

**SCHOOL OF  
AGRICULTURE AND  
ALLIED SCIENCES**

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT  
M.SC. FORESTRY**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## **Forestry**

**UNIT-I:** Importance of Agriculture/Forestry/Livestock in national economy. Basic principles of crop production. Important rural development programmes in India Elementary principles of economics and agri-extension. Organizational set up of Agricultural Research, education and extension in India. Major diseases and pests of crops. Elements of statistics.

**UNIT-II:** Forest- importance, types, classification, ecosystem, biotic and abiotic components, ecological succession and climax, nursery and planting technique, social forestry, farm forestry, urban forestry, community forestry, forest management, silvicultural practices, forest mensuration, Forest inventory, Yield regulations, natural regeneration, man-made plantations, shifting cultivation, taungya, dendrology, hardwoods, softwoods, pulp woods, fuel woods, multipurpose tree species, wasteland management. Agroforestry – importance and land use systems, forest soils, classification and conservation, watershed management, forest genetics and biotechnology and tree improvement, tree seed technology, rangelands, wildlife – importance, abuse, human wildlife conflicts, depletion, management, major and minor forest products including medicinal and aromatic plants, forest inventory, aerial photo interpretation and remote sensing, forest depletion and degradation – importance and impact on environment, global warming, role of forests and trees in climate mitigation, tree diseases, wood decay and discolouration, tree pests, integrated pest and disease management, biological and chemical wood preservation, forest conservation, Indian forest policies, Indian forest act, forest engineering, forest economics, joint forest management and tribology.

# SYLLABUS FOR UNIVERSITY ENTRANCE TEST

SESSION 2026-27

## SUBJECT

- M.SC. MEDICINAL AND AROMATIC  
PLANTS
- PG DIPLOMA IN ENTREPRENEURSHIP  
AND SKILL DEVELOPMENT IN  
MEDICINAL AND AROMATIC PLANTS



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY**  
**(A CENTRAL UNIVERSITY)**  
**SRINAGAR (GARHWAL)**  
**UTTARAKHAND**

## High Altitude Plant Physiology Research Centre (HAPPRC)

### M.Sc. Medicinal & Aromatic Plants and Post Graduate Diploma in Entrepreneurship and Skill Development in Medicinal and Aromatic Plants (PGDESDMAP)

#### Unit 1: General Plant Sciences & Botany

**Plant Physiology:** Photosynthesis: C<sub>3</sub>, C<sub>4</sub>, and CAM pathways; mechanisms and ecological significance, photorespiration and its implications in crop productivity. Seed germination, viability and vigour, factors affecting germination and dormancy. cell elongation and differentiation, transpiration and respiration and their physiological significance. Translocation of assimilates and dry matter partitioning in plants. Crop-water relationship and water use efficiency. Harvest index and its importance in crop productivity. Plant nutrients and their physiological roles. Role of phytohormones (auxins, gibberellins, cytokinins, ethylene and abscisic acid) in plant growth, development and stress responses.

**Cell Biology and Genetics:** Structure and function of plant cell and major cell organelles. Cell division including mitosis and meiosis and their biological significance. Principles of Mendelian genetics and inheritance patterns. Chromosome structure and organization of genetic material. DNA replication, transcription and translation and their regulation. Concept of genetic code and gene expression. Physical and chemical basis of heredity and introduction to molecular genetics.

**Plant Systematics and Economic Botany:** Principles of plant classification and taxonomy. Classification, identification and geographical distribution of medicinal and aromatic plants. Economic importance and uses of important medicinal and aromatic plants used in traditional and modern healthcare systems. Elements of economic botany with reference to plant-based products.

#### Unit 2: Production Technology

**Agro-techniques:** Agro-techniques and production technology for important medicinal and aromatic plants including land preparation, nursery raising, planting methods, nutrient management, irrigation practices and harvesting techniques. cropping systems, soil fertility management and plant nutrition. Factors affecting crop productivity and sustainable crop management practices.

**Organic Farming and Sustainable Agriculture:** Principles and practices of organic farming. Use of biofertilizers, biopesticides and organic manures in crop production. Integrated nutrient management and sustainable soil health management. Good Agricultural Practices (GAP) for medicinal and aromatic plants including quality planting material, field sanitation and sustainable harvesting.

**Medicinal Plant Resources:** Definition, history and importance of medicinal and aromatic plants (MAPs). Status and scope of MAPs in global and Indian markets. Demand and supply

trends of medicinal plants. Diversity of medicinal plants and their role in traditional healthcare systems. Conservation approaches including in situ and ex situ conservation. Role of national and international agencies such as the National Medicinal Plant Board (NMPB), State Medicinal Plant Boards and other organizations involved in the promotion and conservation of MAPs.

### **Unit 3: Phytochemistry, Biochemistry & Post-Harvest Management**

**Plant Biochemistry:** Structure and functions of major biomolecules including carbohydrates, proteins, lipids and nucleic acids. Enzymes: structure, nomenclature and mechanism of action. Vitamins and minerals as cofactors and coenzymes in metabolic processes. Acid–base concepts, buffers and pH in biological systems. Overview of metabolic pathways including glycolysis, TCA cycle and electron transport chain. Nitrate assimilation and biological nitrogen fixation in plants. **Secondary Metabolites:** Nature, classification, biosynthesis and functions of important plant secondary metabolites including alkaloids, phenolics, terpenoids, glycosides and essential oils. Distribution of secondary metabolites in plant systems and their ecological and pharmacological importance. Factors influencing the production of secondary metabolites including environmental and genetic factors.

**Post-Harvest Management:** Post-harvest handling of medicinal and aromatic plants including drying, grading and storage. Principles and methods of extraction of active constituents and essential oils. Processing and value addition of medicinal plant products. Detection of adulteration and evaluation of crude drugs. Quality control measures and factors affecting the stability and activity of bioactive principles during storage.

### **Unit 4: Plant Protection, Biotechnology & Research Tools**

**Plant Protection:** Major insect pests, pathogens and diseases affecting crops and medicinal plants. Principles of Integrated Pest Management (IPM) including biological, cultural and chemical control methods. Role of resistant varieties and ecological approaches in pest and disease management.

**Biotechnology:** Basic concepts of recombinant DNA technology and genetically modified crops. Plant tissue culture techniques including callus culture, micropropagation and somatic embryogenesis. Somaclonal variation and genetic transformation in plants. Application of hairy root cultures and bioreactors for enhanced production of secondary metabolites.

**Molecular and Statistical Tools:** Restriction enzymes, cloning vectors and gene transfer techniques. Molecular and immunological techniques used in plant biotechnology. Introduction to genomics, proteomics and bioinformatics and their applications in plant research and medicinal plant improvement. Basic statistical methods for analysis and interpretation of experimental data.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**  
**M.SC. HORTICULTURE**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
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SRINAGAR (GARHWAL)  
UTTARAKHAND**

## Horticulture

**UNIT-I:** Importance of Agriculture in national economy; basic principles of crop production; cultivation of rice, wheat, chickpea, pigeon-pea, sugarcane, groundnut, tomato and mango. Major soils of India, role of NPK and their deficiency symptoms. Structure and function of cell organelles; mitosis and meiosis; Mendelian genetics; elementary knowledge of photosynthesis; respiration, and transpiration; structure and functions of carbohydrates, proteins, nucleic acids, enzymes and vitamins. Major pests and diseases of rice, wheat, cotton, chickpea, sugarcane and their management. Important rural development programmes in India; organizational set up of agricultural research, education and extension in India; Elements of statistics.

**UNIT-II:** Layout and establishment of orchards; pruning and training; propagation, climatic requirement and cultivation of fruits like mango, banana, citrus, guava, grape, pineapple, papaya, apple, pear, peach and plum; cultivation of plantation crops like coconut and cashew nut and spices like black pepper, coriander, turmeric, important physiological disorders; major vegetable crops of tropical, subtropical and temperate regions 'like cole crops (cauliflower, cabbage and knol khol), cucurbits (pumpkin, bottle gourd, bitter melon, luffa, muskmelon and watermelon, cucumber), root crops (radish, tapioca sweet potato and potato), leafy vegetables (fenugreek and spinach); solanaceous crops (tomato, chillies and brinjal); techniques for raising the nursery; nutritive value of fruits and vegetables and their role in human nutrition; basic physiology of ripening in fruits and vegetables and their products; type of fruits and vegetable products and control of fungal and bacterial diseases; major floricultural crops grown in India for commercial purposes like rose, carnation, chrysanthemum, marigold, tuberose, gladiolus, orchids; establishment and maintenance of lawns, trees, shrubs, creepers, hedges and annuals; type of gardens, methods of crop improvement; male sterility and incompatibility; pure line and pedigree selection; backcross, mass selection; heterosis; plant nutrients, deficiency symptoms of nutrients, manures and fertilisers, systems of irrigation, management of important pests and diseases of fruits and vegetables. Processing and Post Harvest management of horticultural crops.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.SC. (AG.) AGRICULTURE EXTENSION  
AND COMMUNICATION**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

# **M.Sc. (Ag.) Agriculture Extension and Communication**

## **UNIT-I**

Importance of Agriculture in national economy; basic principles of crop production; cultivation of rice, wheat, chickpea, pigeon-pea, sugarcane, groundnut, tomato and mango. Major soils of India, role of NPK and their deficiency symptoms. Structure and function of cell organelles, mitosis and meiosis; Mendelian genetics; elementary knowledge of photosynthesis; respiration, and transpiration; structure and functions of carbohydrates, proteins, nucleic acids, enzymes and vitamins. Major pests and diseases of rice, wheat, cotton, chickpea, sugarcane and their management. Important rural development programmes in India; organisational set up of agricultural research, education and extension in India; Elements of statistics. Measures of central tendency and dispersion, regression and correlation; concept of probability, sampling techniques and tests of significance.

## **UNIT-II**

Theory of consumer behaviour, theory of demand, elasticity of demand, indifference curve analysis, theory of firm, cost curves, theory of supply, price determination, market classification, concept of macroeconomics, money and banking, national income. Agricultural marketing role, practice, institutions, problems and reforms, role of capital and credit in agriculture, crop insurance, credit institutions, cooperatives, capital formation in agriculture, agrarian reforms, globalization, WTO & its impact on Indian agriculture.

## **UNIT-III**

Basic principles of farm management, concept of farming system and economics of farming systems, agricultural production economics-scope and analysis, factor-product relationship, marginal cost and marginal revenue, farm planning and budgeting, Agricultural finance: nature and scope. Time value of money, Compounding and discounting. Agricultural credit: meaning, definition, need, classification. Credit analysis: 4R's, 5C's and 7P's of credit, repayment plans. History of financing agriculture in India. Commercial banks, nationalization of commercial banks. Lead bank scheme, regional rural banks, scale of finance. Higher financing agencies, RBI, NABARD, AFC, Asian Development Bank, World Bank, role of capital and credit in agriculture; credit institutions, co-operatives and agrarian reforms in India.

#### **UNIT-IV**

Extension Education- concept, meaning, principles, philosophy, scope and importance; Extension programme planning and evaluation- steps and principles, models of organizing agricultural extension; historical development of extension in USA, Japan and India. Rural development, meaning, importance and problems; Rural development programmes in India- Pre-independence era to recent ones; Extension teaching methods, definition and concept of sociology, differences between rural & urban communities, social stratification., social groups, social organization and social change. Rural leadership, educational psychology- learning and teaching, role of personality in agricultural extension Indian rural system- its characteristics; value system, cost and class; structure and customs; rural group organization and adult education.

#### **UNIT-V**

Communication, principles, concepts, process, elements and barriers in teaching methods. Different kinds of communication methods, media, and AV aids/materials. Media mix, Campaign, Cyber extension- internet, cybercafé, Kisan Call Centers, teleconferencing, agriculture journalism, diffusion and adoption of innovations-adopter categories, capacity building of extension personnel and farmers- training to farmers, women and rural youth.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.SC. SEED SCIENCE AND TECHNOLOGY**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## **SEED SCIENCE & TECHNOLOGY**

UNIT-I: Importance of Agriculture in national economy; basic principles of crop production; cultivation of rice, wheat, chickpea, pigeon-pea, sugarcane, groundnut, tomato, potato and mango. Major soils of India, role of NPK, and their deficiency symptoms.

UNIT-II: Structure and function of cell organelles; mitosis and meiosis; Mendelian genetics; elementary knowledge of photosynthesis, respiration, and transpiration; structure and functions of carbohydrates, proteins, nucleic acids, enzymes, and vitamins. Major pests and diseases of rice, wheat, cotton, chickpea, sugarcane, and their management.

UNIT-III: Characteristics of prokaryotic and eukaryotic organisms, differences between fungi, bacteria, mycoplasmas and viruses; physical and chemical basis of heredity; chromosome structure; genes/operon concept; protein biosynthesis; transformation, recombination, Heterosis; Elements of economic botany; integrated diseases management; sterilisation, disinfection and pasteurization; Koch's postulates; etiological agents of rusts smuts, powdery/downy mildews, wilts, yellows, mosaic, necrosis, enations, blights and witches- broom; pH, buffer, vitamins, role of plant hormones in seed germination and dormancy; pollination/ fertilization in flowering plants; methods of seed testing; breeders, foundation and certified seeds; seed production in self and cross pollinated crops, nitrate assimilation; biological nitrogen fixation and other uses of microorganisms in agriculture.

UNIT-IV: Food and industry; composting and biogas production. Important rural development programmes in India; organizational setup of agricultural research, education, and extension in India

**SCHOOL OF EARTH  
SCIENCES**

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A./M.SC. DEFENCE STRATEGIC &  
GEO POLITICAL STUDIES (TWO YEAR /  
ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
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SRINAGAR (GARHWAL)  
UTTARAKHAND**

## **Defence, Strategic and Geo-Political Studies**

1. Contemporary Issues of Security Studies
2. Indian Military History
3. Strategic Thoughts
4. Defence Organisation of India
5. Maritime Security
6. International Organisations
7. International Relations
8. Defence Economics
9. Terrorism and Counterterrorism Studies
10. Indian Foreign Policy
11. General Aptitude and Current Affairs
12. Internal Security Challenges
13. Global Peace and Security
14. Geopolitics and Military Geography
15. Science, Technology and National Security

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A./M.SC. GEOGRAPHY (TWO YEAR /  
ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
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UTTARAKHAND**

# Geography

## PART-A PHYSICAL GEOGRAPHY

### Section I: Geomorphology

Solar system and the Earth - Origin of the earth: important theories - Earth's interior - Geological time scale- Earth's Materials and minerals - Rocks classification and characteristics - Earth surface configuration - Order of landforms - Wegner's theory - Plate tectonics.

Endogenic processes: Folds, Fault, Dome and their resultant landforms - Earthquakes and Volcanic activities: causes, resultant landforms and world distribution.

Exogenic processes: Weathering, Mass wasting and resultant landforms - Formation of regolith and soil- Geomorphic agents and processes: Fluvial, Glacial, Coastal, Arid and Karst landforms - Geomorphic hazards and their effects

### Section II: Climatology

Elements of weather and climate –

Composition and Structure of the Atmosphere - Heat budget

Atmospheric pressure: Vertical and horizontal distribution - Winds and their causes of circulation - Types of planetary, Periodic and local winds - Temperature: factors and distribution - Temperature inversion.

Atmosphere moisture: Humidity, evaporation and condensation - Hydrological cycle - Types, regional and seasonal distribution – Monsoon.

Air masses and Fronts- Atmospheric disturbances: Tropical and Temperate cyclones- Anti- cyclones - El- Nino-Southern Oscillation (ENSO) - Recent climatic variability phenomenon.

Climatic classification - Basis of Koppen's and Thornthwaite's classification - Role of climate in Human life

- Atmospheric pollution and global warming: general causes and consequences.

### Section III: Oceanography

Surface configuration of the ocean floor - Hypsographic curve: continental shelf, continental slope, abyssal plain, trenches and deeps - Relief of Atlantic, Pacific, and Indian Oceans.

Distribution of temperature and salinity of oceans and seas - Circulation of oceanic waters, waves and currents - Currents of Atlantic, Pacific and Indian oceans - Tides: causes, types and theories.

Marine deposits - Coral reefs: types and their formation - Coastal environment - Ocean as store house of resources for the future

### Section IV: Biogeography

Biosphere: Meaning and concept - Components of ecosystem and ecology-Biomes: World major biomes and their characteristics

Functions: Trophic levels, energy flows, cycles (geo-chemical, carbon, nitrogen and oxygen), food chain, food web and ecological pyramid

Human interaction and impacts - Environmental ethics - Environmental hazards and disasters (global warming, urban heat island, atmospheric pollution, water pollution, land degradation). Environmental policies - Environmental impact assessment

### **Section V: Physical Geography of India**

Land of diversities - Geological structure - Physical features and divisions- Drainage pattern - Soil types and distribution - Natural vegetation

Climate: Seasons - Monsoon (origin, regional and seasonal variations) - Distribution of temperature and rainfall- Local winds

Mineral and power resources: Major types and their potential, distribution and production – Sources of non-conventional energy

## **PART-B HUMAN GEOGRAPHY**

### **Section V Geographic Thought**

Nature and scope of geography - A brief historical overview of geography as a discipline – Branches of geography: general characteristics and inter-relationships.

Contributions of Greek, Roman, Arab, Chinese and Indian Scholars - Contributors for the development of modern geography- Recent Trends in Geography.

Dualisms in geographic studies (physical vs. human, regional vs. systematic, qualitative vs. quantitative, ideographic vs. nomothetic) – Paradigm shift - Perspectives in geography(positivism, behaviouralism, humanism, structuralism, feminism and postmodernism).

### **Section VII: Population Geography**

Division of mankind - Racial groups and culture: systems, characteristics and distribution - Human Adaptation to the environment - Adaptation in modern society - Globalization and cultural change - Language, communication and belief.

Distribution and density of population: Factors, growth and distribution- Population composition - Population theories - Health and wellbeing

Migration: Internal and international - Settlements: rural and urban - Urbanization process - Patterns and world distribution – Population policies

Electoral geography – Frontiers and Boundaries- Geopolitics and world order – Geopolitical conflicts

### **Section VIII: Geography of Resources**

Nature and components of resources - Resources and environment interface - Classification of resources: renewable and non-renewable, biotic and abiotic resources.

Water, forests and soil resources: Types, distribution, economic and environmental significance - problems of deforestation, soil erosion and water pollution.

Exploitation of natural resources - Impact of Human activities: deforestation, mining, agriculture and industrialization on environment- Population pressure and resources utilization - Population explosion and food security Environmental hazards: pollution and its related problems -Emerging environmental problems - Global warming - Environmental conservation, preservation, and sustainable resource use.

### **Section IX: Economic Geography**

Sectors of economic activity: Primary, Secondary and Tertiary - Favourable geographical conditions for different economic activities.

Agriculture: Primary crops (wheat, rice and maize), commercial crops (cotton, sugarcane, tea, coffee, rubber) distribution and production - Livestock and Fisheries- Important fishing grounds.

Mining economy: Factors governing the exploitation of minerals - World reserves and production of Iron ore, Manganese, Bauxite and Copper.

Fuel and power resources of the world - Distribution and production of coal, petroleum, hydroelectric power, atomic energy and non-conventional sources of energy.

Manufacturing industries: Factors affecting location - growth and distribution of major industries - World production and distribution.

Nature and trends in the International trade - World trade of wheat, cotton, tea, coffee, petroleum, gold, silver, gems and jewelry.

Transport: Relative significance of different means of transport - Factors affecting land, water and air transport - World oceanic routes - Important inland waterways and important canals - Impact of globalization on world economy

### **Section X: Human Geography of India**

Cultural landscape: Population growth, distribution and density - Population composition - Settlements and Urbanization

Agriculture: Major crops, impact of green revolution, Regionalization of Indian agriculture

Industrial development - Location and distribution of iron and steel, cement, cotton textile and sugar industry - Industrial Regions and their characteristics - Industrial Policies in India

Transport Networks (railways, roadways, waterways, airways and pipelines) - International Internal and External Trade (trend, composition and directions)

Regional development planning in India - Globalisation and its impact on Indian Economy- Changing nature of Indian economy - Socio-economic development - Impact of development on environment and natural resources

## **PART-C GEOGRAPHICAL TECHNIQUES**

### **Section XI: Cartography**

Elements of Map Science - Concepts of scale and map - Types of maps and scales - Construction of graphic/linear scales - Enlargement and reduction of maps: methods and procedures - Map compilation and generalization.

General principles and classification of projections: construction, properties, limitations and uses of Zenithal, Conical and Cylindrical projections.

Methods of showing relief- (hachure, shading, and contours) - Contour interpolation - Profiles: drawing of profiles and their relevance in landforms mapping and analysis - Identification of different rocks-SOI Toposheets - Interpretation of physical and cultural topographic sheets.

Methods and instruments for collection of weather data - Construction of climograph and hythergraph, isotherm, isobars and isohyets - Preparation of weather maps- Symbols used in weather maps - Interpretation of Indian daily weather maps.

Mapping techniques of population, social, economic and cultural data - dot, isopleth, and choropleth methods.

### **Section XII: Surveying Techniques**

Basic principles of surveying - Types of surveying - Surveying instruments - Basic principles of field work

- Techniques in physical and socio-economic field surveys- Data collection methods.

Chain and tape survey - Prismatic compass survey - Plane Table survey- Levelling techniques - Electronic surveying instruments (Theodolite and electronic devices)

### **Section XIII: Statistical Techniques**

Statistical Methods: Frequency distribution and histograms - Measures of central tendency and dispersion

- Diagrammatic representation of geographical and statistical data.

Sampling Techniques - Tests of significance - Probability distributions: normal, binomial and Poisson- parametric and non-parametric tests- Correlation and regression.

### **Section XIV: Remote Sensing and GIS**

Remote sensing principles - Types of remote sensing - Aerial photography-Satellite images - Application of Remote Sensing Techniques.

Components and function of GIS - Spatial and non-spatial data - Vector and raster format - GISanalysis - Application of GIS.

Basic principles of Global Navigation Satellite System- Segments and applications.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A./M.SC. GEOLOGY (TWO YEAR /  
ONE YEAR)**



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SRINAGAR (GARHWAL)  
UTTARAKHAND**

# Geology

## UNIT-I

### **Physical Geology:**

Introduction to Geology and its scope, Earth and solar system: origin, size, shape, mass, density and its atmosphere. A brief account of various theories regarding the origin and age of the Earth. Brief idea of interior of earth and its composition. Weathering and erosion: factors, types and their effects. Earthquakes: nature of seismic waves, their intensity and magnitude scale; Origin of earthquake. Volcanoes: types, products and causes of volcanism.

### **Geomorphology:**

Basic principles of Geomorphology, geomorphological cycles, weathering and erosion; geomorphic mapping- tools and techniques. Epigene/ exogenic processes: degradation and aggradation. Hypogene/endogenic processes; Diastrophism and volcanism, Extraterrestrial processes; Geological work of wind, glacier, river, underground water and ocean.

### **Geodynamics:**

Earth as a dynamic system. Elementary idea of continental drift, sea-floor spreading and mid-oceanic ridges. Paleomagnetism and its application. Plate Tectonics: the concept, plate margins, orogeny, deep sea trenches, island arcs and volcanic arcs.

### **Environmental Geology:**

Earth and its spheres: atmosphere, hydrosphere, lithosphere, biosphere and Man; Earth Material. Energy budget: Solar radiation. Global environments: coastal, riverine, desertic, tropical, cold, polar. Concept of global warming and climate change. Geological hazards: Earthquakes, volcanism, landslides, avalanches, floods, droughts; Hazard mitigation.

Resource Management: Energy resources (Conventional and non-conventional), watershed management, land use planning, management of water resources, land reclamation.

### **Structural Geology:**

Introduction to Structural Geology; contours, topographic and geological maps; Elementary idea of bed, dip and strike; Outcrop, effects of various structures on

outcrop. Clinometer/Brunton compass and its use. Elementary idea of types of deformation; Folds: nomenclature and types of folds. Faults: nomenclature, geometrical and genetic classifications, normal, thrust and slip faults. Definition, kinds and significance of joints and unconformity.

### **Hydrology:**

Definition of hydrogeology, Hydrological cycle. Hydrological parameters - Precipitation, evaporation, transpiration and infiltration. Origin of groundwater; Vertical distribution of groundwater. Types of aquifers;

Water bearing properties of rocks - Porosity and Permeability; specific yield, specific retention. Surface and subsurface geophysical and geological methods of ground water exploration. Groundwater provinces of India.

### **Physical Geography**

Definition and Scope, Components of Earth System. Atmosphere – Heat Balance, Global Circulation Pattern, Tropical Cyclones, Monsoon, Climatic Classification (Koppen). Lithosphere – Internal Structure of Earth based on Seismic Evidence, Plate Tectonics and its Associated Features. Fluvial Cycle of Erosion – Davis and Penck. Hydrosphere – Hydrological Cycle, Ocean Bottom Relief Features, Tides and Currents.

### **Fundamentals of Remote sensing & GIS:**

Remote sensing systems; remote sensing sensors; signatures of rocks, minerals and soils. Application of remote sensing in geoscience and geomorphological studies. Types of Indian and Foreign Remote Sensing Satellites, Digital image processing; fundamental steps in image processing; elements of pattern recognition and image classification.

Introduction to Geographic Information System (GIS); components of GIS; product generation in GIS; tools for map analysis; integration of GIS with remote sensing.

## **UNIT-II**

### **Crystallography:**

Crystals and their characters, form, face, edge, solid angle; Interfacial angle and their measurements; Crystallographic axes and angles. Crystal parameters, Weiss and

Miller system of notations. Symmetry elements and description of normal class of Isometric, Tetragonal, Hexagonal, Trigonal, Orthorhombic, Monoclinic and Triclinic systems.

### **Mineralogy:**

Introduction to Mineralogy, Definition and characters of mineral. Physical properties of minerals. Chemical composition and diagnostic physical properties of minerals such as: Quartz, Orthoclase, Microcline, Hypersthene, Hornblende, Garnet, Muscovite, Biotite, Chlorite, Olivine, Epidote, Calcite. Polarizing microscope, its parts and functioning; Ordinary and polarized lights; Common optical properties observed under ordinary, polarized lights and crossed nicols. Optical properties of some common rock forming minerals (Quartz, Orthoclase, Microcline, Olivine, Augite, Hornblende, Muscovite, Biotite, Garnet, Calcite).

### **Geochemistry:**

Introduction to geochemistry: basic knowledge about crystal chemistry. Types of chemical bonds, coordination number; Colloids in geological systems, ion exchanges and geological evidence for earlier colloids. Elementary idea of Periodic Table. : Cosmic abundance of elements; Composition of the planets and meteorites; geochemical evolution of the earth and geochemical cycles. Gold Schmidt's geochemical classification of elements; Distribution of major, minor and trace elements in igneous, metamorphic and sedimentary rocks. Elements of geochemical thermodynamics; Isomorphism and polymorphism.

### **Petrology:**

Igneous Petrology: Magma: definition, composition, types and origin; Forms of igneous rocks; textures of igneous rocks. Reaction principle; Differentiation and Assimilation; Crystallization of unit-component and bi-component (mix-crystals) systems; Bowen's reaction series. Mineralogical and chemical classification of igneous rocks. Detailed petrographic description of Granite, Granodiorite, Rhyolite, Syenite, Phonolite, Diorite, Gabbro. Processes of formation of sedimentary rocks; Classification, textures and structures of sedimentary rocks. Petrographic details of important siliciclastic and carbonate rocks such as - conglomerate, breccia, sandstone, greywacke, shale, lime stones. Process and products of metamorphism; Type of

metamorphism. Factors, zones and grades of metamorphism. Textures and structures of metamorphic rocks. Classification of metamorphic rocks. Petrographic details of some important metamorphic rocks such as - slate, schists, gneiss, quartzite, marble.

### **Economic Geology:**

Concept of ore and ore deposits, ore minerals and gangue minerals; Tenor of ores; Metallic and non-metallic ore minerals; Strategic, Critical and essential minerals. Processes of formation of ore deposits; Magmatic, contact metasomatic, hydrothermal, sedimentation. Study of important metallic (Cu, Pb, Zn, Mn, Fe, Au, Al) and non-metallic (industrial) minerals (gypsum, magnesite, mica). Distribution of coal and petroleum in India.

### **Mineral exploration:**

Elementary idea of geological, geochemical and geophysical prospecting. Elementary idea of mining and environmental considerations for mining.

### **Stratigraphy:**

Definition, Principle of stratigraphy; Geological Time Scale and stratigraphic classification; Physiographic division of India. Study of following Precambrian succession: Dharwar, Cuddapah, Vindhyan and Delhi Supergroups; Brief idea of Palaeozoic succession of northwestern Himalaya; Triassic of Spiti; Mesozoic type succession of Kutch and Rajasthan; Cretaceous of Tiruchirapalli. Study of following type localities: Gondwana and Deccan Trap. Paleogene- Neogene sequences of northwest Himalaya and Assam.

### **Paleontology:**

Definition, Fossils: definition, characters, binomial nomenclature in taxonomy, mode of preservation, condition of fossilization and significance of fossils. Morphology and geological distribution of brachiopods, pelecypods, cephalopods. Morphology and geological distribution of trilobite, echinoidea. Evolutionary history of horse. Morphology, distribution and significance of Gondwana flora.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.SC. REMOTE SENSING & GIS**  
**APPLICATIONS (TWO YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY**  
**(A CENTRAL UNIVERSITY)**  
**SRINAGAR (GARHWAL)**  
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## M.Sc. Remote Sensing and GIS Applications

### SECTION A:

**a) Mathematical Ability & General Awareness:** (20 questions – objective type) HCF and LCM of numbers, decimal fractions, simplification, square root and cube root, percentages, ratio and proportion, chain rule, time and work, time and distance, profit and loss, simple interest and compound interest, area of plane figures, volume and area of solid figures, clocks, stocks and shares, true discount, bankers discount, odd man out and series, problems on ages. Differentiation, Integration, Differential Equation, Matrices and Determinants. Topics related to current affairs.

**b) Logical Reasoning:** (15 questions – objective type) Questions to test ability for logical reasoning, quantitative reasoning, and graphical reasoning.

**c) English Language and Comprehension:** (15 questions – objective type) Questions to test command over the English language.

### SECTION B: (50 questions – objective type, 05 questions in each category)

**a) Agriculture & Soil:** Factors determining agro ecological zones and geographic distribution of crop plants, intercropping and mixed cropping. Origin and types of soils. Land degradation, erosion, land reclamation.

**b) Atmospheric Sciences:** The Earth and the Solar System, Earth Materials, Greenhouse gases and global warming. Cloud formation and precipitation processes, General weather systems of India, Monsoon system, distribution of precipitation over India, ozone depletion.

**c) Computer Applications:** Basic computer awareness and uses. Programming instructions, simple algorithms and computational methods.

**d) Disaster Management:** Natural disasters and technical disasters, agriculture drought, floods, forest fires and diseases.

**e) Environmental Sciences:** Man and Environment, Physico-chemical and Biological factors in the Environment, Geographical classification and zones, Structure and composition of atmosphere, hydrosphere, lithosphere and biosphere.

**f) Forestry & Ecology:** Forest Classification, Forest management. Habitat and niche, Population ecology, Community ecology, Ecological succession, Ecosystem, Biogeography, Conservation biology.

**g) Geosciences:** Modern theories on the origin of the Earth and other planetary bodies. Earth's orbital parameters, Kepler's laws of planetary motion, Geological Time Scale, Age of the Earth, Basic principles of stratigraphy, Theories about the origin of life.

**h) Resources & their Utilization:** Allocation of natural resources and measuring resource scarcity. Resources classification systems, natural and cultural resources, renewable and non-renewable resources. Resource Conservation - resource monitoring and management, Sustainable development of natural resources.

**i) Wildlife Management:** Methods of estimating population density of animals and plants, ranging patterns through direct, indirect and remote observations, habitat characterization.

**j) Water Resources:** Sources of irrigation (rain, canals, tanks, rivers, wells, tube wells), soil moisture content and weather parameters, Water requirement of crops, Methods of irrigation and drainage, watershed management.

**SCHOOL OF LIFE  
SCIENCES**

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**  
**M.SC. BOTANY**  
**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY**  
**(A CENTRAL UNIVERSITY)**  
**SRINAGAR (GARHWAL)**  
**UTTARAKHAND**

# Botany

## 1. Microbiology and Cryptogamic Botany

History and scope of Microbiology. General account, distribution and classification of microorganisms. Viruses- Discovery, general structure, replication (general account), DNA virus (T-phage); Lytic and lysogenic cycle, RNA virus (TMV); Economic importance. Bacteria – Discovery, General characteristics and cell structure; Reproduction-vegetative, asexual and recombination (conjugation, transformation and transduction); Economic importance. Role of microorganisms in Nitrogen metabolism.

General characteristics; Classification of algae; Morphology and life-cycles of Oscillatoria, Scytonema, Volvox, Ulva, Vaucheria, Fucus and Polysiphonia. Economic importance of algae.

**True Fungi:** General characteristics, Comparative account of Ascomycetes, Basidiomycetes and dueteromycetes, Life cycle of Puccinia and Agaricus (Basidiomycota); Symbiotic Associations- Lichens: General account, reproduction and significance; Mycorrhiza: ectomycorrhiza and endomycorrhiza and their significance.

**Bryophytes:** General characteristics, adaptations to land habit, Classification, Range of thallus organisation. Classification, morphology, anatomy and reproduction of Riccia, Anthoceros, Marchantia and Funaria. (Developmental details not to be included). Ecology and economic importance of bryophytes.

**Pteridophytes:** General characteristics, classification, Early land plants (Cooksonia and Rhynia). Classification, morphology, anatomy and reproduction of Selaginella, Equisetum and Pteris. (Developmental details not to be included). Heterospory and seed habit, stelar evolution. Ecological and economical importance of Pteridophytes.

## 2. Genetics and Cell Biology

Study of ultrastructure of plant cell and its organelles using electron micrographic photographs/models. Demonstration of Mitosis in *Allium cepa* roots using squash technique. Observation of mitosis in various stages using permanent slides. Demonstration of Meiosis in the flower buds of Tradescantia using squash technique.

Study of DNA and RNA structures using Photographs. Solving the problems of monohybrid, dihybrid, backcross and testcrosses. Solving problems on gene interactions. Study of Chromosomal holograms, Chromosomal aberrations and abnormalities.

## 3. Comparative Account of Phanerogams

## **Gymnosperms**

General account of morphology and reproduction of the following: *Zamia*, *Ginkgo*, *Taxus* and *Gnetum*, General account of *Williamsonia* and *Pentoxylon*, Phylogenetic trends in Gymnosperms, Distribution of living Gymnosperms in India.

## **Angiosperms**

Classification of Angiosperms (Hutchinson) and general account of numerical taxonomy and chemotaxonomy. Distinguishing characters of the following families and their economic importance: *Meliaceae*, *Combretaceae*, *Rubiaceae*, *Convolvulaceae*, *Scrophulariaceae*, *Verbenaceae*, *Polygonaceae*, *Lauraceae*, *Zingiberaceae*, *Arecaceae*, *Cyperaceae*. Embryology: General account of polyembryony, apomixis and experimental embryology with reference to anther and embryo culture.

### **4. Economic Botany**

Plant resources: Concept, status, utilization, and concerns. World Centers of Primary Diversity of Domesticated Plants. Role of ethnic groups in the conservation of plant genetic resources. Role of plants in relation to Human Welfare. a) Cereals- Wheat and Rice. b) Pulses- A general account. c) Fruits- A general account. d) Alcoholic beverages. e) Important firewood and timber-yielding plants and non-wood forest products (NWFPs). f) Ornamental plants of India. g) Sugar cane and starches (sugarcane, beetroot, potato, sweet potato, cassava), h) Forage and fodder crops. i) Fiber crops. j) Medicinal and aromatic crops.

### **5. Molecular Biology**

Recombinant DNA Technology: Concepts of Recombinant DNA, biological tools of Recombinant DNA technology, modification of the gene, methods of gene transfer, transgenic organisms. DNA Structure and Manipulation - Techniques for DNA isolation and purification. Methods for quantification and characterization of DNA samples. RNA Analysis and Gene Expression-Methods for RNA isolation and purification. Analysis of gene expression. Gene Manipulation Techniques - Methods of gene delivery. Physical, chemical, and biological methods. Transformation, transfection, electroporation and micro-injection. Gene knockout techniques in bacterial and eukaryotic organisms. Genome Editing - Introduction to genome editing techniques- Principles and applications of genome editing techniques. CRISPR-Cas9, site-directed mutagenesis, and other genome editing methods.

### **6. Plant Ecology**

Concept of ecosystem and community, populations and communities, Habitat and niche, species interaction, Hotspots, Key stone species, Species diversity and edge effects, Energy Flow, trophic levels and Food webs; In-situ and ex-situ conservation of Biodiversity, IUCN and Red data book, UNESCO, Biodiversity legislation, Indigenous knowledge and biodiversity conservation, Loss of biodiversity: causes and its impact; Invasive species: threats and management.

## **7. Plant Taxonomy and Diversity of Flowering Plants**

Study of vegetative and floral characters of the following families (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification): Brassicaceae -Brassica, Alyssum / Iberis; Asteraceae -Sonchus/Launaea, Vernonia/Ageratum, Eclipta/Tridax; Solanaceae -Solanum nigrum, Withania; Lamiaceae -Salvia, Ocimum; Liliaceae - Asphodelus / Liliium / Allium; Poaceae -Wheat/ Rice/ Barley/ Maize.

## **8. Reproductive Biology of Angiosperms**

Embryology: General account of polyembryony, apomixis and experimental embryology with reference to anther and embryo culture.

## **9. Plant Physiology and Biochemistry**

Importance of water, water potential and its components; Transpiration and its significance; Factors affecting transpiration; Root pressure and guttation. Essential elements, macro and micronutrients; Role of essential elements; Transport of ions across cell membrane, active and passive transport, carriers, channels and pumps. Sugar translocation. Photosynthetic Pigments (Chl a, b, xanthophylls, carotene); Photosystem I and II, reaction center, antenna molecules; Electron transport and mechanism of ATP synthesis; C<sub>3</sub>, C<sub>4</sub> and CAM pathways of carbon fixation; Photorespiration. Glycolysis, anaerobic respiration, TCA cycle; Oxidative phosphorylation, Glyoxylate cycle, Oxidative Pentose Phosphate Pathway. Discovery and physiological roles of auxins, gibberellins, cytokinins, ABA, ethylene. Plant response to light and temperature Photoperiodism (SDP, LDP, Day neutral plants); Phytochrome (discovery and structure), red and far red light responses on photomorphogenesis; Vernalization.

## **10. Plant Biotechnology**

Concept: Definition of Biotechnology, history and multidisciplinary nature of Biotechnology, Biotechnology in Food: Introduction, dairy products, fish and meat products, food enzymes, sweeteners, bakery products, food wastes, microbial products, oriental fermented foods, drinks, alcoholic and non-alcoholic beverages Enzymology and Enzyme Technology: Definition of enzyme, enzymology and enzyme technology, nature of the enzymes, applications of enzymes, the technology of enzyme production, immobilization of enzyme. Recombinant DNA Technology: Concepts of Recombinant DNA, modification of the gene, methods of gene transfer, transgenic organisms. DNA Structure and Manipulation - Techniques for DNA isolation and purification. Methods, for quantification and characterization of DNA samples. RNA Analysis and Gene, Expression- Methods for RNA isolation and purification. Analysis of gene expression.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.SC. MICROBIOLOGY**  
**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

# Microbiology

- **Microbial Diversity:** History and scope of Microbiology, Diversity of Microbial World, Archaeobacteria and Eubacteria, Gram positive and Gram-negative bacteria. Study of Fungi, Algae, Protozoans and viruses. Microbial growth phases, measurement of growth, bacterial sporulation and germination, binary fission, Ultrastructure of microbial cell (Bacteria, fungi, and viruses).
- **Microbial techniques:** Bacterial enumeration; Colony counter, Spectrophotometer, Sterilization; Autoclave, Hot Air Oven, Laminar Air Flow, Light and Electron Microscopy, Centrifugation, Chromatography, Growth kinetics in Batch, Fed batch and continuous cultures. Plasmid vectors, Restriction enzymes, DNA polymerases, PCR, Sangers method of sequencing, RDT based products; Insulin, Streptokinase
- **Biochemistry of Microbes-** Carbohydrates, Proteins, Lipids, Nucleic acids, Genetic code, Vitamins, Enzymes; action mechanism
- **Microbial Physiology:** Water relations, Cell Membrane, Oxygenic and Anoxygenic Photosynthesis, Respiration: Aerobic, anaerobic and fermentation, Alcoholic, and Lactic acid fermentation. Solid state and submerged fermentation. strain improvement. Scale Up and Scale Down processes.
- **Food Microbiology.** Food preservation methods; High temperatures, drying, Canning, food additives, chemicals and radiation. Preservation of milk; Food hygiene maintenance. Fermented food products: Cheese, Yogurt, Sauerkraut, Kemchi, Ketchup, Idli, Dosa
- **Microbial interactions:** Mutualism, Synergism, Commensalism, Competition, Ammensalism, parasitism; Microbe-Plant interaction: positive-negative interaction; Microbe-Animal interaction: positive-negative interaction;
- **Biogeochemical cycles:** Nitrogen, Sulphur, Carbon and Phosphorus cycles. Microbial Bioremediation and Bioleaching. Biofertilizer: Bacterial, Fungal, Phosphate solubiliser, BGA & associative, Mycorrhiza (types and its applications).
- **Air, Water, and Food borne microorganisms:** *Staphylococcus aureus*, *Clostridium botulinum*, *Vibrio cholerae*, *Escherichia coli*, *Salmonella*, *Mycobacterium*, *SARS* and *Hepatitis* infections. Toxins of food borne pathogenic bacteria and fungi.
- **Microbial Genetics:** Elements of microbial genetics and various horizontal gene transfer mechanisms; Transformation; Conjugation; Transduction, Modern concept of gene structure and gene regulation in Prokaryotes. Mutations, mutagens, and Mutation Repair Mechanisms, Transposition, Prokaryotic Vs Eukaryotic – Replication, Transcription, Translation, and Gene regulation,

# SYLLABUS FOR UNIVERSITY ENTRANCE TEST

SESSION 2026-27

## SUBJECT

- M.SC. ENVIRONMENTAL SCIENCES  
(TWO YEAR)
- ADVANCE PG DIPLOMA IN  
ENVIRONMENTAL ECONOMICS
- PG DIPLOMA IN ENVIRONMENTAL  
MANAGEMENT



HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND

# M.Sc. Environmental Sciences

**Essential Qualification for admission:** B.Sc. with Botany, Zoology, Forestry, Agriculture, Geology or Geography with 45% marks for Gen/OBC/EWS and for SC/ST as per university rules.

## Unit I: Understanding of Environment

- ❖ Definition, scope and importance of Environment, Multidisciplinary nature of Environmental Sciences
- ❖ Understanding of Ecology and Ecosystem, Ecological Succession and Ecosystem Services
- ❖ Energy flow in an Ecosystem, Food Chain, Food Web and Ecological Pyramids
- ❖ Structure, Component and Importance of various ecosystems - Forest, Grassland, Desert and Aquatic ecosystems (pond, stream, lakes, river, ocean, estuaries)
- ❖ Human interaction with its Environment

## Unit II: Natural Resources and their Management

- ❖ Basic concept, types and values of Natural Resources
- ❖ Land resources and land use change; Land degradation, soil erosion and desertification
- ❖ Water resources: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water resources (international & national level)
- ❖ Renewable and non renewable energy sources, use of alternate energy sources, growing energy needs
- ❖ Resource Consumption, Restoration and Conservation Practices
- ❖ Sustainable Development: Scope and importance; Concept of sustainability
- ❖ Deforestation: Causes and impacts due to mining, dam building on environment forests, biodiversity and tribal populations

## Unit III: Biodiversity and its Conservation

- ❖ Levels of biological diversity : genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots
- ❖ India as a mega-biodiversity nation; Endangered and endemic species of India
- ❖ Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions
- ❖ Conservation of biodiversity: In-situ and Ex-situ conservation
- ❖ Biodiversity and its linkages with culture, health and people

## Unit IV: Global Environmental issues

- ❖ Environmental Pollution (air, water, noise, soil)
- ❖ Climate Change, Green House Effect and Global Warming
- ❖ Radiations, Nuclear and Technological Hazards and human health risks
- ❖ Population Growth, Disaster, Pandemic and Human Health Risks

- ❖ Solid waste management: Control measures of urban and industrial waste
- ❖ Biomedical and E-waste management

### **Unit V: Environment and Society**

- ❖ Origin and Evolution of Human; Social, Cultural and Religious Structure and values of Environment
- ❖ Traditional Wisdom, Indigenous/traditional Communities and Livelihood Security
- ❖ Industrial Society, Modernization and Adaptations to Natural and Anthropogenic variations
- ❖ Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan, Narmada Bachao, Ganga Bachao, Tehri Dam
- ❖ Environmental ethics: Role of Indian and other religions and cultures in environmental conservation
- ❖ Environmental Ethics and Legislations
- ❖ Connecting human society with conservation and management of water, energy, biodiversity, culture and heritage and waste management

### **Unit VI: Environment Legislations and polices**

- ❖ Environment Laws: Environment Protection Act 1986; Air (Prevention & Control of Pollution) Act 1981; Water (Prevention and control of Pollution) Act 1974; Wildlife Protection Act 1972; Forest Conservation Act 1980. International agreements: Montreal protocol, Kyoto protocol and Convention on Biological Diversity (CBD)
- ❖ National Environmental Policy, Disaster Management Policy, Forest Policy. Water Policy, Agriculture Policy
- ❖ Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.
- ❖ Human population growth: Impacts on environment, human health and welfare.
- ❖ Disaster management: floods, earthquake, cyclones and landslides
- ❖ Resettlement and rehabilitation of project affected persons
- ❖ Environmental communication and public awareness

## **PG Diploma in Environmental Management &**

### **Advanced PG Diploma in Environmental Economics**

**Essential Qualification for admission:** Graduate in any discipline from a recognized university

/institution with 55% marks for Gen/OBC/EWS and for SC/ST as per university rules.

#### **Unit I: Understanding of Environment**

- (i) Definition, scope and importance and multidisciplinary nature of Environmental Sciences
- (ii) Ecology, Ecosystems Food Chain, Food Web and Ecological Pyramids, Ecosystem Services, Energy flow in Ecosystem and Ecological Succession
- (iii) Structure, Component and Importance of Forest ecosystem, Grassland ecosystem, Desert ecosystem and Aquatic ecosystems
- (iv) Human interaction with its Environment and Concept of sustainability

#### **Unit II: Natural Resources and Biodiversity Conservation**

- (i) Basic concept, types and values of Natural Resources
- (ii) Land resources, Renewable, non renewable and alternate energy sources
- (iii) Levels of biological diversity : genetic, species and ecosystem diversity; global biodiversity hot spots, Bio-geographical zones of India, Endangered and endemic species of India
- (iv) Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts and invasions. Deforestation
- (v) Conservation of biodiversity: In-situ and Ex-situ conservation

#### **Unit III: Environment and Human Society**

- (i) Origin and Evolution of Human; Social, Cultural and Religious Structure in relation to Environment
- (ii) Traditional wisdom, Indigenous communities and Livelihood security
- (iii) Industrial Society, Modernization and Adaptations to Natural and Anthropogenic variations

#### **Unit VI: Environment Legislations and polices and ethics**

- (i) Environment Protection Act 1986; Air Act 1981; Water Act 1974; Wildlife Protection Act 1972; Forest Conservation Act 1980, Environmental Policy, Disaster Management Policy, Forest Policy. Water Policy, Agriculture Policy and Environmental ethics
- (ii) International agreements: Montreal protocol, Kyoto protocol and Convention on Biological Diversity (CBD)
- (iii) Disaster management: floods, earthquake, cyclones and landslides
- (iv) Environmental communication and public awareness and Environmental Movements

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.SC. ZOOLOGY**

**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

**UNIVERSITY ENTRANCE TEST (UET-2026)**  
**Syllabus for 2 Year M.Sc. Zoology**

**Animal Diversity**

General characters and outline classification of Non-Chordata up to Classes.

Salient features of Protozoa; Study of *Amoeba*, *Euglena* and *Paramecium* with reference to structure, locomotion, nutrition and reproduction (life history)

Salient features of Porifera; Study of *Sycon* with reference to structure, reproduction (life history); Canal system in Syconoid sponge; Skeleton system

Salient features of Coelenterata; Study of *Aurelia* with reference to morphology and reproduction (life history); Alternation of generation in Coelenterates

Salient features of Helminthes; Study of *Taenia* and *Ascaris* with reference to morphology, reproduction (life-cycle) and parasitic adaptations

Salient features of Annelida; Types and significance of coelom; Metamerism and its significance; Study of *Nereis* and *Hirudinaria* with reference to morphology and reproduction; Parasitic adaptations of *Hirudinaria*; Trochophore larva and its significance

Salient features of Arthropoda; Study of *Palaemon* with reference to morphology, respiration, excretion and reproduction; Zoological importance of *Peripatus* and *Limulus*; Economic importance of arthropods

Salient features of Mollusca; Study of *Pila* and *Unio* with reference to morphology, respiration and reproduction (life-history)

Salient features of Echinodermata; Study of *Asterias* with reference to morphology, locomotion, water vascular system, mode of feeding and reproduction

General characters and outline classification of Chordates up to Classes.

General characters and classification of Hemichordata; *Balanoglossus*: morphology and development

General characters and classification; of Urochordata; *Herdmania*: Morphology, blood vascular system, reproductive system and development

Classification and salient features of Cephalochordata; *Branchiostoma* (= *Amphioxus*): Morphology, digestive, excretory, reproductive system and development

General characters and classification of Cyclostomata; External features of *Petromyzon* and *Myxine*; Comparison between Lampreys and Hagfish

General characters of cartilaginous and bony fish; Distribution, General characters, and affinities of Dipnoi; External features, Digestive, Respiratory, Blood vascular, Nervous and Urinogenital system of *Scoliodon*; Scales and fins of fishes, respiratory organs in fish

General characters and classification of Amphibia; Elementary idea of parental care

Terrestrial Adaptations in Reptilia; General characters and distribution of Chelonia, *Rhynchocephalia*, Ophidia and Crocodilia; Poisonous and non-poisonous snakes; Biting mechanism in snakes; Venom and Antivenom

General characters of Aves; Morphology, Digestive, Respiratory and Urinogenital System of *Columba*; Feathers in Birds; Aerial adaptations in birds

General organization of Mammalia; Salient features and distribution of Prototheria, Metatheria and Eutheria

**Cell Biology & Molecular Biology**

Introduction to Cell theory; Comparison of a generalised Pro- & Eukaryote cell.

Elementary idea of cell fractionation; Light & Phase Contrast Microscopy, Confocal and Electron Microscopy (TEM & SEM)

Elementary knowledge of the structure & function of plasma membrane, cytoplasm

Introduction to the organelles constituting endomembrane system (Endoplasmic reticulum, Golgi complex, Lysosome, Peroxisome); Nucleus & Nucleolus; Ribosome; Mitochondria; Chloroplast; Introduction to cytoskeleton

Basic features of Cell cycle; Mitosis & Meiosis

Structure of DNA, Types of DNA; Replication of DNA in prokaryotes and eukaryotes: Semiconservative nature of DNA replication, Bi-directional replication, DNA polymerases; primosome, replisome, Rolling circle replication, Unique aspects of eukaryotic chromosome replication

Causes and types of DNA damage, mechanism of DNA repair: Photoreactivation, base excision repair, nucleotide excision repair, mismatch repair, recombinational repair, non-homologous end joining

RNA structure and types of RNA; Transcription in prokaryotes—Prokaryotic RNA polymerase, role of sigma factor, promoter, Initiation, elongation and termination of RNA chains; Transcription in eukaryotes—Eukaryotic RNA polymerases, transcription factors, promoters, enhancers, mechanism of transcription initiation, promoter clearance and elongation RNA splicing and processing;

Regulation of gene expression in prokaryotes—Operon concept (inducible and repressible system), Genetic code and its characteristics; aminoacyl tRNA synthetases, Mechanism of initiation, elongation and termination of polypeptides

### **Animal Physiology**

Introduction to CNS, PNS, ANS; Structure of a neuron, Types of neurons; Types of muscle, Ultrastructure of skeletal muscle, Molecular and chemical basis of muscle contraction

Comparative Physiology of vertebrate digestion e.g., Digestion in different segments of the alimentary canal; Absorption of carbohydrates, proteins, lipids. Ruminant stomach in ungulates

Comparative account of vertebrate respiration; Transport of oxygen and carbon dioxide in blood

Osmoregulation in fishes, structure of nephron, mechanism of urine formation. Thermoregulation in poikilotherms, homeotherms and heterotherms. Aestivation and Hibernation

Comparative account of circulatory system (Open and Closed), Composition of Blood, Lymph, tissue fluid, comparative anatomy of vertebrate heart and aortic arches. Homeostasis, Heart structure, Origin and conduction of the cardiac impulse, cardiac cycle

Autocrine, paracrine, juxtacrine and endocrine mode of action; Introduction to Endocrine glands: Structure and function of hypothalamus, pituitary, thyroid, parathyroid, pancreas, adrenal and gonads' Reproductive physiology of male and female fertility

### **Biochemistry**

Structure, types and functions of Carbohydrates, Proteins and Lipids

Mechanism of action of Enzymes; Kinetics, inhibition and regulation

Glycolysis, Krebs's cycle, pentose phosphate pathway, glycogen metabolism, electron transport chain, transamination, deamination, urea cycle,  $\beta$ -oxidation in fatty acids

### **Wildlife Conservation & Management**

Values of wild life; Conservation ethics; Importance of conservation; Causes of depletion; World conservation strategies

Evaluation and management of wild life - Physical parameters (Topography, Geology, Soil and Water); Biological Parameters (food, cover, forage, browse and cover estimation); Standard evaluation procedures: remote sensing and GIS

Management of habitats - Setting back succession; Grazing logging; Mechanical treatment; Advancing the successional process; Cover construction; Preservation of general genetic diversity

Population estimation: Population density, Natality, Birth rate, Mortality, fertility schedules and sex ratio computation; Faecal analysis of ungulates and carnivores: Faecal samples, slide preparation, Hair identification, Pug marks and census method

National Organizations involved in wild life conservation; Wildlife Legislation – Wildlife Protection Act - 1972, its amendments and implementation; CITES; IUCN Red Data Book

Management planning of wild life in protected areas; Estimation of carrying capacity; Ecotourism / wild life tourism in forests; Concept of climax persistence; Ecology of disturbance

Management of excess population and translocation; Bio-telemetry; Care of injured and diseased animal; Quarantine; Common diseases of wild animal

Zoogeographic areas of Indian Subcontinent; Protected Areas: National Parks/ Sanctuaries/Biosphere Reserves of Indian subcontinent; Important features of protected areas in India; Tiger conservation - Tiger reserves in India; Management challenges in Tiger reserve

## **Genetics, Evolution & Palaeontology**

Mendel's law; Exceptions to Mendel's law; Chromosomal theory of Inheritance; Sex-linked inheritance & genetic disorders; Linkage & Crossing Over

Chromosome structure; Euchromatin; Heterochromatin; Polytene and lamp brush chromosomes. Chromosome banding, Karyotyping; Fine structure of gene and allelism; Sex determination and Sex Linkage  
Cytoplasmic Inheritance, Polygenic Inheritance, Mutation, population and evolution genetics, Hardy-Weinberg Principle

Lamarckism (Neo-Lamarckism); Darwinism (Neo- Darwinism); Modern synthetic theory.

Evidences in favour of evolution: Comparative anatomy, Comparative Embryology, Palaeontology, Biochemistry & Genetics

Organic variations; Isolating Mechanisms; Natural selection (Example: Industrial melanism); Types of natural selection (Directional, Stabilizing, Disruptive), Artificial selection.

Biological species concept (Advantages and Limitations); Modes of speciation (Allopatric, Sympatric)

Fossils and fossilization, Incompleteness of fossil record, Dating of fossils, Significance of fossil record; Geological distribution of animals; Mass extinction (Causes, five major extinctions, K-T extinction in detail), Role of extinction in evolution; Evolution of Horse

## **Animal Behaviour & Endocrinology**

The science of behaviour: History, scope and terminology. Proximate and ultimate causes of behaviour.

Instinct: Definition and characteristics (sign stimuli and Fixed Action Pattern).

Learning behaviour: Definition. Spatial learning. Associative learning, classical conditioning, operant conditioning, language learning. Imprinting. Kin recognition. Instinct versus learning behaviour.

Timing of behaviour: Biological rhythms. The Biological Clock. Circadian rhythms and their synchronisation seasonal rhythms. Photoperiodism

Communication: Visual, olfactory, acoustic (bird songs, amphibian calls); echolocation in bats, electrolocation in fish.

Chemoreception: Chemicals (pheromones) as signals in insects, fish and mammals. Role of olfaction in communication behaviour (territorial, sex recognition, feeding etc) in fish and mammals.

Neural control of behaviour: Components of brain involved in various behaviours. Neural control of drinking, learning, eating, activity & rest, sleep, aggression, sexual behaviour.

Hormonal Control of behaviour: Hormone brain relationships. Sexual behaviour in mammals (e.g. rat).

Sociobiology: Elements of sociality and social grouping in animals

Endocrine messengers: hormones, neurohormones, hormone like substances (neuronal peptides, autocoids, pheromones, neurosecretion).

Hormones and Physiological actions of the endocrine glands in mammals: Pituitary, Thyroid, Parathyroid, Pancreas, Gastro-intestinal tract, Adrenal cortex and Medulla, Thymus and Pineal.

Hormone biosynthesis: Protein peptide hormones (gonadotropins, thyrotropin, corticotropin, steroids and catecholamines).

Mechanism of action of Protein hormones and Catecholamines: membrane bound receptors, G-protein and control of adenylyl cyclase, Cyclic nucleotide cascade

Organisation & physiological actions of the Testis: Androgen binding protein (ABP), Inhibin. Neuroendocrine control of testicular functions (Gn RH regulation, FSH- effects on germinal epithelium, LH- effects on Leydig cells, negative feedback regulation).

Organization & physiological actions of the Ovary: Folliculogenesis, Ovulation, Luteinization, Ovarian cycles; Seasonal reproductive cycles; sexual dysfunctions in man

## **Developmental Biology**

Gametogenesis: Events in spermatogenesis. Morphology of mature mammalian spermatozoon; Events in Oogenesis, Significance of oogenesis. Vitellogenesis in birds; Comparison between Spermatogenesis & Oogenesis

Fertilization: Mechanism of fertilization; Capacitation, Molecular events - Block to polyspermy. Egg activation; Elementary idea of parthenogenesis.

Types of eggs and cleavage. Role of yolk during cleavage; Products of cleavage (Morula and Blastula). Fate map: fate map of early blastula of Frog, Fate of germ layers. Types of morphogenetic movements. Gastrulation in sea urchin, frog, chick and mammal. Neurogenesis & Notogenesis.

Extra Embryonic Foetal Membrane (Chick). Development of chick embryo up to 72 hours. Types, formation and function of Placenta in mammals. Metamorphic events in frog life cycle and its hormonal regulation.

Elementary concept of primary organizer; Induction; nature and its mechanism of action; Development of eye and limbs; Totipotency; Teratogenesis; *Drosophila* development up to gastrulation; Differential expression of genes in *Drosophila*.

### **Basics of Biotechnology**

Introduction to Genetic Engineering. Tools and techniques.

Enzymes, Restriction endonuclease.

Ligases, Alkaline phosphatase, Reverse transcriptase, DNA polymerase, Vectors-plasmids, phages, cosmids. Biotechnology hazards and safety. Social, moral and ethical issues

Biotechnology in health care. Therapeutic products (Hormones, regulatory proteins, antibiotics). Prenatal diagnosis of genetic diseases. Vaccines, Immunodiagnosics (RIA, ELISA, IRMA) and DNA probe for disease identification. Gene therapy. Human Genome and Biomedicine

Introduction to Environmental Biotechnology. Bioprocessing Techniques. Enzyme Biotechnology. Single cell proteins. Food and Beverage Biotechnology. Biotechnology in animal agriculture. Biotechnology in plant agriculture

Genetics and Biotechnology: Introduction, Animal Cloning (therapeutic and Reproductive), Genetic manipulation at organism level: Transgenesis, Knock in and Knock out models (Cre-Lox P system), CRIPER-CAS9 technology, genome editing in nature and artificial species improvement of plants and animals. Genetic manipulation at cellular and molecular level, transfection technologies, adenoviral and lentiviral based methods; Industrial genetics; Cell fusion and hybridoma techniques

### **Applied Zoology**

Host, Definitive host, Intermediate host, Parasitism, Symbiosis, Commensalism, Reservoir, Zoonosis;

Transmission, Prevention and control of diseases—Tuberculosis, swine flu, typhoid, Covid-19;

Brief account of *Rickettsia prowazekii*, *Borrelia recurrentis* and *Treponema pallidum*;

Life history and pathogenicity of *Entamoeba histolytica*, *Plasmodium vivax*, *Leishmania donovani* and *Trypanosoma gambiense*;

Life history and pathogenicity of *Schistosoma haematobium*, *Ancylostoma duodenale* and *Wuchereria bancrofti*;

Biology, control and damage caused by *Helicoverpa armigera*, *Pyrilla perpusilla* and *Papilio demoleus*, *Callosobruchus chinensis*, *Sitophilus oryzae* and *Tribolium castaneum*; Safe storage of stored grains

Life cycle, medical importance and control of *Pediculus humanus corporis*, *Anopheles*, *Culex*, *Aedes*, *Xenopsylla cheopis*, *Phlebotomus argentipes*;

Domestic animals of economic importance; Preservation and artificial insemination in cattle; Induction of early puberty and synchronization of estrus in cattle;

Principles of poultry breeding, Management of breeding stock and broilers, Processing and preservation of eggs;

Genetic improvements in aquaculture industry; Induced breeding and transportation of fish seed.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.SC. BIOCHEMISTRY**  
**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY**  
**(A CENTRAL UNIVERSITY)**  
**SRINAGAR (GARHWAL)**

# UTTARAKHAND

## BIOCHEMISTRY

### 1. Fundamentals of Biochemistry

- Scope and significance of biochemistry.
- Chemical foundations: atomic structure, chemical bonding, acids, bases, and buffers.
- Properties of water and its role as a universal solvent.
- Concepts of pH, pKa, molarity, and molality.

### 2. Biomolecules

- **Carbohydrates:** classification, structure, and functions.
- **Proteins:** amino acids, peptide bonds, protein structure levels, and functions.
- **Lipids:** types, structure, and biological roles.
- **Nucleic Acids:** DNA and RNA structures, nucleotides, and base pairing.

### 3. Enzymology

- Nature and classification of enzymes.
- Mechanism of enzyme action and factors affecting activity.
- Enzyme kinetics: Michaelis-Menten equation and Lineweaver-Burk plot.
- Enzyme inhibition: competitive, non-competitive, and uncompetitive.

### 4. Metabolism and Bioenergetics

- Overview of metabolic pathways and their regulation.
- Carbohydrate metabolism: glycolysis, gluconeogenesis, TCA cycle, and pentose phosphate pathway.
- Lipid metabolism:  $\beta$ -oxidation and fatty acid synthesis.
- Amino acid metabolism and urea cycle.
- ATP synthesis and energy currency of the cell.

### 5. Molecular Biology

- Structure and replication of DNA.
- Transcription and translation processes.
- Gene expression and regulation.
- Mutations and DNA repair mechanisms.
- Genetic Code

### 6. Cell Biology

- Structure and function of prokaryotic and eukaryotic cells.
- Organelles and their roles.
- Cell cycle, mitosis, and meiosis.
- Cell signalling and communication.

- Apoptosis and Necrosis

## **7. Immunology**

- Components of the immune system: innate and adaptive immunity.
- Antigens, antibodies, and antigen-antibody interactions.
- Major histocompatibility complex (MHC) and immune response.
- Vaccines and immunological memory.

## **8. Techniques in Biochemistry**

- **Spectroscopy:** UV-Vis, IR, and fluorescence spectroscopy principles and applications.
- **Chromatography:** paper, thin-layer, and column chromatography techniques.
- **Electrophoresis:** principles and types, including SDS-PAGE.
- **Centrifugation:** basic principles and applications.

## **9. Clinical Biochemistry**

- Composition and analysis of blood and urine.
- Biochemical markers in liver and kidney function tests.
- Lipid profiles and cardiovascular risk assessment.
- Enzymes as diagnostic tools.

## **10. Nutrition and Health**

- Balanced diet and nutritional requirements.
- Vitamins and minerals: sources, functions, and deficiencies.
- Role of macronutrients and micronutrients in health.
- Nutritional disorders and their biochemical basis.

## **12. Biotechnology**

- Recombinant DNA technology: restriction enzymes, cloning vectors, plasmids.
- PCR, blotting techniques (Southern, Western), DNA fingerprinting.
- Genetically modified organisms (GMOs), transgenic plants and animals.
- Applications of biotechnology in medicine, agriculture, and environment.
- Introduction to genomics, proteomics, and bioinformatics.

## **13. Microbiology**

- History and contributions: Pasteur, Koch, Jenner.
- Classification of microorganisms: bacteria, viruses, fungi, protozoa.
- Microbial growth, staining techniques, culture media.
- Antibiotics: mechanism of action and resistance.
- Human microbiome and its role in health and disease.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.SC. BIOTECHNOLOGY**  
**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY**  
**(A CENTRAL UNIVERSITY)**  
**SRINAGAR (GARHWAL)**  
**UTTARAKHAND**

## **Life Sciences**

Biological nomenclature, classification and taxonomy; diversity of living organisms including microorganisms, plants and animals; organismal development and embryogenesis; types of reproduction in living organisms; methods of biological improvement; genetics including Mendel's experiments and principles of inheritance; mutations and polyploidy; multiple allelism; quantitative genetics; linkage and recombination; cytoplasmic inheritance; alterations in genetic make-up including changes at the genetic level and in chromosome structure.

## **Cell Biology and Molecular Biology**

Classification of animals including invertebrates and vertebrates. Structure of prokaryotic and eukaryotic cells; cell organelles; membrane structure and function; cytoskeleton; cell cycle. Nucleic acids: structure, properties and functions; genetic code; DNA replication; transcription and translation; DNA damage and repair. Molecular biology techniques including dot-blot hybridization, polymerase chain reaction (PCR), DNA fingerprinting, restriction fragment length polymorphism (RFLP), genome mapping and *in situ* hybridization.

## **Biochemistry**

Chemistry of carbon compounds and functional groups. Biomolecules including carbohydrates, lipids and proteins; enzymes and vitamins. Concepts of molecular weight and molecular mass and their related units. Standard solutions including normality and molarity; pH calculations and buffers. Properties of water including osmosis and osmotic pressure; hypertonic, hypotonic and isotonic solutions; density gradient. Basic structure–function relationships of plant and animal cells. Principles and applications of laboratory instruments such as pH meter and spectrophotometer. Concepts related to potential difference, potential gradient, electrochemical cell and electromotive force (EMF).

## **Microbiology**

General properties, structure and principles of classification of actinomycetes, bacteria, fungi and viruses. Bacterial structure, microbial nutrition and overview of metabolism. Virus diversity and viral replication cycle. Medically important bacteria including *Staphylococcus*, *Enterobacter*, *Clostridium* and *Pseudomonas*. Epidemiology and public health. Antimicrobials and their mode of action. Principles of microscopy including bright-field, dark-field and phase-contrast microscopy. Microbial genetics including transformation, transduction, conjugation and plasmids.

## **Immunology**

Introduction to the immune system; innate and adaptive immunity; cells and organs of the immune system. Antigens and antibodies, structure and functions of immunoglobulins, antigen–antibody interactions. Major histocompatibility complex (MHC), antigen processing and presentation, humoral and cell-mediated immune responses, complement system and cytokines. Basic immunological techniques (e.g., ELISA), hypersensitivity reactions, vaccines and immunization.

## **Fundamentals of Biotechnology**

Recombinant DNA technology including basic principles of gene cloning; vectors for gene cloning such as plasmids and bacteriophages; DNA-modifying enzymes; purification of DNA from living cells; introduction of DNA into living cells; techniques used in recombinant DNA technology; cloning vectors for *Escherichia coli* (*E. coli*). Animal and plant cell culture techniques and their applications including vaccines. Industrial biotechnology including fermentation technology, media for industrial fermentations, strain improvement, inoculum development, bio-inoculants, fermentor design, instrumentation and control, types of bioreactors, aeration and agitation, recovery and purification of fermentation products, effluent treatment and bio-fuels.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.SC. HIMALAYAN AQUATIC**

**BIODIVERSITY**

**(TWO YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

# Syllabus for PG Entrance Examination

## UNIT 1: Life and Animal Diversity

- **Systematics and Classification of Animals**
  - Animal distribution, taxonomy, and evolutionary relationships
  - Classical and molecular phylogenetics
- **Invertebrate Zoology (Phylum-Wise Study)**
  - **Protozoa:** Classification, biodiversity, life cycles (*Plasmodium*, *Entamoeba*, *Trypanosoma*, etc.)
  - **Porifera:** Canal system, spicules (*Sycon*)
  - **Coelenterata:** Polymorphism, coral reefs (*Obelia*)
  - **Helminths:** Life cycles and pathogenicity (*Fasciola*, *Schistosoma*, etc.)
  - **Annelida:** Metamerism, larval forms (*Pheretima*)
  - **Arthropoda:** General study (*Periplaneta*)
  - **Mollusca:** Torsion/detorsion, respiration (*Pila*)
  - **Echinodermata:** Larval forms, Aristotle's lantern (*Asterias*)
  - **Hemichordata:** Basic characters and classification

## UNIT 2: Ecology and Environmental Biology

- **Ecological Principles:** Niches, species diversity, food chains/webs, biogeochemical cycles
- **Population Ecology:** Interactions, growth, birth/death rates, age structure
- **Ecosystems:** Types, dynamics, productivity, energy flow, succession
- **Biodiversity & Conservation:** Hotspots, Red Data Book, afforestation, restoration
- **Global Environmental Issues:** Climate change, ozone depletion, biomagnification
- **Phyto-geography:** Indian ecological zones, flora endemism, climate variation

## UNIT 3: Natural Resources and Their Management

- **Natural Resources:** Types, values, factors affecting distribution and depletion
- **Forest & Wildlife:** Types, exploitation impact, management, conflicts
- **Water Resources:** Status, usage, IWRM, policies, governance
- **Energy Resources:** Renewable vs. non-renewable, crisis, sustainability

## UNIT 4: Environmental Pollution, Monitoring and Management

- **Air, Water, Soil and Noise Pollution:** Standards, pollutants, Impacts
- **Monitoring Concepts:** Goals, ecological assessment, planning
- **Programs:** GEMS, NAMP, NWMP
- **Bioindicators:** Lichens, algae as pollution indicators
- **Pollution Control:** Techniques, cleaner fuels, STPs, ETPs, tree plantations

## UNIT 5: Fisheries and Aquaculture Management

- **Fisheries:** Indian freshwater systems, gears, production
- **Aquaculture:** Finfish, crustaceans, hatchery, nutrition, biotechnology
- **Aquarium Industry:** Species care, maintenance, budgeting
- **Fish Farming:** Water quality, algal control, transport techniques

### **UNIT 6: Microbial Ecology**

- **Microbial Ecology:** Interactions, nutrient cycles, bioremediation
- **Techniques:** Culture methods, microscopy, PCR, NGS
- **Taxonomy & Diversity:** Bacteria, Archaea, viruses, fungi, protozoa
- **Cell Biology:** Structure of prokaryotes, cell walls, motility
- **Microbial Growth & Control:** Growth curve, biofilms, sterilization

### **UNIT 7: Plant Systematics, Physiology & Economic Botany**

- **Systematics:** Botanical nomenclature, APG system, DNA barcoding
  - **Anatomy:** Root, stem, leaf, floral organs, meristems, secondary growth
  - **Physiology:** Photosynthesis (C3, C4, CAM), respiration, nitrogen metabolism, water transport
  - **Plant Hormones:** Auxin, GA, ABA, ethylene, cytokinin, etc.
  - **Economic Botany:** Cereals, pulses, fiber, oils, dyes, GM crops, algae, fungi, medicinal plants
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**SCHOOL OF SCIENCES**

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.SC. CHEMISTRY**

**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
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# Chemistry

## PHYSICAL CHEMISTRY

### Gaseous State

Behavior of real gases: Deviations from ideal behavior, compressibility factor, and its variation with pressure for different gases. Causes of deviation from ideal behavior. van der Waals equation of state, its derivation and application in explaining real gas behaviour; van der Waals equation expressed in virial form, Boyle temperature. Isotherms of real gases and their comparison with van der Waals isotherms, continuity of states, critical state, critical constants and van der Waals constants, law of corresponding states.

Kinetic molecular model of a gas: postulates and derivation of the kinetic gas equation; collision frequency; collision diameter; mean free path and viscosity of gases, including their temperature and pressure dependence, relation between mean free path. Maxwell distribution and its use in evaluating molecular velocities (average, root mean square and most probable) and average kinetic energy, law of equipartition of energy, degrees of freedom and molecular basis of heat capacities.

### Liquid State

Structure and physical properties of liquids; vapour pressure, surface tension, viscosity, and their dependence on temperature, Effect of addition of solutes on surface tension, cleansing action of detergents.

### Ionic Equilibria

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, protic acids. Salt hydrolysis, hydrolysis constants, degree of hydrolysis, Buffer solutions; Henderson equation, buffer capacity, buffer range, buffer action, applications of buffers in analytical chemistry, common ion effect; dissociation constants of mono-, di- and tri-protic acids, Solubility and solubility product. Brönsted-Lowry concept of acid-base reactions, solvated proton, relative strength of acids, types of acid-base reactions, levelling solvents, Lewis concept of acids and bases, Hard and Soft Acids and Bases (HSAB) Application of HSAB principle, Theory of indicators; selection and limitations of indicators.

### Solid State

Nature of the solid state, law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry, symmetry elements and symmetry operations, qualitative idea of point and space groups, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, simple rotating crystal method and powder pattern method for X-ray diffraction, Analysis of powder diffraction patterns of NaCl, CsCl and KCl. Various types of defects in crystals, Glasses and idea of liquid crystals.

### Thermodynamics

Intensive and extensive variables; state function and path function properties isolated, closed and open systems;. First law: Concept of heat,  $q$ , work,  $w$ , internal energy,  $U$ , and statement of first law; enthalpy,  $H$ , relation between heat capacities  $c_p$  and  $c_v$ , calculations of  $q$ ,  $w$ ,  $U$  and  $H$  for reversible and irreversible systems. free expansion of gases (ideal and van der Waals) under isothermal and adiabatic conditions.

Concept of entropy; thermodynamic scale of temperature, statement of the second law of thermodynamics; molecular and statistical interpretation of entropy. Calculation of entropy change for reversible and irreversible processes.

Gibbs and Helmholtz energy; variation of  $S$ ,  $G$ ,  $A$  with  $T$ ,  $V$ ,  $P$ ; Free energy change and spontaneity. Relation between Joule-Thomson coefficient and other thermodynamic parameters; inversion temperature; Gibbs-Helmholtz equation.

### **Thermochemistry:**

Heats of reactions: standard states; enthalpy of formation of molecules and ions and enthalpy of combustion and its applications; calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data, effect of temperature (Kirchhoff's equations), pressure on enthalpy of reaction

### **Partial molar quantities**

Partial molar quantities, dependence of thermodynamic parameters on composition; Gibbs Duhem equation, chemical potential of ideal mixtures, change in thermodynamic functions in mixing of ideal gases.

### **Dilute solutions or Colligative Properties**

Dilute solutions; lowering of vapour pressure, Raoult's and Henry's Laws and their applications. Excess thermodynamic functions. Thermodynamic derivation using chemical potential to derive relations between the four colligative properties: [(i) relative lowering of vapour pressure, (ii) elevation of boiling point, (iii) Depression of freezing point, (iv) osmotic pressure] and amount of solute. Applications in calculation of molar masses of normal, dissociated and associated solutes in solution.

### **Molecular Spectroscopy & Photochemistry**

Unit-I Interaction of electromagnetic radiation with molecules and various types of spectra; Born Oppenheimer approximation. Rotation spectroscopy: Selection rules, intensities of spectral lines, determination of bond lengths of diatomic and linear triatomic molecules, isotopic substitution.

Vibrational spectroscopy: Classical equation of vibration, computation of force constant, amplitude of diatomic molecular vibrations, anharmonicity, Morse potential, dissociation energies, fundamental frequencies, overtones, hot bands, degrees of

freedom for polyatomic molecules, modes of vibration, concept of group frequencies. Vibration-rotation spectroscopy: diatomic vibrating rotator, P, Q, R branches.

Unit-II Raman spectroscopy: Qualitative treatment of Rotational Raman effect; Effect of nuclear spin, Vibrational Raman spectra, Stokes and anti-Stokes lines; their intensity difference, rule of mutual exclusion. Electronic spectroscopy: Franck-Condon principle, electronic transitions, singlet and triplet states, fluorescence and phosphorescence, dissociation and predissociation.

Unit-III Photophysical and photochemical processes: laws of photochemistry, quantum yield. Jablonski diagrams: Franck-Condon principle, Law of photochemical equivalence, quantum efficiency, low and high quantum efficiency. kinetics of photochemical reactions ( $\text{H}_2 + \text{Br}_2 \rightleftharpoons \text{HBr}$ ,  $2\text{HI} \rightleftharpoons \text{H}_2 + \text{I}_2$ ), energy transfer in photochemical reactions (photosensitization and quenching), fluorescence, phosphorescence, chemiluminescence, Discussion of Electronic spectra and photochemistry (Lambert-Beer law and its applications).

### **Chemical Kinetics**

Order and molecularity of a reaction, rate laws in terms of the advancement of a reaction, differential and integrated rate laws for first, second and fractional order reactions, pseudounimolecular reactions, determination of the order, kinetics of complex reactions (limited to first order): (i) Opposing reactions(ii) parallel reactions and (iii) consecutive reactions and their differential rate equations (steady-state approximation in reaction mechanisms) (iv) chain reactions. Temperature dependence of reaction rates; Arrhenius equation; activation energy. Collision theory of reaction rates, Lindemann mechanism, qualitative treatment of the theory of absolute reaction rates.

### **Catalysis**

Types of catalyst, specificity and selectivity, mechanisms of catalyzed reactions at solid surfaces; effect of particle size and efficiency of nanoparticles as catalysts. Enzyme catalysis, MichaelisMenten mechanism, acid-base catalysis.

### **Surface chemistry**

Physical adsorption, chemisorption, adsorption isotherms (Freundlich, Temkin, Derivation of Langmuir adsorption isotherms, surface area determination), BET theory of multilayer adsorption (no derivation), Adsorption in solution

### **Phase Equilibria**

Concept of phases, components and degrees of freedom, derivation of Gibbs Phase Rule for nonreactive and reactive systems; Clausius-Clapeyron equation and its applications to solid liquid, liquid-vapour and solid-vapour equilibria, phase diagram for one component systems, with applications. Phase diagrams for systems of solid-liquid equilibria involving eutectic, congruent and incongruent melting points, solid solutions. Three component systems, water -chloroform-acetic acid system, triangular plots. Binary solutions: Gibbs-Duhem-Margules equation, its derivation and applications to fractional distillation of binary miscible liquids (ideal and nonideal),

azeotropes, lever rule, partial miscibility of liquids, Critical solution temperature, miscible pairs, steam distillation for the separation of immiscible liquids .

### **Introduction to Quantum Chemistry:**

Unit-I Introduction to black-body radiation and distribution of energy, photo-electric effect, concept of quantization, wave particle duality (de-Broglie's hypothesis), The uncertainty principle, The wave function: wave function and its interpretation, conditions of normalization and Orthogonality and its significance. Basic idea about operators, eigen function and values, Schrodinger equation and application to free-particle and particle in a box, boundary conditions, wave functions and energies, degeneracy, hydrogen atom, Schrodinger equation in polar coordinates, radial and angular parts of the hydrogenic orbitals, degeneracies, spherical harmonics, representations of hydrogenic orbitals.

Unit-II Quantitative treatment of simple harmonic oscillator model, setting up of Schrodinger equation and discussion of solution of wave functions. Rigid rotator model and discussion of application of Schrodinger equation. idea about transformation to spherical polar coordinate, discussion on solution.

Unit-III Qualitative treatment of hydrogen atom and hydrogen-like ions: setting up of Schrödinger equation in spherical polar coordinates, radial part, quantization of energy (only final energy expression). Average and most probable distances of electron from nucleus. Valence bond and molecular orbital approaches, LCAO-MO treatment of H<sub>2</sub>, H<sub>2</sub> + ; bonding and anti-bonding orbitals, Comparison of LCAO-MO and VB treatments of H<sub>2</sub> (only wavefunctions, detailed solution not required) and their limitations.

### **Conductance**

Arrhenius theory of electrolytic dissociation. Conductivity, equivalent and molar conductivity and their variation with dilution for weak and strong electrolytes. Molar conductivity at infinite dilution.

Kohlrausch law of independent migration of ions. Debye-Hückel-Onsager equation, Wien effect, Debye- Falkenhagen effect, Walden's rules. Ionic velocities, mobilities and their determinations, transference numbers and their relation to ionic mobilities, determination of transference numbers using Hittorf and Moving Boundary methods. Applications of conductance measurement: (i) degree of dissociation of weak electrolytes, (ii) ionic product of water (iii) solubility and solubility product of sparingly soluble salts, (iv) conductometric titrations, and (v) hydrolysis constants of salts.

### **Electrochemistry**

Quantitative aspects of Faraday's laws of electrolysis, rules of oxidation/reduction of ions based on half- cell potentials, applications of electrolysis in metallurgy and industry. Chemical cells, reversible and irreversible cells with examples. Electromotive force of a cell and its measurement, Nernst equation; Standard electrode (reduction) potential and its application to different kinds of half-cells. Application of EMF measurements in determining (i) free energy, enthalpy and entropy of a cell reaction,

(ii) equilibrium constants, and (iii) pH values, using hydrogen, quinone-hydroquinone, glass electrodes. Concentration cells with and without transference, liquid junction potential; determination of activity coefficients and transference numbers. Qualitative discussion of potentiometric titrations (acid- base, redox, precipitation).

## **INORGANIC CHEMISTRY**

### **Atomic Structure**

Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: de Broglie equation, Heisenberg's Uncertainty Principle and its significance, Schrödinger's wave equation, significance of  $\psi$  and  $\psi^2$ . Quantum numbers and their significance. Normalized and orthogonal wave functions. Sign of wave functions. Radial and angular wave functions for hydrogen atom. Radial and angular distribution curves. Shapes of s, p, d and f orbitals. Contour boundary and probability diagrams. Pauli's Exclusion Principle, Hund's rule of maximum multiplicity, Aufbau's principle and its limitations, Variation of orbital energy with atomic number.

### **Periodicity of Elements**

s, p, d, f block elements, the long form of periodic table. Detailed discussion of the following properties of the elements, with reference to s and p-block. (a) Effective nuclear charge, shielding or screening effect, Slater rules, variation of effective nuclear charge in periodic table. (b) Atomic radii (van der Waals) (c) Ionic and crystal radii. (d) Covalent radii (octahedral and tetrahedral) (e) Ionization enthalpy, Successive ionization enthalpies and factors affecting ionization energy. Applications of ionization enthalpy. (f) Electron gain enthalpy, trends of electron gain enthalpy. (g) Electronegativity, Pauling, Mullikan, Allred Rachow scales, electronegativity, bond order, partial charge, hybridization, group electronegativity. Sanderson electron density ratio.

### **Chemical Bonding**

Ionic bond: General characteristics, types of ions, size effects, radius ratio rule and its limitations. Packing of ions in crystals. Born-Landé equation with derivation, expression for lattice energy. Madelung constant, Born-Haber cycle and its application, Solvation energy.

Covalent bond: Lewis structure, Valence Shell Electron Pair Repulsion Theory (VSEPR), Shapes of simple molecules and ions containing lone- and bond-pairs of electrons multiple bonding, sigma and pi-bond approach, Valence Bond theory, (Heitler-London approach). Hybridization containing s, p and s, p, d atomic orbitals, shapes of hybrid orbitals, Bent's rule, Resonance and resonance energy, Molecular orbital theory. Molecular orbital diagrams of simple homonuclear and heteronuclear diatomic molecules, MO diagrams of simple tri and tetra-atomic molecules, e.g., N<sub>2</sub>, O<sub>2</sub>, C<sub>2</sub>, F<sub>2</sub>, CO, NO, and their ions; HCl, BeF<sub>2</sub>, CO<sub>2</sub>, HCHO, (idea of s-p mixing and orbital interaction to be given). Covalent character in ionic compounds, polarizing power and polarizability. Fajan rules, polarization. Ionic character in covalent compounds: Bond moment and dipole moment. Ionic character from dipole moment and electronegativities.

## **Metallic bonding and Weak chemical forces**

Metallic Bond: Qualitative idea of free electron model, Semiconductors, Insulators. Weak Chemical Forces: van'der Waals, ion-dipole, dipole-dipole, induced dipole -dipole-induced dipole interactions, Lenard-Jones 6-12 formula, hydrogen bond, effects of hydrogen bonding on melting and boiling points, solubility and dissolution.

## **Oxidation-Reduction and general principle of metallurgy**

Redox equations, Standard Electrode Potential and its application to inorganic reactions. Occurrence of metals based on standard electrode potentials. Ellingham diagrams for reduction of metal oxides using carbon or carbon monoxide as reducing agent. Electrolytic Reduction, Hydrometallurgy. Methods of purification of metals: Electrolytic Kroll process, Parting process, van Arkel- de Boer process and Mond's process, Zone refining.

## **Chemistry of s and p Block Elements**

Inert pair effect, Relative stability of different oxidation states, diagonal relationship and anomalous behavior of first member of each group. Allotropy and catenation. Complex formation tendency of s and p block elements. Hydrides and their classification ionic, covalent and interstitial. Basic beryllium acetate and nitrate.

Structure, bonding, preparation, properties and uses. Boric acid and borates, boron nitrides, borohydrides (diborane) carboranes and graphitic compounds, silanes, Oxides and oxoacids of nitrogen, Phosphorus and chlorine. Per-oxo acids of Sulphur inter-halogen compounds, polyhalide ions, pseudo-halogens, properties of halogens.

## **Noble Gases**

Occurrence and uses, rationalization of inertness of noble gases, Clathrates; preparation and properties of XeF<sub>2</sub>, XeF<sub>4</sub> and XeF<sub>6</sub>; Bonding in noble gas compounds (Valence bond and MO treatment for XeF<sub>2</sub>), Shapes of noble gas compounds (VSEPR theory).

## **Inorganic Polymers**

Types of inorganic polymers, comparison with organic polymers, synthesis, structural aspects and applications of silicones and siloxanes. Borazines, silicates and phosphazenes, and polysulphates.

## **Coordination Chemistry**

Werner's theory, EAN rule, piano-stool compounds, valence bond theory (inner and outer orbital complexes), Crystal field theory, d-orbital splitting, weak and strong fields, pairing energies, factors affecting the magnitude of ( $\Delta$ ). Octahedral vs. tetrahedral coordination, tetragonal distortions from octahedral geometry Jahn-Teller theorem, square planar complexes, d orbital splitting in trigonal bipyramidal, square pyramidal and cubic ligand field environments, CFSE, Variation of lattice energies, enthalpies of hydration and crystal radii variations in halides of first and second row transition metal series, Qualitative aspect of Ligand field theory, MO diagrams of representative coordination complexes, IUPAC nomenclature of coordination

compounds, isomerism in coordination compounds. Stereochemistry of complexes with the coordination number 4 and 6, Chelate effect,

### **Transition Elements**

General group trends with special reference to electronic configuration, colour, variable valency, magnetic and catalytic properties, and ability to form complexes. Stability of various oxidation states and e.m.f. (Latimer & Bsworth diagrams). Difference between the first, second and third transition series. Chemistry of Ti, V, Cr Mn, Fe and Co in various oxidation states (excluding their metallurgy)

### **Lanthanoids and Actinides**

Electronic configuration, oxidation states, color, spectra and magnetic behavior, lanthanide contraction, separation of lanthanides (ion-exchange method only).

### **Bioinorganic Chemistry**

Metal ions present in biological systems, classification of elements according to their action in biological system. Geochemical effect on distribution of metals. Sodium / K-pump, carbonic anhydrase and carboxypeptidase. Excess and deficiency of some trace metals. Toxicity of metal ions (Hg, Pb, Cd and As), toxicity, chelating agents in medicine. Iron and its application in biosystems, Haemoglobin; Storage and transfer of iron.

### **Organometallic Compounds**

Definition and classification of organometallic compounds on the basis of bond type. Concept of hapticity of organic ligands. Metal carbonyls: 18 electron rule, electron count of mononuclear, polynuclear and substituted metal carbonyls of 3d series. General methods of preparation (direct combination, reductive carbonylation, thermal and photochemical decomposition) of mono and binuclear carbonyls of 3d series. Structures of mononuclear and binuclear carbonyls of Cr, Mn, Fe, Co and Ni using VBT. pi-acceptor behaviour of CO (MO diagram of CO to be discussed), synergic effect and use of IR data to explain extent of back bonding.

## **ORGANIC CHEMISTRY**

### **1. Basics of Organic Chemistry**

Organic Compounds: Classification, and Nomenclature, Hybridization, Shapes of molecules, Influence of hybridization on bond properties. Electronic Displacements: Inductive, electromeric, resonance and mesomeric effects, hyperconjugation and their applications; Dipole moment; Organic acids and bases; their relative strength. Homolytic and Heterolytic fission with suitable examples. Curly arrow rules,

formal charges; Electrophiles and Nucleophiles; Nucleophilicity and basicity; Types, shape and relative stabilities of reaction intermediates (Carbocations, Carbanions, Free radicals and Carbenes). Organic reactions and their mechanism: Addition, Elimination and Substitution reactions.

### **2. Stereochemistry**

Concept of asymmetry, Fischer Projection, Newmann and Sawhorse projection formulae and their interconversions; Geometrical isomerism: cis–trans and, syn-anti isomerism E/Z notations with C.I.P rules. Optical Isomerism: Optical Activity, Specific Rotation, Chirality/Asymmetry, Enantiomers, Molecules with two or more chiral-centres, Distereoisomers, meso structures, Racemic mixtures, Relative and absolute configuration: D/L and R/S designations.

### **3. Chemistry of Aliphatic Hydrocarbons Carbon-Carbon sigma bonds**

Chemistry of alkanes: Formation of alkanes, Wurtz Reaction, Wurtz- Fittig Reactions, Free radical substitutions: Halogenation - relative reactivity and selectivity.

#### **Carbon-Carbon pi-bonds.**

Formation of alkenes and alkynes by elimination reactions, Mechanism of E1, E2, E1cb reactions. Saytzeff and Hofmann eliminations. Reactions of alkenes: Electrophilic additions their mechanisms (Markownikoff/ Anti Markownikoff addition), mechanism of oxymercuration demercuration, hydroboration- oxidation, ozonolysis, reduction (catalytic and chemical), syn and anti-hydroxylation (oxidation). 1, 2- and 1, 4- addition reactions in conjugated dienes and, DielsAlder reaction; Allylic and benzylic bromination and mechanism, e.g. propene, 1-butene, toluene, ethyl benzene. Reactions of alkynes: Acidity, Electrophilic and Nucleophilic additions.

#### **Cycloalkanes and Conformational Analysis**

Cycloalkanes and stability, Baeyer strain theory, Conformation analysis, Energy diagrams of cyclohexane: Chair, Boat and Twist boat forms.

#### **Aromatic Hydrocarbons**

Aromaticity: Huckel's rule, aromatic character of arenes, cyclic carbocations/carbanions and heterocyclic compounds with suitable examples. Electrophilic aromatic substitution: halogenation, nitration, sulphonation and Friedel-Craft's alkylation/acylation with their mechanism. Directing effects of substituent groups.

#### **Chemistry of Halogenated Hydrocarbons**

Alkyl halides: Methods of preparation, nucleophilic substitution reactions – SN1, SN2 and SNi mechanisms with stereochemical aspects and effect of solvent etc.; nucleophilic substitution vs. elimination.

Aryl halides: Preparation, including preparation from diazonium salts. nucleophilic aromatic substitution; SNAr, Benzyne mechanism. Relative reactivity of alkyl, allyl/benzyl, vinyl and aryl halides towards nucleophilic substitution reactions.

Organometallic compounds of Mg and Li and their use in synthesis.

#### **Alcohols, Phenols, Ethers and Epoxides**

Alcohols: preparation, properties and relative reactivity of 1°, 2°, 3° alcohols, Bouvaelt-Blanc Reduction; Preparation and properties of glycols: Oxidation by periodic acid and lead tetraacetate, Pinacol- Pinacolone rearrangement.

Phenols: Preparation and properties; Acidity and factors effecting it, Ring substitution reactions, Reimer– Tiemann and Kolbe's–Schmidt Reactions, Fries and Claisen rearrangements with mechanism.

Ethers and Epoxides: Preparation and reactions with acids. Reactions of epoxides with alcohols, ammonia derivatives and  $\text{LiAlH}_4$

### **Carbonyl Compounds**

Structure, reactivity and preparation; Nucleophilic additions, Nucleophilic addition-elimination reactions with ammonia derivatives with mechanism; Mechanisms of Aldol and Benzoin condensation, Knoevenagel condensation, Claisen-Schmidt, Perkin, Cannizzaro and Wittig reaction, Beckmann and Benzil-Benzilic acid rearrangements, haloform reaction and Baeyer Villiger oxidation,  $\alpha$ -substitution reactions, oxidations and reductions (Clemmensen, WolffKishner,  $\text{LiAlH}_4$ ,  $\text{NaBH}_4$ , MPV, PDC and PGC); Addition reactions of unsaturated carbonyl compounds: Michael addition.

Active methylene compounds: Keto-enol tautomerism. Preparation and synthetic applications of diethyl malonate and ethyl acetoacetate.

### **Carboxylic Acids and their Derivatives**

Preparation, physical properties and reactions of monocarboxylic acids: Typical reactions of dicarboxylic acids, hydroxy acids and unsaturated acids: succinic/phthalic, lactic, malic, tartaric, citric, maleic and fumaric acids; Preparation and reactions of acid chlorides, anhydrides, esters and amides; Comparative study of nucleophilic substitution at acyl group -Mechanism of acidic and alkaline hydrolysis of esters, Claisen condensation, Dieckmann and Reformatsky reactions, Hofmann bromamide degradation and Curtius rearrangement.

### **Sulphur containing compounds**

Preparation and reactions of thiols, thioethers and sulphonic acids

### **Nitrogen Containing Functional Groups**

Preparation and important reactions of nitro and compounds, nitriles and isonitriles  
Amines: Effect of substituent and solvent on basicity; Preparation and properties: Gabriel phthalimide synthesis, Carbylamine reaction, Mannich reaction, Hoffmann's exhaustive methylation, Hofmann-elimination reaction; Distinction between  $1^\circ$ ,  $2^\circ$  and  $3^\circ$  amines with Hinsberg reagent and nitrous acid. Diazonium salts: Preparation and synthetic applications.

### **Polynuclear Hydrocarbons**

Reactions of naphthalene phenanthrene and anthracene Structure, Preparation and structure elucidation and important derivatives of naphthalene and anthracene; Polynuclear hydrocarbons.

### **Heterocyclic Compounds**

Classification and nomenclature, Structure, aromaticity in 5-numbered and 6-membered rings containing one heteroatom; Synthesis, reactions and mechanism of substitution reactions of Furan, Pyrrole (Paal- Knorr synthesis, Knorr pyrrole synthesis, Hantzsch synthesis), Thiophene, Pyridine (Hantzsch synthesis), Pyrimidine, Structure elucidation of indole, Fischer indole synthesis and Madelung synthesis), Structure elucidation of quinoline and isoquinoline, Skraup synthesis, Friedlander's synthesis, Knorr quinoline synthesis, Doebner-Miller synthesis, Bischler-Napieralski reaction, Pictet-Spengler reaction, Pomeranz- Fritsch reaction Derivatives of furan: Furfural and furoic acid.

**Separation technique and Chromatography:** solvent extraction, classification, principle and efficiency of the technique. Mechanism of extraction : extraction by solvation and chelation .classification ,principle and efficiency of the technique mechanism of separation adsorption ,partition and ion exchange. Development of chromatograms frontal, elution and displacement methods. Qualitative and quantitative aspects of chromatographic analysis :IC, GLC, CLC and HPLC chromatographic technique

**Thermogravimetric Analysis :** Theory of TGA, basic principle and instrumentation , technique for quantitative estimation of Ca and Mg from their mixtures.

## **Organic Spectroscopy**

### **Basic Principles of UV Spectroscopy:**

Application of Woodward-Fisher rule in interpretation of Organic compounds: Application of visible, ultraviolet and infrared spectroscopy in organic molecules. Electromagnetic radiation, electronic transitions,  $\lambda_{max}$  &  $\epsilon_{max}$ , chromophore, auxochrome, bathochromic and hypsochromic shifts.

Application of electronic spectroscopy and Woodward rules for calculating  $\lambda_{max}$  of conjugated dienes and  $\alpha, \beta$  – unsaturated compounds.

### **Basic principles of IR Spectroscopy:**

Identification of Functional groups of various classes of organic compounds: Infrared radiation and types of molecular vibrations, functional group and fingerprint region. IR spectra of alkanes, alkenes and simple alcohols (inter and intramolecular hydrogen bonding), aldehydes, ketones, carboxylic acids and their derivatives (effect of substitution on  $>C=O$  stretching absorptions).

### **NMR (1 H and 13C NMR):**

Application of Chemical Shifts, Splitting of signals, Spin coupling and Over Houser effect in interpretation of NMR spectra, Isotopic exchange.

### **Basic principles Mass Spectrometry:**

Application of fragmentation rule in characterization of organic compounds. Problems on structure elucidation of organic compounds based on spectral data.

# SYLLABUS FOR UNIVERSITY ENTRANCE TEST

SESSION 2026-27

## SUBJECT

- M.A. HOME SCIENCE  
(TWO YEAR / ONE YEAR)
- M.SC. HOME SCIENCE (FOOD AND  
NUTRITION)
- PG DIPLOMA IN NUTRITION AND  
DIETETICS



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY**  
**(A CENTRAL UNIVERSITY)**  
**SRINAGAR (GARHWAL)**  
**UTTARAKHAND**

## **Home Science**

### **FOOD AND NUTRITION:**

- Fundamentals of food and Nutrition, food groups, methods of cooking, food safety and preservation, Food adulteration.
- Elementary knowledge of General, Organic and In-organic Chemistry and Bio-chemistry.
- Concept of Nutrition, balanced diet, nutrients: sources & deficiency diseases, physiology of human body, Human Energy, B.M.R. and community nutrition, RDA, nutrition during life cycle
- Scientific basis for planning and preparation of therapeutic Diets and Diets for various physiological conditions.

### **HOME MANAGEMENT:**

- Home Management Concept & process of Home Management, Resources and their management, Decision making, Time, Energy & Money Management, Work simplification, savings, Household budget.
- Concept of interior and exterior decorations of House, elements and principles of art and design, Housing, Household Equipment, Consumer protection and Markets.

### **CLOTHING AND TEXTILE:**

- History of textiles in India,
- Textile fibres: manufacturing, characteristics, properties and classification
- Selection of fabrics for various purposes. Family clothing, its construction and storage.
- Fabric construction and fabric finishes, Dyeing and Printing, laundering of fabrics.

### **CHILD DEVELOPMENT:**

- Concept of Growth and Development, Principles of development, areas of development
- Developmental Tasks, factors affecting development.
- stages of development
- Mortality and morbidity of children, immunization, child rearing methods, methods of child study.
- Adjustment of children, marriage and family establishment, functions of family, parent's education and mental health.
- Various National and International programmes for the upliftment of women and children and society at large.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.SC./M.A. MATHEMATICS**  
**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL  
UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## Differential Calculus

Limit and Continuity ( $\epsilon$  and  $\delta$  definition), Types of Discontinuities, Differentiability of functions, Rolle's theorem, Lagrange's Mean Value theorem, Cauchy Mean Value Theorem.

Successive differentiation, Leibnitz's theorem, Taylor's theorem with Lagrange's and Cauchy's forms of remainder, Taylor's series, Maclaurin's series of  $\sin x$ ,  $\cos x$ ,  $e^x$ ,  $\log(1+x)$ ,  $(1+x)^m$

Indeterminate forms, Partial Differentiation, Euler's Theorem for Homogeneous functions, Maxima & minima of function of one and two variables

Tangents and normal, Curvature. Asymptotes, Singular Points.

## Integral Calculus

Integration of rational and irrational functions, Properties of definite integrals. Reduction formulae for integrals of rational and trigonometric functions,

Gamma and Beta functions. Areas and lengths of curves in the plane, Volumes and surfaces of solids of revolution. Double and triple integrals.

## Differential Equations

Classification of differential equations: their origin and applications, initial value problems, boundary value problems, existence of solution. Separable equation and reducible to this form.

Exact differential equation, integrating factors, special integrating factor and transformations. linear differential equation and Bernoulli equations, first order higher degree equations solvable for  $x$ ,  $y$ ,  $p$ .

Higher-order differential equations with constant coefficients, basic theory of linear differential equations, The Cauchy-Euler equation, Simultaneous differential equations. Wronskian and its properties Second order linear differential equations with variable coefficients, Inspection Method, Reducible to normal form, Change of Independent Variable, Variation of Parameters. Total differential equations.

Order and degree of partial differential equations, Concept of linear and non-linear partial differential equations, Formation of first order partial differential equations, Linear partial differential equation of first order, Lagrange's method, Charpit's method.

## Vector Calculus

Scalar and vector products of three and four vectors, Reciprocal systems of vectors, Applications of vectors to three dimensional geometry. Differentiation of vectors, partial differentiation of vectors, Velocity and acceleration, Integration of vectors.

Differential operators, Gradient of a scalar point function, Directional Derivative, divergence and curl of vectors. Line integrals, Surface integrals, Applications of Gauss's, Green's and Stokes theorems.

## Real Analysis

Finite and infinite sets, Examples of countable and uncountable sets, Real line, Bounded sets, Supremum and infimum, Completeness property of  $\mathbb{R}$ , Archimedean property of  $\mathbb{R}$ , intervals, Concept of limit points, closed sets, statement of Bolzano-Weierstrass theorem.

Real Sequence, Bounded sequence, Cauchy convergence criterion for sequences, Cauchy's theorem on limits, order preservation and squeeze theorem, monotone sequences and their convergence, monotone convergence theorem.

Infinite series. Cauchy convergence criterion for series, Positive term series, Geometric series, Comparison test, p-test, Root test, Ratio test, Alternating series, Leibnitz's test, Cauchy Condensation test, absolute and conditional convergence.

Riemann integral : Definition and examples, Properties of Riemann integrals, Necessary and sufficient conditions for integrability, Fundamental theorem of Calculus.

### **Abstract Algebra**

Definition and examples of groups, Abelian groups, the groups of integers under addition and multiplication modulo  $n$ , Subgroups, Necessary and sufficient condition, Examples of subgroups including the center of a group, Groups of complex roots of unity.

The general linear group  $GL_n(n, R)$ , Groups of symmetries of (i) an isosceles triangle, (ii) an equilateral triangle, (iii) a rectangle, and (iv) a square, Permutation groups, Even and odd permutations, Group of quaternions.

Homomorphism and isomorphism of groups, Order of an element, Cyclic groups and its properties, Cosets, Index of subgroup, Lagrange's theorem., Cayley's theorem.

Normal subgroups: Definition and examples. Definition and examples of rings, Examples of commutative and non-commutative rings, the ring of integers modulo  $n$ , Ring of matrices, Subrings and ideals, Integral domains and fields with examples.

### **Linear Algebra**

Vector spaces, Subspaces, Algebra of subspaces, Quotient spaces, Linear combination of Vectors, Linear span, Linear independence/dependence, Basis and dimension, Dimension of subspaces.

Linear transformations, Null space, Range, Rank and nullity of a linear transformation, rank-nullity theorem, Isomorphism, Isomorphism theorems, Inevitability and isomorphism's.

Matrix representation of a linear transformation, Algebra of linear transformations, Dual space, Dual basis, Double dual, Annihilator.

Eigen value and eigen-vectors of Linear Transformation, Characteristics polynomial, algebraic and geometric multiplicities of eigen-value, Applications of eigen-value and eigen-vectors in finding the power of Matrix  $A$ ,  $\exp(A)$ ,  $\sin(A)$ ,  $\cos(A)$ , and  $p(A)$ , similar Matrices, diagonalization of matrix.

### **Complex Analysis**

Properties of complex numbers, Regions in the complex plane, Functions of complex variable, Limits, Continuity, differentiability of complex functions, Exponential function, Logarithmic function, Trigonometric function.

Differentiability and Analyticity, Cauchy-Riemann Equations, Sufficient conditions for analyticity, Harmonic Functions, Harmonic conjugate function, Applications, Examples of analytic functions.

Contours, Contour integrals and its examples, Upper bounds for moduli of contour integral, Cauchy- Goursat theorem, Cauchy integral formula. Cauchy inequality, Liouville's theorem, Morera's theorem.

Sequences and Series, Taylor Series, Laurent Series, Singularities, Classification of singularities, Residues and Residue theorem.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**  
**M.SC. PHYSICS**  
**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL  
UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## Physics

**Mathematical Methods:** Calculus of single and multiple variables, partial derivatives, Jacobian, imperfect and perfect differentials, Taylor expansion, Fourier series. Vector algebra, Vector Calculus, Multiple integrals, Divergence theorem, Green's theorem, Stokes' theorem. First order equations and linear second order differential equations with constant coefficients. Matrices and determinants, Algebra of complex numbers.

**Mechanics and General Properties of Matter:** Newton's Laws of motion and applications, Velocity and acceleration in Cartesian, polar and cylindrical coordinate systems, uniformly rotating frame, centrifugal and Coriolis forces, Motion under a central force, Kepler's laws, Gravitational Law and field, Conservative and non-conservative forces. System of particles, Center of mass, equation of motion of the CM, conservation of linear and angular momentum, conservation of energy, variable mass systems.

**Elastic and inelastic collisions.** Rigid body motion, fixed axis rotations, rotation and translation, moments of Inertia and products of Inertia, parallel and perpendicular axes theorem. Principal moments and axes. Kinematics of moving fluids, equation of continuity, Euler's equation, Bernoulli's theorem.

**Oscillations, Waves and Optics:** Differential equation for simple harmonic oscillator and its general solution. Superposition of two or more simple harmonic oscillators. Lissajous figures. Damped and forced oscillators, resonance. Wave equation, traveling and standing waves in one-dimension. Energy density and energy transmission in waves. Group velocity and phase velocity. Sound waves in media. Doppler Effect. Fermat's Principle. General theory of image formation. Thick lens, thin lens and lens combinations.

Interference of light, optical path retardation. Fraunhofer diffraction. Rayleigh criterion and resolving power. Diffraction gratings. Polarization: linear, circular and elliptic polarization. Double refraction and optical rotation.

**Electricity and Magnetism:** Coulomb's law, Gauss's law. Electric field and potential. Electrostatic boundary conditions, Solution of Laplace's equation for simple cases. Conductors, capacitors, dielectrics, dielectric polarization, volume and surface charges, electrostatic energy. Biot-Savart law, Ampere's law, Faraday's law of electromagnetic induction, self and mutual inductance. Alternating currents. Simple DC and AC circuits with R, L and C components. Displacement current, Maxwell's equations and plane electromagnetic waves, Poynting's theorem, reflection and refraction at a dielectric interface,

transmission and reflection coefficients (normal incidence only). Lorentz Force and motion of charged particles in electric and magnetic fields.

**Kinetic theory, Thermodynamics:** Elements of Kinetic theory of gases. Velocity distribution and equipartition of energy. Specific heat of Mono-, di- and tri-atomic gases. Ideal gas, van-der-Waals gas and equation of state. Mean free path. Laws of thermodynamics. Zeroth law and concept of thermal equilibrium. First law and its consequences. Isothermal and adiabatic processes. Reversible, irreversible and quasi-static processes. Second law and entropy. Carnot cycle. Maxwell's thermodynamic relations and simple applications. Thermodynamic potentials and their applications. Phase transitions and Clausius Clapeyron equation. Ideas of ensembles, Maxwell-Boltzmann, Fermi-Dirac and Bose-Einstein distributions.

**Modern Physics:** Inertial frames and Galilean invariance. Postulates of special relativity. Lorentz transformations. Length contraction, time dilation. Relativistic velocity addition theorem, mass energy equivalence. Blackbody radiation, photoelectric effect, Compton Effect, Bohr's atomic model, X-rays. Wave-particle duality, Uncertainty principle, the superposition principle, calculation of expectation values, Schrödinger equation and its solution for one-, two- and three-dimensional boxes. Solution of Schrödinger equation for the one-dimensional harmonic oscillator. Reflection and transmission at a step potential, Pauli Exclusion Principle. Structure of atomic nucleus, mass and binding energy. Radioactivity and its applications. Laws of radioactive decay.

**Solid State Physics, Devices and Electronics:** Crystal structure, Bravais lattices and basis. Miller indices. X-ray diffraction and Bragg's law. Intrinsic and extrinsic semiconductors, variation of resistivity with temperature. Fermi level. p-n junction diode, I-V characteristics, Zener diode and its applications, BJT: characteristics in CB, CE, CC modes. Single stage amplifier, two stage R-C coupled amplifiers. Simple Oscillators: Barkhausen condition, sinusoidal oscillators. OPAMP and applications: Inverting and non-inverting amplifier. Boolean algebra: Binary number systems; conversion from one system to another system; binary addition and subtraction. Logic Gates AND, OR, NOT, NAND, NOR exclusive OR; Truth tables; combination of gates; de Morgan's theorem.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.PHARMA. (PHARMACEUTICAL  
CHEMISTRY/PHARMACEUTICS/PHARMA  
COLOGY/PHARMACOGNOSY  
(TWO YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## Pharmaceutical Sciences

### PHARMACEUTICAL CHEMISTRY

#### 1. Pharmaceutical Impurities

Impurities in pharmaceutical substances, sources, types & effects of impurities. Limit tests for heavy metals like lead, iron, arsenic, mercury & for chloride & sulphate as per Indian Pharmacopoeia [I. P.].

#### 2. Isotopes

Isotopes- stable & radioactive, mode & rate of decay. Types & measurement of radioactivity. Radiopharmaceuticals & their diagnostic & therapeutic applications in pharmacy & medicine such as  $^{125}\text{I}$ ,  $^{32}\text{P}$ ,  $^{51}\text{Cr}$ ,  $^{60}\text{Co}$ ,  $^{59}\text{Fe}$ ,  $^{99\text{Tc-M}}$ . Radiocontrast media, use of  $\text{BaSO}_4$  in medicine.

#### 3. Therapeutic classes of drugs

The following topics should be dealt with covering nomenclature [including stereochemical aspects], biological activity [including side & toxic effects ], mode of action, structure activity relationship [where ever applicable] & syntheses of reasonable molecules.

1. Dentifrices, desensitizing agents, & anticaries agents.
2. General anesthetics.
3. Local anesthetics.
4. Antiseptics, disinfectants, sterilants, & astringents.
5. Diagnostic agents.
6. Coagulants, anticoagulants & plasma expanders.
4. Drug metabolism

Introduction to drug metabolism based on the functional groups.

#### 5. Various classes of therapeutic agents

A detailed study of the following classes with respect to drug nomenclature, classification, physicochemical properties, mode of action [MOA], structure activity relationships [SAR], wherever applicable, synthesis of simple & prototype molecules, drug metabolism, therapeutic uses & side effects. Drug resistance, wherever applicable, should be covered in respective classes of drugs.

- a. Antibacterial sulpha drugs [only].
- b. Antifungal agents.
- c. Thyroid & anti thyroid drugs.
- d. Antiallergic agents.
- e. Antiulcer agents & Proton Pump Inhibitors.
- f. Hypoglycemic agents.
- g. Antimalarials

#### 6. Different classes of therapeutic drugs

A detailed study of the following classes with respect to drug nomenclature, classification, physicochemical properties, mode of action [MOA] , structure activity relationships [SAR] , wherever applicable, synthesis of simple & prototype molecules, drug metabolism, therapeutic uses & side effects. Drug resistance, wherever applicable, should be covered in respective classes of drugs.

- a) Sedative-hypnotics
- b) Antiepileptic agents.
- c) Anti-anxiety drugs.
- d) Diuretics.

e) Antibiotics. Penicillins, cephalosporins & other beta- lactam antibiotics like imipenam & aztreonam. Beta-lactamase inhibitors such as clavulanic acid & sulbactam. Chloramphenicol. Tetracyclines. Aminoglycoside antibiotics. Macrolide antibiotics. Lincomycins. Polypeptide antibiotics. Anticancer antibiotics.

7. Different classes of therapeutic drugs

A detailed study of the following classes with respect to drug nomenclature, classification, physicochemical properties, mode of action [MOA], biosynthesis, structure activity relationships [SAR], wherever applicable, synthesis of simple & prototype molecules, drug metabolism, therapeutic uses & side effects. Drug resistance, wherever applicable, in respective classes of drugs.

a) Narcotic [centrally acting] analgesics [analgetics]. Morphine & all its structural modifications [peripheral & nuclear]. Narcotic agonists & antagonists [dual & pure]. Non-narcotic analgesics [NSAIDS]. Difference between narcotic & non- narcotic agents.

b) Adrenergic drugs. Neurotransmitters & their role. General & specific adrenergic agonists & antagonists [up to alpha-2 & beta-2 only].

c) Cholinergic agents. Muscarinic & nicotinic cholinergic agonists & antagonists [up to M2 & N2]. Neuronal [transmission] blockers.

d) Asymmetric synthesis. Chirality, chiral pool, sources of various naturally available chiral compounds. Eutomers, distomers, eudismic ratio. Enantioselectivity & enantiospecificity. Enantiomeric & diastereomeric excess. Prochiral molecules. Asymmetric synthesis of captopril & propranolol.

e) Combinatorial chemistry. Introduction & basic terminology. Databases & libraries. Solid phase synthesis technique. Types of supports & linkers, Wang, Rink, & dihydropyran derivatized linkers. Reactions involving these linkers. Manual parallel & automated parallel synthesis. Houghton's tea bag method, micromanipulation, recursive deconvolution. Mix & split method for the synthesis of tripeptides. Limitations of combinatorial synthesis. Introduction to throughput screening.

## PHARMACEUTICS

1. Introduction to Pharmaceuticals

Definition, importance of pharmaceuticals, areas concerned, scope of Pharmaceutics, history and development of profession of Pharmacy and Pharmaceutical industry in India. A brief review of present Indian Pharma. Industry in global perspective.

2. Introduction to dosage form

Definition of drug. New drug and dosage form. The desirable properties of a dosage form, the need of dosage form. Ideas about available type of dosage forms and new drug delivery system.

3. Route of administration

Route of administration with respect to dosage form design, physiological consideration for various routes of administration.

4. ADME

Scheme of fate of dosage form after its administration. Definition and introduction to concept of absorption, distribution, biotransformation and elimination of drug. Introduction to bioavailability and various equivalences referring plasma time profile of drug.

5. Sources of drug information

Introduction to Pharmacopoeia with reference to IP, BP, USP and International Pharmacopoeia. Study of structure / features (index) general notice and compartment of monographs of excipients, drug and drug product. Other sources. Textbooks, journals, internet (drug information system, online database, patient/ consumer information and non- print material. Classification of information, primary, secondary and tertiary. Nomenclature of drug.

#### 6. Allopathic dosage form

Merits / demerits, importance, formulation development - vehicles / excipients with examples for the dosage form: liquid dosage form: monophasic liquid dosage form. Aromatic waters, syrup, elixir, linctus, lotion, liniment, glycerites, solutions, spirits, ENT preparations, mixtures, paints, mouthwash.

#### 7. Ayurvedic system of medicine

Theory, basic concept, diagnosis, various branches of treatment in ayurveda, types of drug formulation in Ayurveda and important Ayurvedic drugs and their uses, formulation of asavas, arishtas, watika, churna, tailas, ghruta, lep.

#### 8. Biological products

Absorbable and non-absorbable material types, sutures and ligatures, processing, manufacturing, sterilization, packing, QC tests of materials like catgut and nylon.

#### 9. Dosage Form Necessities and Additives

Antioxidants, preservatives, coloring agents, flavoring agents and diluting agents, emulsifying agents, suspending agents, ointment bases, solvents, and others.

#### 10. Powders

Advantages and limitations as dosage form, manufacturing procedure and equipment, special care and problems in manufacturing powders, powders of IP, effervescent granules and salts.

#### 11. Capsules

Hard gelatin capsules, shell formulation and manufacturing, capsule sizes, storage, filling, cleaning process general formulation contents and evaluation. Soft gelatin capsules, shell formulation, formulation contents, filing, sealing and storage. Microencapsulation, advantages, encapsulation materials, methods of microencapsulation, I.P. formulations

#### 12. Tablets

Types, ideal requirement, classification, granulation methods, general formulation, compression machines, different types of tooling's, difficulties in tableting, trouble shooting aspects, evaluation, sugar coating, compression coating, film coating, problems in tablet coatings and their trouble shooting aspects. IP formulations.

#### 13. Parenterals - product requiring sterile packaging

Definition, types advantages and limitations, general formulation, vehicles, production procedure, production facilities, controls, tests, selected IP injections, sterile powders, implants, emulsions, suspensions.

#### 14. Suspensions

Formulation of deflocculated and flocculated suspension, manufacturing procedure, evaluation methods, IP suspensions.

#### 15. Emulsions

Types, emulsifying agents, general formulation, manufacturing procedure, evaluation methods, IP emulsions.

## 16. Suppositories

Ideal requirements, bases, manufacturing procedure, evaluation methods, IP products.

## 17. Semisolids

Definitions, bases, general formulation, manufacturing procedure, evaluation methods, IP products.

## 18. Liquids (solutions, syrups, elixirs, spirits, aromatic water, liquid for external uses)

Definition, types, general formulation, manufacturing procedure, evaluation methods, IP products.

## 19. Pharmaceutical Aerosols

Definition, propellants, general formulation, manufacturing and packaging methods, pharmaceutical applications. Impacts of propellants on environment.

## 20. Ophthalmic preparations

Requirement, formulation, methods of preparation, containers, evaluation, IP products.

## 21. Radio Pharmaceuticals

Therapeutic uses, diagnostic uses, facilities and work area, preparation of radio pharmaceuticals, radio pharmaceuticals used in medicines.

## 22. Stability of formulated products

Requirements, drug regulatory aspects, pharmaceutical products stability, self life, overages, containers, closures.

## 23. Novel Drug delivery system

Critical fluid technology, transdermal drug delivery system, controlled drug delivery system, multiple emulsion, nano particles, targeted drug delivery system, aerosols, inhalation & new products reported etc.

## 24. Cosmetics

Formulation and preparation of dentifrices, hair creams, lipsticks, face powders, shaving preparations, skin creams, shampoos, hair dyes, depilatories, manicure preparations etc.

## PHARMACOLOGY

### 1. General Pharmacology

Introduction to Pharmacology- Definition, scope and source of drugs, dosage form and routes of drug administration. Pharmacodynamics-Mechanism of drug action, Receptors, classification and drug receptors interaction, combined effect of drugs, factors modifying drug action.

Pharmacokinetics-Mechanism and principle of Absorption, Distribution, Metabolism and Excretion of drugs. Principles of basic and clinical pharmacokinetics. Pharmacogenetics. Adverse drug reactions.

Discovery and development of new drugs-Preclinical and clinical studies.

### 2. Pharmacology of peripheral nervous system

Neurohumoral transmission (Autonomic and somatic).

Parasympathomimetics, Parasympatholytics, Sympathomimetics, Sympatholytics, Ganglionic stimulants and blockers. Neuromuscular blocking agents and skeletal muscle relaxants (peripheral).

Local anesthetic agents. Drugs used in Myasthenia Gravis.

### 3. Pharmacology of cardiovascular system

Introduction of hemodynamic and Electrophysiology of heart.

Anti-hypertensive drugs, Anti-anginal agents, Anti-arrhythmic drugs. Drugs used in congestive heart failure. Anti-hyperlipidemic drugs.

Drugs used in the therapy of shock.

Haematinics, anticoagulants and haemostatic agents. Fibrinolytics and antiplatelet drugs.

Blood and plasma volume expanders.

### 4. Drugs acting on urinary system

Diuretics and anti-diuretics.

### 5. Drugs acting on Respiratory system

Anti-asthmatic drugs, Mucolytics and nasal decongestants, Anti-tussives and expectorants. Respiratory stimulants

### 6. Pharmacology of central nervous System

Neurohumoral transmission in the C.N.S with special emphasis on Pharmacology of various neurotransmitters. General anesthetics. Alcohols and disulfiram. Sedatives, hypnotics and centrally acting muscle relaxants, Psychopharmacological agents: Antipsychotics, antidepressants, anti-anxiety agents, anti-manics and hallucinogens.

Anti-epileptic drugs. Anti-parkinsonism drugs. Nootropics.

Narcotic analgesics, drug addiction, drug abuse, tolerance and dependence.

### 7. Pharmacology of Endocrine system

Basic concepts in endocrine pharmacology. Hypothalamic and pituitary hormones.

Thyroid hormones and ant thyroid drugs, Parathormone, Calcitonin and vitamin-D. Insulin, oral hypoglycemic agents and glucagon. ACTH and corticosteroids. Androgens and anabolic steroids. Estrogens, progesterone and oral contraceptives. Drugs acting on the uterus.

### 8. Chemotherapy

General principals of chemotherapy. Sulphonamides and co-trimoxazole.

Antibiotics- Penicillins, cephalosporins, chloramphenicol, Macrolides, quinolones and fluoroquinolones, quinolones. Tetracyclines. Aminoglycosides and miscellaneous antibiotics. Chemotherapy of tuberculosis, leprosy, fungal diseases, viral diseases, AIDS, protozoal diseases, worm infections, urinary tract infections and sexually transmitted diseases. Chemotherapy of malignancy.

### 9. Pharmacology of drug acting on the gastrointestinal tract

Antacids, anti-secretory and antiulcer drugs.

Laxatives and antidiarrheal drugs. Appetite stimulants and suppressants. Digestants and carminatives. Emetics and antiemetics.

### 10. Peptides and proteins as mediators

General Principal of peptide pharmacology Biosynthesis and regulation of peptides Peptide antagonists. Protein and peptide as drugs.

### 11. Nitric oxide

Biosynthesis of nitric oxide and its physiological role.

Therapeutic use of nitric oxide and nitric oxide donors. Clinical condition in which nitric oxide may play a part.

### 12. Vitamins & Minerals

Vitamin deficiency diseases and their management. Role of minerals in health & diseases.

### 13. Principles of toxicology

Definition of poison. General principles of treatment of Poisoning. Treatment of poisoning due to Heavy metals, insecticides, opioids and other addict forming drugs. Study of acute, sub-acute and chronic toxicity as per OECD guidelines. Genotoxicity, Carcinogenicity, teratogenicity and mutagenicity studies.

### . PHARMACOGNOSY

#### 1. Introductory Pharmacognosy

Historical development, modern concept and scope of Pharmacognosy. Significance of Pharmacognosy in various systems of medicine practiced in India viz: Ayurveda, Unani, Homeopathic and Siddha.

#### 2. Classification of crude drugs

Based on alphabetical, morphological, pharmacological, chemical, taxonomical and chemotaxonomic methods: organized and unorganized drugs: official and unofficial drugs.

#### 3. Sources of crude drugs

Plants, animals and minerals: marine products: plant tissue culture.

#### 4. Factors influencing quality of crude drugs

Exogenous factors: temperature, rainfall, daylight, altitude and soil. Endogenous factors: Mutation, polyploidy, & hybridization in medicinal plants. Production factors including collection, drying, storage and transport methods.

Study of morphological and histological characters of crude drugs, Ergastic cell inclusions, anatomical structures of both monocot and dicot stems, leaves and roots: barks, fruits and seeds.

#### 5. Techniques in microscopy

Details of mountants, clearing agents, chemomicroscopic (microchemical) reagents.

#### 6. Pharmaceutical aids

Biological sources, chemical constituents, adulterants and uses of: Starches, acacia gum, tragacanth, sterculia, guar gum, pectin, arachis oil, castor oil, sesame oil, cotton seed oil, olive oil, cotton, silk, wool, regenerated fibers, asbestos, kaolin, prepared chalk.

kieselghur.

#### 7. Enzymes

Biological sources, preparation, characters and uses of: diastase, papain bromelain, ficin, yeast, pancreatin, urokinase, pepsin, trypsin, penicillinase, hyaluronidase and streptokinase.

#### 8. Natural pesticides and insecticides

Introduction to herbicides, fungicides, fumigants and rodenticides tobacco, pyrethrum, & neem.

#### 9. Adulteration and evaluation of crude drugs

Different methods of adulteration: Evaluation of drugs by organoleptic, microscopic, physical, chemical and biological methods. Deterioration of herbal drugs by insects.

#### 10. Quantitative microscopy

Definition and determination of stomatal index, stomatal number, palisade ratio, vein islet number, vein termination number, lycopodium spore method. Micrometers and measurement of microscopic characters.

#### 11. Carbohydrates & lipids

Biological sources, salient morphological features, chemical constituents, and uses of: Plantago, shark liver oil, cod liver oil, guggul lipids.

#### 12. Tannins

Biological sources, morphology, chemical constituents, chemical test and uses of: Pale catechu, black catechu, nutgalls, Terminalia belerica, Terminalia chebula, Terminalia arjuna.

#### 13. Volatile oils

Biological sources, morphology, chemical constituents, adulterants and uses of: Black pepper, turpentine, mentha, coriander, cardamom, cinnamon, cassia, lemon grass, caraway, dill, spearmint, clove, anise, fennel, nutmeg, eucalyptus, sandal wood.

#### 14. Resinous drugs

Classification, formation, sources, chemical constituents, identification test, adulterants and uses of: benzoin, peru balsam, tolu balsam, asafoetida, ginger, turmeric, capsicum, podophyllum.

#### 15. Glycosides

Nature and classification. Biological sources, morphology, chemical constituents, adulterants and uses of: Digitalis, strophanthus, aloe, rhubarb, senna, quassia, dioscorea, quillaia, glycyrrhiza, ginseng, gentian, withania, bitter almond. Biosynthesis of cardiac and anthraquinone glycosides.

#### 16. Alkaloids

Nature, classification, biological sources, morphology, chemical constituents, adulterants and uses of: Areca nut, belladonna, hyoscyamus, stramonium, duboisea, coca, coffee, tea, cinchona, opium, ipecac, nux vomica, ergot, rauwolfia, vinca, kurchi, ephedra, colchicum, vasaca, pilocarpus, aconite, Solanum xanthocarpum. Biosynthesis of tropane, cinchona and opium alkaloids.

#### 17. Extraction and Isolation Techniques

General methods used for the extraction, isolation and identification of alkaloids, lipids, glycosides, flavonoids, saponins, volatile oils and resins. Application of column, paper and thin layer chromatographic techniques, for the isolation of phytopharmaceuticals.

#### 18. Phytopharmaceuticals

Isolation, identification and estimation of: caffeine, eugenol, digoxin, piperine, tannic acid, diosgenin, hesperidine, berberine, calcium sennosides, rutin, glycyrrhizin, menthol, ephedrine, quinine, andrographolides and guggul lipids.

#### 19. Quality control and Standardization of herbal drugs

Quality control of herbal drugs as per WHO, AYUSH and Pharmacopeial guidelines- Extractive values, ash values, chromatographic techniques (TLC, HPTLC and HPLC) for determination of chromatographic markers. Determination of heavy metals, insecticides, pesticides and microbial load in herbal preparations.

#### 20. Herbal formulations

Principals involved in Ayurveda, Sidha, Unani, Chinese and Homeopathic systems of medicines. Preparation of Ayurvedic formulations like aristas, asava, ghutika, tailia,

churna, avaleha, ghrita and bhasmas: Unani formulations like majooms, Safoofs. Determination of alcohol contents in arishtas & asavas.

#### 21. Plant Biotechnology

History and scope of plant tissue culture, growth media, plant growth regulators: callus and suspension culture, Biotransformation, immobilization, hairy root culture. Transgenic plants and their applications, plant tissue culture as source of secondary metabolites.

#### 22. Herbal cosmetics

Importance of herbals as shampoos (soapnut), conditioners and hair darkeners, (amla, henna, hibiscus, tea), skin care (aloe, turmeric, lemon peel, vetiver).

23. Traditional herbal drugs Common names, sources, morphology, active constituents and uses (traditional, folklore), pharmacological and clinical uses of: punarnava (*Boerhaviadiffusa*), shankhpushpi (*Convolvulus microphylla*), lehsun (*Allium sativum*), guggul mukul), kalmegh tulsii valerian officinalis), artemisia (*Artemisia annua*), chirata (*Swertia chirata*), ashoka (*Saraca indica*).

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.SC. PHARMACEUTICAL CHEMISTRY**  
**(TWO YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

Atomic Structure: Review of: Bohr's theory and its limitations, dual behaviour of matter and radiation, de Broglie's relation, Heisenberg Uncertainty principle. Hydrogen atom spectra. Need of a new approach to Atomic structure.

Chemical Bonding and Molecular Structure Ionic Bonding: General characteristics of ionic bonding. Energy considerations in ionic bonding, lattice energy and solvation energy and their importance in the context of stability and solubility of ionic compounds. Statement of Born-Landé equation for calculation of lattice energy, Born-Haber cycle and its applications, polarizing power and polarizability. Fajan's rules, ionic character in covalent compounds, bond moment, dipole moment and percentage ionic character.

Covalent bonding: VB Approach: Shapes of some inorganic molecules and ions on the basis of VSEPR and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements. Concept of resonance and resonating structures in various inorganic and organic compounds.

Physical Effects, Electronic Displacements: Inductive Effect, Electromeric Effect, Resonance and Hyperconjugation. Cleavage of Bonds: Homolysis and Heterolysis. Structure, shape and reactivity of organic molecules: Nucleophiles and electrophiles. Reactive Intermediates: Carbocations, Carbanions and free radicals. Strength of organic acids and bases: Comparative study with emphasis on factors affecting pK values.

Aromaticity: Benzenoids and Hückel's rule.

Stereochemistry, Conformations with respect to ethane, butane and cyclohexane. Interconversion of Wedge Formula, Newmann, Sawhorse and Fischer representations. Concept of chirality (upto two carbon atoms).

Configuration: Geometrical and Optical isomerism; Enantiomerism, Diastereomerism and Meso compounds). Threo and erythro; D and L; cis - trans nomenclature; CIP Rules: R/ S (for upto 2 chiral carbon atoms) and E / Z Nomenclature (for upto two C=C systems).

Aliphatic Hydrocarbons Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure. Alkanes: (Upto 5 Carbons). Preparation: Catalytic hydrogenation, Wurtz reaction, Kolbe's synthesis, from Grignard reagent. Reactions: Free radical Substitution: Halogenation.

Alkenes: (Upto 5 Carbons) Preparation: Elimination reactions: Dehydration of alkenes and dehydrohalogenation of alkyl halides (Saytzeff's rule); cis alkenes (Partial catalytic hydrogenation) and trans alkenes (Birch reduction). Reactions: cis-addition (alk.  $\text{KMnO}_4$ ) and trans-addition (bromine), Addition of HX (Markownikoff's and anti-Markownikoff's addition), Hydration, Ozonolysis, oxymercuration-demercuration, Hydroboration-oxidation.

Alkynes: (Upto 5 Carbons) Preparation: Acetylene from  $\text{CaC}_2$  and conversion into higher alkynes; by dehalogenation of tetra halides and dehydrohalogenation of vicinal-dihalides.

Reactions: formation of metal acetylides, addition of bromine and alkaline  $\text{KMnO}_4$ , ozonolysis and oxidation with hot alk.  $\text{KMnO}_4$ .

Aromatic hydrocarbons, Preparation (Case benzene): from phenol, by decarboxylation, from acetylene, from benzene sulphonic acid. Reactions: (Case benzene): Electrophilic substitution: nitration, halogenation and sulphonation. FriedelCraft's reaction (alkylation and acylation)

(upto 4 carbons on benzene). Side chain oxidation of alkyl benzenes (upto 4 carbons on benzene).

Alkyl and Aryl Halides Alkyl Halides (Upto 5 Carbons) Types of Nucleophilic Substitution (SN1, SN2 and SNi) reactions. Preparation: from alkenes and alcohols. Reactions: hydrolysis, nitrite & nitro formation, nitrile & isonitrile formation. Williamson's ether synthesis: Elimination vs substitution. Aryl Halides Preparation: (Chloro, bromo and iodo-benzene case): from phenol, Sandmeyer & Gattermann reactions. Reactions (Chlorobenzene): Aromatic nucleophilic substitution (replacement by -OH group) and effect of nitro substituent. Benzyne Mechanism: KNH<sub>2</sub>/NH<sub>3</sub> (or NaNH<sub>2</sub>/NH<sub>3</sub>). Reactivity and Relative strength of C-Halogen bond in alkyl, allyl, benzyl, vinyl and aryl halides.

Alcohols, Phenols and Ethers (Upto 5 Carbons) Alcohols: Preparation: Preparation of 1o, 2o and 3o alcohols: using Grignard reagent, Ester hydrolysis, Reduction of aldehydes, ketones, carboxylic acid and esters. Reactions: With sodium, HX (Lucas test), esterification, oxidation (with PCC, alk. KMnO<sub>4</sub>, acidic dichromate, conc. HNO<sub>3</sub>). Oppeneauer oxidation Diols: (Upto 6 Carbons) oxidation of diols. Pinacol-Pinacolone rearrangement. Phenols: (Phenol case) Preparation: Cumene hydroperoxide method, from diazonium salts. Reactions: Electrophilic substitution: Nitration, halogenation and sulphonation. Reimer-Tiemann Reaction, Gattermann-Koch Reaction, Houben-Hoesch Condensation, Schotten - Baumann Reaction. Ethers (aliphatic and aromatic): Cleavage of ethers with HI. Aldehydes and ketones (aliphatic and aromatic): (Formaldehyde, acetaldehyde, acetone and benzaldehyde) Preparation: from acid chlorides and from nitriles. Reactions - Reaction with HCN, ROH, NaHSO<sub>3</sub>, NH<sub>2</sub>-G derivatives. Iodoform test. Aldol Condensation, Cannizzaro's reaction, Wittig reaction, Benzoin condensation. Clemensen reduction and Wolff Kishner reduction. Meerwein-Ponndorf Verley reduction

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure. Carboxylic acids and their derivatives Carboxylic acids (aliphatic and aromatic) Preparation: Acidic and Alkaline hydrolysis of esters. Reactions: Hell - Vohlard - Zelinsky Reaction. Carboxylic acid derivatives (aliphatic): (Upto 5 carbons) Preparation: Acid chlorides, Anhydrides, Esters and Amides from acids and their interconversion. Reactions: Comparative study of nucleophilicity of acyl derivatives. Reformatsky Reaction, Perkin condensation.

Amines and Diazonium Salts Amines (Aliphatic and Aromatic): (Upto 5 carbons) Preparation: from alkyl halides, Gabriel's Phthalimid

Preparation: from alkyl halides, Gabriel's Phthalimide synthesis, Hofmann Bromamide reaction. Reactions: Hofmann vs. Saytzeff elimination, Carbylamine test, Hinsberg test, with HNO<sub>2</sub>, Schotten - Baumann Reaction. Electrophilic substitution (case aniline): nitration, bromination, sulphonation. Diazonium salts: Preparation: from aromatic amines. Reactions: conversion to benzene, phenol, dyes.

Amino Acids, Peptides and Proteins: Preparation of Amino Acids: Strecker synthesis using Gabriel's phthalimide synthesis. Zwitterion, Isoelectric point and Electrophoresis. Reactions of Amino acids: ester of -COOH group, acetylation of -NH<sub>2</sub> group, complexation with Cu<sup>2+</sup> ions, ninhydrin test.

Carbohydrates: Classification, and General Properties, Glucose and Fructose (open chain and cyclic structure), Determination of configuration of monosaccharides, absolute configuration of Glucose and Fructose, Mutarotation, ascending and descending in monosaccharides. Structure of disaccharides (sucrose, maltose, lactose) and polysaccharides.

Chromatography: Definition, general introduction on principles of chromatography, paper chromatography, TLC, Column, ion-exchange chromatography

Qualitative and quantitative aspects of chromatographic methods of analysis: IC, GLC, GPC, TLC and HPLC.

Mass spectroscopy: Making the gaseous molecule into an ion (electron impact, chemical ionization)

UV-Visible Spectrometry: Basic principles of instrumentation (choice of source, monochromator and detector) for single and double beam instrument

Infrared Spectrometry: Basic principles of instrumentation (choice of source, monochromator & detector) for single and double beam instrument; sampling techniques.

NMR spectroscopy: Principle, Instrumentation, Factors affecting chemical shift, Spin-coupling, Applications.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.SC./M.A. STATISTICS**  
**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

### **M.A/M.Sc 2 Year Statistics**

1. Univariate Descriptive Statistics and Probability
2. Bivariate Descriptive Statistics and Probability Distributions
3. Theory of Estimation and Testing of Hypothesis
4. Applied Statistics
5. Sampling Survey and Nonparametric Methods
6. Analysis of Variance and Design of Experiment

### **M.A/M.Sc 1 Year Statistics**

1. Univariate Descriptive Statistics and Probability
2. Bivariate Descriptive Statistics and Probability Distributions
3. Theory of Estimation and Testing of Hypothesis
4. Applied Statistics
5. Sampling Survey and Nonparametric Methods
6. Analysis of Variance and Design of Experiment
7. Measure Theory and Probability
8. Real Analysis and Complex Analysis
9. Linear Algebra
10. Decision Theory and Bayesian Analysis
11. Actuarial Statistics

Note: The main topics are mentioned here. The content details are available on the department page of University Website.

**SCHOOL OF  
ENGINEERING AND  
TECHNOLOGY**

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**MCA / M.SC. IT/M.SC. CS (TWO YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## Entrance Test Syllabus-MCA/M.Sc (IT)/M.Sc CS

### Mathematics: (40 questions)

1. Algebra: Fundamental operations in Algebra, expansion, Factorization, quadratic equations, indices, logarithms, arithmetic, geometric and harmonic progressions, binomial theorem, permutations and combinations, Determinants & Matrices.
2. Set Theory: Sets and subsets, operations on sets, sequences, properties of integers, relations and functions.
3. Co-ordinate Geometry: Rectangular Cartesian co-ordinates, equations of a line, midpoint, intersections etc., equations of a circle, distance formulae, pair of straight lines, parabola, ellipse and hyperbola.
4. Calculus: Limit of functions, continuous functions, differentiation of functions, Tangents and normal, simple examples of maxima and minima, Integration of function by parts, by substitution and by partial fraction.
5. Vector: Position vector, addition and subtraction of vectors, scalar and vector products and their application to simple geometric problems and mechanics.
6. Trigonometry: Simple identities, trigonometric equations, properties of triangles, solution of triangles, height and distance.
7. Probability and Statistics: Basic concepts of probability theory, Averages, Dependend and independent events, frequency distributions, and measures of dispersions, skewness and kurtosis, random variable and distribution functions, mathematical expectations, Binomial, Poisson, normal distributions, curve fitting, and principle of least squares, correlation and regression.
8. Linear Programming: Formulation of simple linear programming problems, basic concepts of graphical and simplex methods, revised simplex method, transportation and assignment problems, duality and integer programming.

### Logical Reasoning: (30 questions)

Questions in this section will contain

1. Number Series
2. Verbal Classification
3. Analogies
4. Verbal Reasoning
5. Statement and Assumption
6. Statement and Conclusion
7. Cause and Effect
8. Logical Deduction
9. Letter and Symbol Series
10. Visual-Spatial Reasoning

### Computer Awareness: (30 questions)

1. Computer Basics: Organization of a computer, Central Processing Unit (CPU), Structure of instructions in CPU, input/output devices, computer memory, memory organization backup back-up devices.
2. Data Representation: Representation of characters, integers, and fractions, binary and hexadecimal representations, Binary Arithmetic: Addition, subtraction, division, multiplication, single arithmetic, and two complement arithmetic, floating-point representation of numbers, Boolean algebra, truth tables, Venn diagrams.
3. Computer Architecture: Block structure of computers, communication between the processor and I/O devices.
4. Flow chart and Algorithm, Fundamentals of Operating System and Basics of Internet & Social Media tools.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT  
M.TECH. (CSE)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

# Entrance Test Syllabus-M.Tech(CSE)

## Marks-100

1. Set Theory & Algebra: Sets; Relations; Functions; Compositions of functions and relations, Group: Partial Orders; Boolean Algebra.
2. Theory of Computations: Finite Automata and Regular Expressions, on determinism and NFA, Properties of Regular Sets, Context free grammar: Chomsky Normal Form (CNF), Griebach Normal Form (GNF), Push-down automata, Moore and mealy Machines, Turing machines.
3. Digital Logic: Number representations and computer arithmetic (Fixed and floating point), Logic functions, Minimizations, Design and synthesis of combinational and sequential circuits, A/D AND D/A CONVERTERS.
4. Computer Organization and Architecture: Machine instructions and addressing modes, ALU and data-path, CPU control design, memory interface, I/O interface (Interrupt and DMA mode), Instruction pipelining, Cache and main memory, Secondary storage.
5. Microprocessors and interfacing: Instructions sets, addressing modes, Memory interfacing. interfacing peripheral devices, Interrupts. Microprocessor architecture, Instructions set and Programming (8085), Microprocessor applications, DMA, Interrupt and Timer.
6. Programming and Data Structures: Programming in C; Functions, Recursion, Parameter passing, and Definition of data structure. Arrays, Stacks, Queues linked lists, trees, priority queues and heaps, Binary search trees
7. Algorithm: Algorithm concepts, Analyzing and design, asymptotic notations and their properties. Worst and average case analysis, Design: Greedy approach, Dynamic programming, Divide and conquer, Tree and graph transversals, Spanning trees, shortest paths: Hashing, Sorting Searching.
8. Operating System: Main functions of operating systems, Processes, Threads, Interprocess communication, concurrency, Synchronization, Deadlock, CPU scheduling, I/O scheduling, Resource scheduling. Deadlock and scheduling algorithms, banker's algorithm for deadlock handling. Memory management and virtual memory. File Systems, I/O systems, DOS, UNIX and Windows.
9. Computer Networks: OSI Model, TCP/IP model, LAN technologies (Ethernet, Token ring), Transmission media - twisted pair, coaxial cables fiber-optic cables, Flow and error control techniques, Routing algorithms, Congestion control, IP (v4), Application layer protocols (icmp, dns, smtp, pop, ftp, http); Sliding window protocols: Internetworking: Switch Hub, Bridge, Router, Gateways, Concatenated virtual circuits, Firewalls: Network Security; Cryptography public key, secret key. Domain Name System (DNS)-Electronic Mail and World Wide Web (WWW).
10. Artificial Intelligence: Basic concepts of AI; Intelligent agents, solving problems by searching -Uniformed search, Informed search, Logical agents; first order logic; knowledge representations.
11. Cryptography & Network security: Computer & network security concepts, Classical encryption techniques: Symmetric cipher model, Caesar Cipher, Playfair Cipher, Hill Cipher.
12. Data Science: Basic concepts, data, types of data-structured, unstructured; data representation, machine learning algorithms-supervised, unsupervised, reinforcement, clustering, classification and regression problems, data preprocessing, normalization, smoothing, visualization.

**SCHOOL OF ARTS,  
COMMUNICATION AND  
LANGUAGES**

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**  
**M.A. THEATRE**  
**(TWO YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY**  
**(A CENTRAL UNIVERSITY)**  
**SRINAGAR (GARHWAL)**  
**UTTARAKHAND**

## **THEATRE (FOLK AND PERFORMING ARTS)**

- ❖ Dramatic literature of East and West.
- ❖ Modern plays and playwright.
- ❖ Acting techniques.
- ❖ Major Directors of India and abroad.
- ❖ Current trends in Performing Arts.
- ❖ Performing Arts Institutions.
- ❖ Famous Films and Directors.
- ❖ Theatre Design like: Light, Costume, Set design etc.

# SYLLABUS FOR UNIVERSITY ENTRANCE TEST

SESSION 2026-27

## SUBJECT

- M.A. JOURNALISM & MASS  
COMMUNICATION (TWO YEAR)
- PG DIPLOMA IN JOURNALISM AND  
MASS COMMUNICATION



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY**  
**(A CENTRAL UNIVERSITY)**  
**SRINAGAR (GARHWAL)**  
**UTTARAKHAND**

## Syllabus for PG Entrance Exam.

### 1. Introduction to Journalism & Mass Communication

- Concepts, nature, evolution & scope.
- Role of communication in development, change, empowerment of the society.

### 2. Reporting and Editing

- News reporting- gathering, source verification, editing practices.

### 3. Advertising & Public Relations

- Advertising principles, campaign planning, media strategy.
- PR functions, tools, corporate image building.

### 4. Media Laws & Ethics

- Freedom of speech & expression, Press laws, cyber law, IPR, ethical perspective of media. Human rights & media, Right to information.

### 5. ICT and Media

- Internet, Digital media, New media, Social media
- multimedia tools.

### 6. Film & Visual Communication

- Film language, visual grammar, aesthetics, cinema history.

### 7. Communication Research

- Research design, tools, data analysis, ethics in media research.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A. DRAWING & PAINTING**  
**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

**SYLLABUS FOR M.A. ENTRANCE TEST 2025-26**  
**Drawing and Painting**

<b>Fundamentals of Visual Art</b>	<p>Meaning and Definition of Art, Classification of Art, Types of Painting. Line, shape and Form, Colour, Tone and Value, Space, Texture Introduction of Composition Proportion, Movement &amp; Rhythm, Dominance, Harmony, Unity, Contrast, Balance, Perspective. Introduction of major principles of painting, Unity and verity, Balance, Emphasis, Contrast, Rhythm, Scale &amp; Proportion</p>
<b>Methods &amp; Materials of Painting</b>	<p>Introduction to media and techniques: Monochromatic Drawing media &amp; tech.: pencil, charcoal, ink, coloured chalk etc. Painting media &amp; tech.: watercolour, tempera, gouache, oil colour, acrylic, batik, tie and die. Brief introduction of Print Making &amp; tech.: Relief Prints, Intaglioprints, planographic prints. Mural, video art, computer art, mix media, collage, documented art.</p>
<b>History of Indian Painting</b>	<p>Pre-historic cave painting, Indus Valley art, Wall Painting tradition :Jogimara, Ajanta, Bagh, Sittanvasal, Badami, Elephanta and Ellora. Manuscript and Pat Painting tradition: Pal School, Apbhransha/Jain School. Miniature painting tradition : Rajasthani School, Mughal School, Pahari School. Patna/Company School, Indigenous schools : Kalighat Painting, Orissa, Nathdwara, Tanjore painting. Raja Ravi Verma. Bengal School/Renaissance period, Six Limbs of Indian painting. A Brief Introduction New Trends in Modern Indian paintings Some important painters and artist groups: Jamini Roy, Rabindranath Tagore, Gagandranath Tagore, Amrita Shregil, Calcultta Group, PAG ,Delhi Shilpa Chakra. Contemporary Indian Painters: Satish Gujral, M.F.Husain, K.S.Kulkarni, K.K.Habbar, N.S. Bendre, Ram Kumar, Arprna Cour, Anjolilla Menon, Anupam Sood, Nalani Malani, Arpita Singh, Gogi Sarojpal, Tayb Mehta, A.Ramchandran.</p>
<b>History of European Painting</b>	<p>Primitive cave painting. Greek painting. Roman painting. Early Christian Art.Byzantine Art. Romanesque painting. Gothic painting. Renaissance painting. Brief introduction of early 19<sup>th</sup> century painting, (Neo-classicism,Romanticism,Realism.Pre-Raphaelites)Impressionism. Post-Impressionism, Symbolism,Fauvism. Cubism, Expressionism, Surrealism, Abstract Art.</p>

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A. ENGLISH**

**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## English

### 1. **History of English and Indian Literatures:**

- Major Authors
- Texts
- Literary Movements

### 2. **Indian Writing in English:**

- Major Authors
- Texts including English translations
- History

### 3. **Literary Terms:**

- Allegory
- Ballad
- Blank Verse
- Comedy
- Dissociation of Sensibility
- Dramatic Monologue
- Elegy
- Enlightenment
- Epic
- Fancy and Imagination
- Imitation
- Intentional Fallacy
- Motif
- Ode
- Onomatopoeia
- Paradox
- Plot
- Figures of Speech
- Satire
- Soliloquy
- Sonnet
- Tragedy
- Wit, (etc.)

### 4. **Literary Genres:**

- Fiction and Non-fiction
- Life writings
- Diary
- Drama
- Essay
- Novel
- Poetry
- Prose
- Short Story
- Epic
- Travelogue
- Science Fiction, (etc.)

**5. Comparative Literature and Translations studies:**

- Concepts
- Theories
- Texts

**6. Literary Criticism and Theory:**

- Classical and Modern Criticism
- Marxism
- Structuralism and Post-structuralism
- Feminism
- Eco-criticism
- Post Colonialism

**7. Awareness of Current Literary Trends, Events, Awards etc.**

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A. HINDI**

**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## हिन्दी

1. हिन्दी साहित्य का काला विभाजन और नामकरण।
2. हिन्दी साहित्य का इतिहास (आदिकाल से आधुनिक काल तक)।  
प्रमुख रचनाकार, रचनाएं और प्रवृत्तियां
3. हिन्दी साहित्य की विविध विधाएं एवं रचनाकार  
(उपन्यास, कहानी, नाटक, निबंध, आलोचना एवं अन्य गद्य विधाएं)
4. प्रयोजन मूलक हिन्दी के विविध रूप
5. जनसंचार माध्यमों में हिन्दी  
(समाचार पत्र और हिन्दी, विज्ञापन और हिन्दी, रेडियो एवं टेलीविजन में हिंदी)
6. भारतीय काव्य शास्त्र (शब्द शक्ति, काव्य हेतु, काव्य प्रयोजन एवं काव्य लक्षण)
7. हिन्दी व्याकरण (संधि, समास, काल, वाक्य विन्यास)

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**B.LIB. AND INFORMATION SCIENCE**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

# Department of Library and Information Science

## Bachelor of Library and Information Science (B.LISc) Entrance Exams Syllabus.

The entrance syllabus for the Bachelor of Library and Information Science (B.LISc) generally focuses on assessing a candidate's aptitude for organizing information, general knowledge, proficiency in English, and logical reasoning. Key topics include the foundation of library science, information sources, and basic IT concepts.

Below are the common subject areas covered in B.Lib.Sc. entrance examinations:

### 1. Library and Information Science (Core Topics)

- **Foundation of Library & Information Science:** History of libraries, Types of libraries (Public, Academic, Special, National), Five Laws of Library Science, and Library Legislation in India.
- **Library Management:** Principles of management (POSDCORB), Collection development, Acquisition, Cataloguing, Circulation, and Maintenance.
- **Information Sources & Services:** Types of information sources (Primary, Secondary, Tertiary), Reference services, User education, and Information literacy.
- **Knowledge Organization:** Basic concepts of Library Classification (DDC, CC) and Library Cataloguing (AACR-II, CCC).

### 2. General Aptitude and Awareness

- **General Knowledge:** Current affairs, social issues, and Indian history/culture.
- **Basic English:** Grammar, vocabulary, and comprehension.
- **Logical Reasoning & Mental Ability:** Analytical skills and basic mathematical ability.
- **Information Communication Technology (ICT) Fundamentals:** Basics of computers, internet search engines, and networking basics.

### 3. Key Topics by Subject Area

- **Library Classification Theory:** Need, Purpose, Functions, and Species of Classification Schemes (DDC, UDC, Colon Classification).
- **Library Cataloguing Theory:** Need and Purpose, Physical forms, Cataloguing codes, and Subject headings.
- **Information Systems & Networks:** Overview of national and international systems like INFLIBNET, DELNET, NISCAIR, and UNESCO.

### Entrance Exam Pattern

- **Types of Questions:** Multiple Choice Questions (MCQs).
- **Mode:** Often conducted off-line exams.
- **Duration:**
- **Focus:** Tests basic understanding of library concepts and general awareness rather than in-depth technical knowledge.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.LIB. AND INFORMATION SCIENCE**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

# Master of Library and Information Science (M.LISc.) Entrance Exams Syllabus

Master of Library and Information Science (M.LISc.) entrance exams typically cover foundational knowledge of library science, information management, research methods, and IT applications. Core topics include Library Cataloguing (AACR-2, MARC-21, RDA), Classification (DDC, CC), Information Sources, Management, and Information Technology (networks, internet).

## Key Syllabus Areas for Master's Entrance Exams:

- **Foundations of Library & Information Science:** Definition, objectives, types of libraries, 5 Laws of Library Science, library legislation in India, and professional ethics.
- **Library Cataloguing & Classification:** Definitions, types (alphabetical, classified), entry elements (CCC, AACR-2), subject cataloguing, standards (MARC-21, ISBD, Dublin Core), and classification systems (DDC, CC).
- **Information Sources, Systems & Services:** Reference services, bibliographies, types of libraries (Academic, Public, Special), and library networks/consortia (INFLIBNET, DELNET).
- **Management & Administration:** Principles, functions, human resources, financial management, and marketing in libraries.
- **Information Technology & Digital Libraries:** Computer basics, internet services, library software, digital library concepts, and open sources.
- **Research Methodology:** Types of research, research design, data collection tools (surveys, questionnaires), and citation methods.
- **General Awareness & Proficiency:** Often includes General English, Computer awareness, and basic mathematical ability.

## Common Exam Structure

- **Format:** Multiple Choice Questions (MCQs).
- **Duration:**
- **Content:** Focus on foundational library knowledge (B.Lib. level) and basic General Knowledge.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A. MUSIC CLASSICAL**

**(VOCAL/TABLA)**

**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## MUSIC

### **Hindustani Music (Vocal-Instrumental)**

#### **Unit 1- Detailed Knowledge Of The Salient Features Of Ragas & Comparative Study**

Prescribed Ragas: Bilawal, Alhaiya Bilawal, Bhairav, Kafi, Yaman, Khamaj, Asawari, Bhupali, Deshkar, Brindabani Sarang, Malkauns, Bihag, Bhimpalasi, Bageshri, Des, Jaijaiwanti, Ramkali, Hameer, Kedar, Kamod, Chayanat, Todi, Multani, Gaud Sarang, Patdeep, Puriy Dhanashri, Shuddha Sarang.

#### **Unit 2- Detailed Knowledge Of The Salient Features Of Talas And Comparative Study**

Prescribed Talas: Dadra, Keharwa, Rupak, Teevra, Jhaptala, Sultala, Ektala, Chautala, Teentala, Tilwada, Dhamar, Jhumra, Ada Chutala

#### **Unit 3- Understanding Of Musical Terms:**

Nad, Shruti, Swara, Thaata, Vadi, Samvadi, Anuvadi, Vivadi, Jati, Varna, Alankar, Sthaya, Tana, Gamak, Meend, Kan, Krintan, Soot, Zamzama, Ghaseet, Kaku, Avirbav, Tirobhav,

#### **Unit 4- Physics Of Sound:**

Pitch, Intensity, Timbre, Vibration, Forced Vibration, Free Vibration, Just Intonation, Equally Tempered Scale, Harmony, Melody, Polyphony

#### **Unit 5- Musical Forms:**

Gram, Murcehana, Gandharva, Gan, Nibhaddha-Anibaddha, Jati Gayan, Prabandha, Dhrupad, Dhamar, Khayal, Tarana, Tappa, Chaturang, Maseet Khani Gat, Razakani Gat, Alap, Bol-Alap, Jod- Alap, Vilambit Gat, Drut Gat, Jhala

#### **Unit 6- Laya And Tala:**

Laya- Meaning, Vilambit, Madhya, Drut

Layakari – Dungun, Tigun Changun, Panchgun, Chegung, Ada, Kuad Biad.

Tala – Meaning, Avartan, Matra, Tali, Khali, Sam, Vibhag. Das Pranas Of Tala.

#### **Unit-7 Study Of Following Texts:**

Natya Shastra, Brihaddheshi, Sangeet Makarand, Sangeet Ratnakar, Swarm Mel Kala Nidhi, Raga, Vibodh, Raga Tarangini, Sangeet Parijat, Chaturdandi Prakashika,

#### **Unit-8 Contribution Of Musician/Scholars:**

Tansen, Amir Khusru, Jaidev, Sadarang, Adarang, Mansingh Tomar, V.N. Bhatkhande, V.D Paluskar. S.N Ratanjankar, Omkar Nath Thakur, Haddu-Hassu Khan, Bade Gulam Ali Khan, Abdul karim Khan, Vilayat Hussain Khan, Allaudin Khan, Mushtaq Ali Khan.

#### **Unit-9 Study Of Musical Concepts:**

**A. Classification Of Musical Instruments:** Tatta, Avnadh, Ghan, Shushir, Knowledge, Construction And Tuning Of The Prominent Instruments And Playing Techniques Of Sitar Guitar, Violon, Santoor, Tanpura.

**B. Classification Of Ragas:**

- a. Raga-Ragini Classification
- b. Thaata-Raga Classification
- c. Ragang Classification
- d. Time Theory Of Ragas At Present Time

**Unit-10 Knowledge Of Notation System:**

- a. Detailed Knowledge Of V.N. Bhatkhande Notation System
- b. Detailed Knowledge Of V.D Paluskar Notation System
- c. Basic Knowledge Of Staff Notation System.

**Unit-11 Gharana And Their Significant Features:**

- a. Gharana- Meaning And Importance
- b. Dhrupad- Vanis, Dagar, Darbhanga, Betia Styles
- c. Vocal- Gwailor, Agra, Delhi, Kirana, Jaipur, Patiala.
- d. Instrumental Music And Their Prominent Styles At Present.

**Unit-12 Life And Contribution Of Karnataka and Western Composers:**

- a. Tygaraja, Muthuswamy Dikshitar, Shyama Shastri
- b. Bach, Bethoven, Mozart

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A. SANSKRIT**

**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
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UTTARAKHAND**

### घटकम्-1 (Unit-1): संस्कृतसाहित्येतिहासः-- History of Sanskrit Literature

वैदिकसंहिता, ब्राह्मणग्रन्थाः, आरण्यकग्रन्थाः, उपनिषदः, वेदाङ्गानि, दर्शनानि, रामायणम्, महाभारतम्, पुराणानि।

कवयः तेषां कृतयश्च- भासः, अश्वघोषः, कालिदासः, भारविः, भट्टिः, शूद्रकः, भवभूतिः, सुबन्धुः, माघः, बाणभट्टः, दण्डी, श्रीहर्षः, कल्हणः।

Vaidikasamhitās, Brāhmaṇagrānthis, Āraṇyākagrānthis, Upaniṣads, Vedāṅgas, Darśanas, Rāmayaṇam, Mahābhāratam, Purāṇas.

Poets and their Works: Bhāsa, Aśvaghōṣa, Kālidāsa, Bhāravi, Bhaṭṭi, Śūdraka, Bhavabhūti, Subandhu, Māgha, Bāṇabhaṭṭa, Daṇḍī, Śrīharṣa, Kalhaṇa.

### घटकम्-2 (Unit-2) संस्कृतव्याकरणम् (Sanskrit Grammar)

शब्दरूपाणि, धातुरूपाणि, सन्धिः, समासः, कारकाणि, स्त्रीप्रत्ययाः, कृदन्ताः, तद्धिताः।

Śabdārūpas, Dhāturūpas, Sandhi, Samāsa, Kāraḥ, Strīpratyayas, Kṛdantas, Taddhitas.

### घटकम्-3 (Unit-3) संस्कृतकाव्यशास्त्रं छन्दशास्त्रञ्च (Sanskrit Poetics and Prosody)

आलङ्कारिकाः - भरतः, भामहः, दण्डी, वामनः, आनन्दवर्षनः, कुन्तकः, मम्मटः, क्षेमेन्द्रः, विश्वनाथः। प्रसिद्धाः अलङ्काराः, प्रसिद्धानि छन्दांसि, नाट्यतत्त्वम्, रसनिष्पत्तिः।

Ālaṅkārikas:- Bharata, Bhāmaha, Daṇḍī, Vāmana, Ānandavardhana, Kuntaka, Mammaṭa, Kṣemendra, Viśvanātha. Prominent Ālaṅkāras, Prominent metres, Nāṭyatattva, Rasanīṣpatti.

### घटकम्-4 (Unit-4) संस्कृतसाहित्यग्रन्थाः (Sanskrit Literary Works)

अभिज्ञानशाकुन्तलम्, मेघदूतम्, श्रीमद्भगवद्गीता, भर्तृहरिकृतं नीतिशतकम्, हितोपदेशः

Abhijñānaśākuntalam, Meghadūtam, Śrīmadbhagavadgītā, Nītiśatakam of Bhartṛhari, Hitopadeśa

**SCHOOL OF HUMANITIES  
AND SOCIAL SCIENCES**

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A./M.SC. ANTHROPOLOGY**  
**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY**  
**(A CENTRAL UNIVERSITY)**  
**SRINAGAR (GARHWAL)**  
**UTTARAKHAND**

## **Anthropology**

### **Physical Anthropology/Biological Anthropology**

Theories of Biological Evolution - Lamarckism and Neo-Lamarckism, Darwinism and Neo-Darwinism, Synthetic Theory of Evolution;

Cell Structure, RNA, DNA Structure and Function; DNA Replication; Protein Synthesis; Human Chromosomes; Chromosomal Aberrations;

Human Blood Group Systems ABO and Rh

Mendel's laws Linkage and Crossing Over, Inheritance Pattern;

Population Genetics; Evolutionary forces - Mutation, Genetic Drift, Gene Flow, Natural Selection, Cell Divisions; Mitosis, Meiosis.

General Characteristics of Primates. New World Monkeys and Old World Monkeys: Anatomical Changes in Becoming a Biped – Vertebral Column and Skull, Pelvis and Birth Canal, Leg, Foot, Arm Morphological differences between apes and man.

General Characteristics of Early Hominids – Australopithecus, Homo Erectus, Neanderthal Man, Archaic Homo Sapiens.

Human variation and Adaptation: Racial Classification, Human Skeleton, Anthropometry – Somatometry, Osteometry, Craniometry; Human Growth and Development. Human health and ecology.

Methods of Basic Data Analysis- Central tendency, Dispersion, Normal distribution, Chi-square test.

### **Social and Cultural Anthropology**

Major branches of Anthropology

Social and Cultural Anthropology: Concept, Definition and its Scope, Ethnology and Ethnography.

Society - Social Group, Definition and characteristics of society, Social Institutions, Pre-literate Societies, Complex societies.

Social Stratification - Age, Caste, Class, Gender, Division of Labour, Varna and Caste System in India. Social Change - Theories, factors of social change, Industrialization, modernization and developments.

Marriage - Forms of Marriage, ways of acquiring mate, Functions of Marriage, Endogamy, Exogamy, Residence after Marriage, Preferential forms of marriage in traditional societies.

Kinship - Function, Consanguineal and Affinal, Kinship Terminology and Kinship

Behavior, Lineage, Clan.

Family - Nuclear, Joint and Extended, Characteristic and Functions. Theories on origin of Family, Patriarchal and Matriarchal Family.

Religion - Origin of Religion, Animism, Animatism. Magic or primitive science. Types of Magic – Contagious, Imitative, Black and White Magic.

Economy - Hunting and Gathering, Subsistence economy, Reciprocity, Barter system, Redistribution, Kula Ring, Potlatch.

Polity - State and Stateless Society, Chiefdom, Political organization in pre-industrial society, power and dispute settlement, Norms, Mores and Penalty measures, oath and ordeals in Customary law.

Culture

Definition and characteristics of culture, material and non-material culture, Rites and rituals, Rites de passage, Sacred Complex, Sanskritization and Westernization, Little and great tradition, Enculturation, Acculturation, Assimilation, Cultural lag.

### **Thought And Theories In Social-Cultural Anthropology**

Social Evolution – Classical, Neo evolution and cultural ecology, School of Diffusion, Functionalism, Neo- Functionalism, Structural-Functionalism, Structuralism, Culture pattern, Ethnocentrism, Historical Particularism and Cultural Relativism.

Contribution of Social-Cultural Anthropologists:

E.B. Tylor, L.H. Morgan, Julian Steward, Leslie White, B. Malinowski, Radcliffe Brown, Franz Boas, Margaret Mead, Ruth Benedict, Levi Strauss, Edmund Leach , M.N. Srinivas, L.P. Vidyarthi, S.C. Dube, D.N. Majumdar, N.K. Bose, G.S. Ghurye.

Concept of Tribe and Constitutional Safeguards to Scheduled Tribes

Linguistic Anthropology: Structure of language- Phoneme, morphemes, sentence, grammar, script. Linguistic classification of Indian population.

Role of applied anthropology in administration, policy and public health.

Fieldwork tradition in Social Anthropology

Fieldwork – Rapport building, Primary and secondary data, questionnaire and schedule, observation, case study method and Interview

### **Archaeological Anthropology**

History and growth; Aims, scope;

Prehistoric Culture – Definition and bases of classification;

Major stages – Pleistocene and Holocene, Plio-Pleistocene boundary; Major environment and climatic changes of Pleistocene - glacial, pluvial

Dating –Relative dating - Stratigraphy, Pollen analysis, Absolute Dating methods - Radiocarbon-14, Potassium-Argon, Dendrochronology, Thermoluminescence. Limitations of Relative dating and Absolute Dating methods.

Prehistoric Lithic tool typology and technology-Lower palaeolithic-pebble tools, chopper and chopping tools, hand axes and cleaver;

Middle palaeolithic – clactonian, Levalloisian and Mousterian flakes, scrapers, point; Upper palaeolithic –knife, borer, burin, points; Mesolithic – microlithic;

Neolithic –celt (axe, adze), ring stone, grinding stone.

Block on block or anvil technique, direct percussion or stone hammer technique, cylinder or hollow hammer technique, clactonian technique, Levalloisian technique, discoid core or Mousterian technique, blade or fluting technique, pressure flaking technique, step flaking technique, retouch, grinding and polishing.

Pleistocene and Holocene prehistoric cultures – Lower palaeolithic – pebble and Acheulian tool culture (Oldowan, Sohan, Madrasian, Attirampakkam, Choukoutien); Middle palaeolithic – Mousterian (Belan valley, Bhimbetka, Nevasa); Upper palaeolithic – (Birbhanpur, Bagor, Adamgarh, Sarainahar Rai); Mesolithic –Langhnaj & Bhimbetka; Neolithic –Burzahom, Brahmagiri, Sangakallu, Daojali Hading.

Chalcolithic Cultures in India: distribution, habitat and economy; Characters and antiquity of Ahar.

Indus Valley Civilization - Extent, features and causes of decline of Indus civilization Iron Age in India – antiquity, stages; PGW and NBP;

Megalithic – concept and types: Menhir, avenue, dolmen, cairn, cist.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A. ECONOMICS**

**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## **Economics**

### **Micro Economics:**

- Consumer Theory or Behavior: Demand, Utility, Indifference Curve, Revealed Preference Theory, Consumer Surplus
- Production Theory: Production Function, Law of Variable Proportions, Returns to Scale, Cost Function, types and concepts
- Price and Output determination in Market: Perfect and Imperfect Competition (Monopoly, Price Discrimination, Monopolistic, Duopoly and Oligopoly models) General Equilibrium, Efficiency and Welfare: Equilibrium and efficiency under pure exchange and production; overall efficiency and welfare economics, externality

### **Macro Economics:**

- National Income Accounting
- Income and Output Determination: Aggregate Demand and Aggregate Supply, Effective Demand Principle, Classical and Keynesian Theory

### **Money and Inflation:**

- Demand and Supply of Money, Money Multiplier and High-Powered Money, Credit Creation, Role of Reserve Bank of India and Commercial Banks, Quantitative Theories of Money, Philip's Curve
- Monetary and Fiscal Policy of India and its role.

### **Consumption and Investment Function:**

- Permanent, Relative and Life Cycle Hypothesis, determinants of business fixed investment; residential investment and inventory investment, Multiplier and Accelerator
- Open Economy Models: Mundell and Fleming Model (IS, LM and BP curve) , Balance of Payments, exchange rate determination, Purchasing Power Parity
- Economic Growth: Harrod-Domra Model, Solow Model

### **Statistical Methods in Economics:**

- Mean, Mode, Median, Dispersion, Skewness, Quartile Deviation, Average Deviation, Standard Deviation
- Correlation
- Simple Regression Model Probability Distribution Sampling

### **Mathematical Methods in Economics:**

- Sets and Vector
- Functions of one and several real variables Single and Multi-variable optimization
- Integration of functions
- Difference equations
- Determinants Matrix
- Linear Programming Probability
- Differential Equations

### **Indian Economy:**

#### **Overview of colonial economy:**

- Macro Trends: National Income; population; occupational structure.

- Agriculture: Agrarian structure and land relations; agricultural markets and institutions – credit, commerce and technology; trends in performance and productivity; famines. Railways and Industry: Railways; the de-industrialization debate; evolution of entrepreneurial and industrial structure; nature of industrialization in the interwar period; constraints to industrial breakthrough; labor relations.
- Economy and State in the Imperial Context
- The imperial priorities and the Indian economy; drain of wealth; international trade, capital.
- Flows and the colonial economy – changes and continuities; government and fiscal policy.
- New Economic Policy:
- Public Economics: Public and Private Goods, Externalities, Budget, Deficits, Public Debt, Fiscal Federalism in India,
- Taxation: its economic effects; dead weight loss and distortion, efficiency and equity considerations, tax incidence, optimal taxation.
- International Trade Theories: Adam Smith, Ricardo, Heckscher-Ohlin model and New Trade Theories

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A. HISTORY / M.A. ANCIENT INDIAN  
HISTORY, CULTURE AND  
ARCHAEOLOGY  
(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
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UTTARAKHAND**

## **Ancient History of India (10000 BCE to 1206 CE)**

Stone Age (Paleolithic, Mesolithic and Neolithic age), Chalcolithic Age, Indus Valley Civilization, Aryan & Vedic Age, State formation in Ancient India, Rise of Ancient Indian Empire (Haryank, Shishunag, Nanda Dynasty), Age of Religion (Buddhism & Jainism), Mauryan Age (Social, Political and Culture), Post - Mauryan Period (Indo-Greeks, Sakas, Kushanas, Western Kshatrapas), Early State and Society in South India (Kharavela, Satavahanas, Tamil States of the Sangam Age; Administration, Economy, Art and Architecture). Guptas, Vakatakas and Vardhanas (Administration, Society and Culture), Regional States during the Gupta Era: The Kadambas, Pallavas, Chalukyas of Badami; Polity and Administration, Literature; growth of Vaishnava and Shaiva religions. Palas, Senas, Rashtrakutas, Paramours, Polity and Administration.

## **Early Medieval India (750 AD- 1206 AD).**

Major political developments in Northern India, the rise of Rajputs; The Cholas: Administration, Village Economy and Society; Indian Feudalism; Agrarian economy and urban settlements; Trade and Commerce.

## **Medieval History of India (1206-1707 AD)**

Establishment of Delhi-Sultanate Rule (Mamulak, Khilji and Tughlaq dynasties), Administration of Delhi Sultanate (Military reform, Iqta system, etc.), Art & Architecture Vijaynagar and Bahamani Kingdom (Rise, Social, Economic and Administration), Bhakti Movement, Sufi Movement; Culture: Persian literature, Establishment of Mughal Empire (Administration, Society, Political and Literature), Expansion of Mughal Empire (Babar to Aurangzeb), Rise of Sur dynasty, Decline of Mughal Empire.

## **Modern History of India (1707 to 1947)**

Modern Historiography, Colonialism in India, British Raj & British Expansion in India, Imperialism, Social and Cultural Development, Structure of British Administration (all Acts) Economic impact in British Period (Settlement), Industrialization, Social and Religious Reform movement (Ram Mohan Rai, Swami Dayanand, Jyoiba Phule etc.), National movement in India, Mass Movement and British Rule, Indian National Congress Summit, Gandhian Movement, Constitutional Development, Struggle for Freedom. European History, French, English, American, and Russian Revolutions, World Wars I and II.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A. PHILOSOPHY**

**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

# **Philosophy**

## **Section: I**

### **Metaphysics (Indian and Western)**

1. The Concept of God
2. Free Will and Determinism
3. Self and None-self
4. Consciousness
5. Personal Identity
6. Substance and Qualities
7. Being and Becoming
8. Appearance and Reality
9. Mind and Body Problem
10. Universals and Particulars
11. Realism and Idealism
12. Essence and existence

## **Section: II**

### **Epistemology(Indian and Western)**

1. Theories of Truth
2. Theories of Error
3. Definitions of Knowledge
4. Knowledge by acquaintance and Knowledge by Description
5. Sources of Knowledge
6. Skepticism
7. Justification of Knowledge: Foundationalism, Anti-foundationalism, and Coherentism
8. Knowing that and knowing How
9. Problem of Induction
10. A-priori Knowledge

### **Section:III Ethics(Indian and Western)**

Questions will be from both Indian and Western philosophical perspective.

1. Theories of Normative Ethics: Utilitarianism, Kantian Deontology, Virtue ethics, Social contract theory, care ethics.
2. Theories of Meta-ethics: Relativism, Non-naturalism, Emotivism, Universal Prescriptivism,
3. Themes of Applied Ethics: Abortion, Euthanasia, Surrogacy, Capital punishment, Animal and
4. Environment ethics
5. Thoughts of Indian ethical tradition: Nature of Dharma, Mokṣa, Puruṣārthas, R̥ṇa, and themes from Buddhist and Jain ethics

## **Section: IV**

### **Traditional Logic**

1. Inductive Logic
2. Analogical Reasoning
3. Causal Reasoning
4. Categorical proposition
5. Categorical syllogisms

### **Deductive Logic**

1. Symbolic Logic

2. Methods of Deduction
3. Quantification Logic
4. Informal Fallacies: Indian and Western
5. Types of Arguments

**Section: V**

**Social and Political Philosophy**

1. Theories of Justice
2. Liberty and Equality
3. Democracy
4. Freedom and Responsibility
5. Rights and Duties
6. Feminism
7. Global justice
8. Marginalization and Discrimination
9. Gandhi: Non-violence, Satyagraha, Swaraj, Nationalism, State
10. Pt. Deen Dayal Upadhyay: EkatmManavavad

# **Philosophy**

## **Section: I**

### **Metaphysics (Indian and Western)**

13. The Concept of God
14. Free Will and Determinism
15. Self and None-self
16. Consciousness
17. Personal Identity
18. Substance and Qualities
19. Being and Becoming
20. Appearance and Reality
21. Mind and Body Problem
22. Universals and Particulars
23. Realism and Idealism
24. Essence and existence

## **Section: II**

### **Epistemology (Indian and Western)**

11. Theories of Truth
12. Theories of Error
13. Definitions of Knowledge
14. Knowledge by acquaintance and Knowledge by Description
15. Sources of Knowledge
16. Skepticism
17. Justification of Knowledge: Foundationalism, Anti-foundationalism, and Coherentism
18. Knowing that and knowing How
19. Problem of Induction
20. A-priori Knowledge

### **Section:III Ethics (Indian and Western)**

Questions will be from both Indian and Western philosophical perspective.

6. Theories of Normative Ethics: Utilitarianism, Kantian Deontology, Virtue ethics, Social contract theory, care ethics.
7. Theories of Meta-ethics: Relativism, Non-naturalism, Emotivism, Universal Prescriptivism,
8. Themes of Applied Ethics: Abortion, Euthanasia, Surrogacy, Capital punishment, Animal and
9. Environment ethics
10. Thoughts of Indian ethical tradition: Nature of Dharma, Mokṣa, Puruṣārthas, Ṛṇa, and themes from Buddhist and Jain ethics

## **Section: IV**

### **Traditional Logic**

6. Inductive Logic
7. Analogical Reasoning
8. Causal Reasoning
9. Categorical proposition
10. Categorical syllogisms

### **Deductive Logic**

6. Symbolic Logic

7. Methods of Deduction
8. Quantification Logic
9. Informal Fallacies: Indian and Western
10. Types of Arguments

**Section: V**

**Social and Political Philosophy**

11. Theories of Justice
12. Liberty and Equality
13. Democracy
14. Freedom and Responsibility
15. Rights and Duties
16. Feminism
17. Global justice
18. Marginalization and Discrimination
19. Gandhi: Non-violence, Satyagraha, Swaraj, Nationalism, State
20. Pt. Deen Dayal Upadhyay: EkamManavavad

**Section: VI**

**Introduction to Research**

1. Meaning and Definition
2. Objectives of Research
3. Types of Research
4. Hypothesis and its types
5. Steps of Report Writing

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A. POLITICAL SCIENCE**  
**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY**  
**(A CENTRAL UNIVERSITY)**  
**SRINAGAR (GARHWAL)**  
**UTTARAKHAND**

## **Political Science**

### **Western Political Philosophy:**

- Plato
- Aristotle
- Machiavelli
- Hobbes
- Locke
- Rousseau
- J.S. Mill
- Karl Marx
- John Rawls

### **Indian Political Thought:**

- Ram Mohan Roy
- Gandhi
- Ambedkar
- Savarkar
- Kautilya

### **Political theory:**

- Concepts of liberty
- Equality
- Justice
- Sovereignty
- Citizenship and Gender
- Democracy human Rights, State
- Contemporary Issues
- Feminism Ideology

### **International Relations:**

- Realism, Neorealism, Liberalism and Neoliberalism
- Cold War politics
- NAM, SAARC, UNO, ASEAN, EU
- India's foreign policy particularly with China
- Pakistan and USA.

### **Indian Government and Politics:**

- Preamble
- Making of the Constituent Assembly
- Parliament
- Cabinet
- Prime Minister
- President
- Fundamental Rights
- Fundamental Duties
- Directive Principles of State Policy
- Amendments
- Governor
- State Government
- Federalism

- Political Parties (National and Regional)
- Elections
- Local Government
- Judiciary
- Governance

### **Comparative Government and Politics**

- Political Culture
- Political Parties
- Electoral Systems
- Approaches/ Models
- Types of Regimes

#### Public Policies in India

- Models
- Process
- Types

### **General issues of contemporary relevance.**

- Global Justice
- Nationalism
- Climate Change

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A. PSYCHOLOGY**

**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## **PAPER-1: FOUNDATIONS OF PSYCHOLOGY**

### **Unit 1:** Introduction:

Psychology: a science and a perspective, origin and development of psychology, psychology in India, methods.

### **Unit 2:** Cognitive processes:

Perception, nature of perception, laws of perceptual organization, learning conditioning, observational learning memory-processes, information processing model, techniques for improving memory.

### **Unit 3:** Motivation and Emotion:

Motives: biogenic and sociogenic

Emotions: aspects of emotions, key emotions

### **Unit 4:** Personality and Intelligence:

Personality: nature, theories

Intelligence: nature, theories

## **PAPER-2: INTRODUCTION TO SOCIAL PSYCHOLOGY**

### **Unit 1:** Introduction:

Brief history of social psychology (special emphasis on India), Scope of social psychology, levels of social behavior, approaches towards understanding social behavior

### **Unit 2:** Individual level processes:

Person perception: attribution-theories, biases and errors

Attitude: formation, change and resistance to change

### **Unit 3:** Interpersonal processes:

Interpersonal attraction, pro-social behavior, aggression

### **Unit 4:** Group dynamics:

Key aspects of groups, cooperation and conflict, group decision making.

## **PAPER-3: PSYCHOLOGICAL DISTRESS AND WELL BEING**

### **Unit 1: Basic Concepts:**

Psychological distress, abnormality and psychological well-being

### **Unit 2: Theoretical perspectives:**

Biological, familial, cultural, behavioural, cognitive and psychodynamic.

### **Unit 3: Clinical states:**

Anxiety disorders-Obsessive compulsive disorder, mood disorders-Unipolar, Bipolar, and schizophrenia: Paranoid and Catatonic.

### **Unit 4: Dealing with psychological distress:**

Coping strategies, personal growth and well-being

## **PAPER-4: STATISTICAL METHODS AND PSYCHOLOGICAL RESEARCH**

**Unit 1: Introduction:** Scales of measurement, graphical representation of data

**Unit 2: Data analysis:** Measures of central tendency: Mean, median, mode (properties and computation). Standard deviation: properties and computation.

Correlation: Pearson method, properties of Normal Probability Curve (NPC).

**Unit 3: Psychological Testing:** Introduction to psychological testing, characteristics of test, Reliability, Validity, Norms, types of tests.

**Unit 4: Qualitative methods:** Interview, observation, case study

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A. SOCIOLOGY**

**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

# Sociology

## **Basic Concepts in Sociology:**

- **UNIT – I**  
**Sociology:** Definition, nature and scope; Relationship with other Social Sciences: Psychology, Anthropology, History, Economics and Political Science.
- **UNIT – II**  
**Basic Concepts:** Social Structure, Society, Social Organization, Community, Association, Norms, Values.
- **UNIT – III**  
**Status and Role:** Types of status and role and their interrelationship
- **UNIT – IV**  
**Socialization:** Meaning, types, processes and agencies. Theories of self (Freud, Cooley and Mead) Culture: Meaning, characteristics; material and non-material culture; cultural lag. Culture and civilization.

## **Social Processes and Problems:**

- **UNIT – I**  
**Social Processes:** Cooperation, Accommodation, Assimilation, Competition and Conflict.
- **UNIT – II**  
**Social Groups:** Definition, characteristics, types (primary and secondary; in-group and out- group; Reference group and Peer group).
- **UNIT – III**  
**Social Institutions:** Marriage; Family; Kinship, Education, Religion and Economy: Meaning and Functions
- **UNIT – IV**  
**Social Control:** Meaning, Significance and agencies.  
**Social Deviance:** Meaning, characteristics, forms and factors.

## **Society, Culture and Social Change:**

- **UNIT – I**  
**Societies:** Types and Characteristics- Tribal, Rural, Urban, Industrial and Post-Industrial.
- **UNIT – II**  
**Culture:** Definition and Nature; Types- Material and Non- Material.  
**Socialization:** Importance, Process and Stages.  
**Social Control:** Types and Means
- **UNIT – III**  
**Processes of Social Change:** Characteristic Features of Industrialization, Modernization, Globalization and Secularization.
- **UNIT – IV**  
**Social Stratification:** Types, theories of stratificationsocial mobility and its types.

## **Indian Society:**

- **UNIT – I**  
**Evolution of Indian Society:** Traditional basis of Indian Society; Unity and Diversity in India; India as a Pluralistic Society.
- **UNIT – II**  
Caste, theories of Caste system and its Changing Dimensions in India; Dominant caste.
- **UNIT – III**  
**Processes of Social Change in India:** Sanskritization, Westernization, Modernization, Prophetization and Universalization.
- **UNIT – IV**  
**Social Issues and Problems:** Gender Discrimination, Problems of Women; Problems of Dalits, OBCs and Minorities; Affirmative Actions.

## **Social Research:**

- **UNIT – I**  
**Social Research:** Definition, Nature and Purpose; Steps in Social Research; Problem of Objectivity and Subjectivity in Social Research.
- **UNIT – II**  
**Research Methods:** Research Designs; Social Survey; Hypothesis- Types & significance; Sampling and Sampling Procedure.
- **UNIT – III**  
**Techniques of Data Collection:** Observation, Interview, Questionnaire, Schedule and Case Study; Types of Data.
- **UNIT – IV**  
**Statistical Analysis and Use of Computer in Social Research:** Classification and Tabulation of data; Measures of Central Tendency: Mean, Median and Mode; Use of Computers in Social Research.

## **Social Problems in India:**

- **UNIT – I**  
**Social Problem:** Meaning and Definition; Importance of the Study of Social Problems; Sociological Perspectives on Social Problem-Anomie and suicide (Durkheim) Labeling (Becker).
- **UNIT – II**  
**Structural Issues:** Inequality of Caste, Class, Gender and Ethnicity.
- **UNIT – III**  
**Problems and Issues:** Female Feticide, Dowry, Domestic Violence, Divorce; Problems of Aged.
- **UNIT – IV**  
**Social Disorganization:** Crime, Juvenile Delinquency, Corruption, Communalism, Drug Addiction, Suicide, Nepotism, Prostitution and AIDS.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**  
**M.A. SOCIAL WORK**  
**(TWO YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## Social Work

### **Unit – I**

#### **Social concepts:**

Family, marriage, neighborhood, community, organization, culture, caste, clan, values, culture, traditions, practices, norms, lifestyle, health, socialization, needs.

### **Unit – II**

#### **Economic concepts:**

Economy, market, production, distribution, demand, supply, labor, income, expenditure, globalization, privatization, liberalization, industrialization.

### **Unit – III**

#### **Political concepts:**

Politics, democracy, decentralization, panchayat, legislature, executive, judiciary, human rights, social justice, freedom, liberty, fundamental rights & duties.

### **Unit – IV**

#### **Psychological concepts:**

Individual, self, behavior, mental functions, attitude, emotions, beliefs, self-esteem, intelligence.

### **Unit – V**

#### **Environmental concepts:**

Environment, atmosphere, pollution-air, water, sound; natural resources - air, water, soil, forest; disaster

### **Unit- VI**

#### **Legal concepts:**

Constitution, law, petition, litigation, First-hand information report (FIR),

## **Unit –VII**

### **Social reform, Social movement, Social work:**

Concepts: Social reform, social movement, revolution, Satyagraha, non-violence, truth, justice, peace, social work, social development;

Bhakti movement –

Guru Nanak, Kabir, Basaveshwar

Social reformers –

Raja Ram Mohan Roy, Swami Vivekananda, Dhondo Singh Karve

Freedom movement –

Gandhi, Subhash Chandra Bose

Dalit & Social movement –

Ambedkar, Medha Patkar, Anna Hazare, Aruna Roy

Non-government organizations, Corporate.

## **Unit – VIII**

### **Social change and Social transformation:**

Concepts:

Social change, social transformation,

## **Unit – IX**

### **Sustainable technologies:**

Forms of sustainable technologies: solar, wind, bio-gas, bio-mass, bio-diesel;

Pollution control through technologies.

# SCHOOL OF COMMERCE

**UNIVERSITY ENTRANCE EXAMINATION**  
**[SESSION - 2026-27]**

**SUBJECT**

**M.COM. (TWO YEAR/ ONE YEAR)/**  
**PG DIPLOMA IN BUSINESS ADMIN.**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY**  
**(A CENTRAL UNIVERSITY)**  
**SRINAGAR (GARHWAL)**  
**UTTARAKHAND**

## **Micro Economics**

1. Definition Nature and Scope of Economics, Marshall & Robins Views. Utility of Economics, Micro vs. Macro Economics, Economic Theory and Business Decisions.
2. Utility Analysis, Consumer Behaviour, Consumer's Equilibrium. Traditional Approach and Indifference Curve and Analysis: Price Income and Substitution Effects. Some Application of Indifference Curve Techniques, Demand and Elasticity of Demand.
3. Production – Equal Product Curves, Scale of Production: Input-Output Relationship, Cost Curves; Variable Cost Conditions and Law of Variable Proportions, Producers' Equilibrium. Product Pricing.
4. Market Format, Perfect Competition, Monopoly and Imperfect Competition. Pricing of Factors of Production, Concept of Marginal Productivity, Theories of Rent, Wages, Theories of Interest and Profit.

## **Currency and Banking**

1. Functions Significance of Money, Various Forms of Money, Causes, Remedies and Effects of Inflation, Deflation and Reflation Indian Money Market, Principles Methods of Note Issues, Monetary Standard – Gold Standard, Bi-metallize and Managed Currency Standard.
2. Meaning and Significance of Credit. Factors Influencing the Volume of Credit in Country, Credit Creations of Bank, Credit Control by RBI.
3. Functions of Commercial Bank, Types of Banks, Unit and Branch Banking System, Concept of Mix Banking, Central Bank and its Functions, Reserve Bank of India, State Bank of India, Regional Rural Banks, Progress of Nationalized Banks in India
4. Meaning, Objective and Methods of Foreign Exchange and Factors Causing Fluctuation in Exchange Rate.

## **Essential of Management**

1. Nature, Scope and Functions of Management, Evolution of Management Thought, Various Approaches to Management, Functions of a Manager, Introduction to Corporate Social Responsibility.
2. Planning: Objective, Nature and Process of Planning, SWOT Analysis, Formulation of Plans, Decision Making Process. Organizing: Objectives, Nature and Process of Organizing Formal and Informal Organization, Authority and Responsibility, Delegation and Empowerment, Centralization and Decentralization, Concept of Departmentation, Organization Chart, Line, Staff and Functional Relationships.
3. Staffing: Concept, Manpower Planning, Recruitment, Selection, Training and Development, Performance Appraisal. Directing: Concept and Techniques of Motivation and Leadership. Process and Barriers to Communication.
4. Controlling: Concept, Need and Techniques. Controlling: Concept, Process and Techniques and Control, Management by Objectives (MBO) Management by Exception (MBE), Essentials of Effective Control, Managerial Effectiveness.

## **Accounting**

1. Accounting an Introduction: Accounting Standard – National and International, Partnership Accounts – Admission, Retirement & Death and Dissolution of Partnership Firm.

2. Absorption, Amalgamation and Reconstruction of Companies, Liquidation of Companies and Preparation of a Liquidator's Final Statement of Account.
3. Hire Purchase System and Instalment Accounts, Royalties Accounts, Insolvency Accounts.
4. Branch Account: Insurance Claim for Loss of Stock and Loss of Profit.

### **Business Organization**

1. Definition, Nature and Scope of Business, Business and Society, Social Responsibility of Business, Factors Determining the Size of Business Unit. Forms of Business Organization – A Comparative Study.
2. Production Management, Rationalization & Methods of Remuneration.
3. Organization Process – Importance, Principles, Various Aspects of Organization, Organization Structure, Departmentation, Line and Staff Relationships, Span of Control, Delegation of Authority, Decentralization.
4. Produce and Stock Exchange: Its Organization and Economic Functions.

### **Business Statistics**

1. General – The Nature and Scope of Statistics: Definition of Statistics. Law of Statistical Regularity: Law of Inertia of Large Numbers. Probability and Sampling. Limitations of Statistics.
2. Methods of Statistical Enquiry – Types and Characteristics of Units. Methods of Collection of Data; Questionnaire and Schedule; Proximations and Accuracy, Errors and their Effects.
3. Classification and Tabulation – Objects, General- Rules for the Construction of Tables; Statistical Series.
4. Measure of Central Tendency – Mean Mode, Median, Quartile Harmonic and Geometric Mean.
5. Measurement of Dispersion and Skewness – Range, Quartile Deviation, Mean Deviation, Standard Deviation and their Coefficients; Measures of Skewness.
6. Correlation Analysis – Graphic Method, Scatter Diagram, Karl Pearson's Coefficient of Correlation, Spearman's Ranking Method, Lag and Lead, Probable and Standard Error.

### **Business Law**

Main Principles of Indian Law Relating to:

1. Contract Act 1872
2. Agency, Sale of Goods 1930
3. Partnership, Negotiable Instruments and Hundis and Consumer Protection Act 1986

### **Cost Accounting**

1. Definition, Nature, Scope and Significance, Cost Unit, Cost Centre, Elements of Costs, System of Ascertainment of Cost, Control and Ascertainment of Materials, Labour and Overhead Costs, Allocation, Apportionment and Absorption of Overheads.
2. Single Output or Unit Costing, Contract and Job Costing, Calculation of Tender, Quotation, Estimated Price, Process and Operating Costing.
3. Marginal Costing – its use in Management Standard Costing, Variance Analysis.
4. Integrated Accounts.

5. Reconciliation of Cost and Financial Accounts, Cost Accounting/ Cost Control Accounts, Interfirm Comparison.

### **Company law**

1. Company: Definition, Classification, Incorporation, Memorandum of Association, Articles of Association. Doctrine of Constructive Notice, Doctrine of Indoor Management, Commencement of Business. Company Management: Appointment, Rights and Obligations of Directors, Managers and Secretary.
2. Prospects, Definition and Contents of Prospectus, Liability for Untrue Statements. Shares: Definition, Share Vs Stock, Classes of Shares, Voting Rights, Issue of Shares at Par, Premium and Discount, ESOP, Bonus, Rights, Buyback, Public Shares at Par, Premium and Discount, ESOP, Bonus, Rights, Buyback, Public Issue, Calls, Forfeiture, Loan and Surrender, Transfer and Transmission, Statutory Restriction on Transfer, Borrowing Power, Mortgages and Changes, Debentures.

### **Insurance**

1. Introduction to Insurance: Purpose and Need of Insurance, Insurance as a Social Security Tool; Insurance and Economic Development, Fundamentals/ Principles of Insurance. Contract of Insurance.
2. Life Insurance – Principles and Practice of Life Assurance. Life Assurance Contract, their Nature and Characteristics, Parties to the Contract and their Rights and Duties. Conditions and terms of Policy. Nominations and Assignment Practice in Connection with Collection of Premium, Revivals, Loans, Surrenders, Claims, Bonuses and Annuity Payments, Mortality Table.
3. Fire Insurance - The Basic Principles of Fire Insurance Contracts. Fire Policy, Conditions, Assignment of Policy, Claims. Marine Insurance – General Principles – Insurable Interest and Value Disclosure Marine Policy and their Conditions, Premium Double Insurance: Assignment of Policy Warranties the Voyage, Loss and Abandonment: Partial Losses and Particular Charges; Salvage; Total Losses and measures of indemnity, Subrogation equation of payments, types of annuities; Present Value and Amount of an Annuity, Including the Case of Continuous Compounding; Analysis of Annuity; Valuation of Simple Loans and Debentures; Problems Relating to Sinking Funds.

### **Income Tax Law and Accounts**

1. Basic Concepts: Income, Agricultural Income, Casual Income, Assessment Year Previous Year, Gross Total Income, Total Income Person. Tax Evasion, Avoidance and Tax Planning. Basic of Charge; Scope of Total Income, Residence and Tax Liability, Income which does not form Part of Total Income. Deduction from Gross Total Income.
2. Head of the Income: Salaries; Income from House Property; Profit and Gains to Business or Profession. Capital Gains; Income from Other Sources.
3. Computations of Total Income of an Individual, H.U.F and Firm.
4. Deemed Income: Aggregation of Income, Set-off and Carry Forward of Losses; Tax Authorities; Assessment Procedures.

### **Contemporary Audit**

1. Introduction: Meaning and objectives of Auditing: Types of Audits; Internal Audit. Audit Process: Audit Programmed; Audit and Books; Working Papers

- and Evidences; Consideration for Commencing an Audit; Routine Checking and Test Checking. Internal Check System: Internal Control.
2. Audit Procedure: Vouching; Verification of Assets and Liabilities. Audit of Limited Companies: Company Auditor- Appointment, Powers, Duties, and Liabilities.
  3. Auditing Standards – Appointment, Power, Duties and Liability of Auditor. Broad Outlines of Company Audit and Auditor’s Report. Special Audit – Banking Companies, Educational Institutions, Insurance Companies. Investigation, Audit of Non-profit Organization, Divisible Profit & Dividend.
  4. Recent Trends in Auditing – Nature and Significance of Cost Audit; Tax Audit, Management Audit, Computerized Audit.

### **Indian Economic Structure**

1. Nature of Indian Economy Features of a Developing Economy. Characteristics and Problems of Indian Economy. Objectives of Economics Planning in India. India’s Five-Year Plans – Achievements and Failures. Indian Agriculture – Its Features and Problems. Agricultural Development in Planned Era. Green Revaluation, Agricultural Marketing, Rural Poverty and Indebtedness. Rural Industrialization. Rural Development Programmed, Cooperative Movement.
2. Population Growth and Population Explosion. Population Policy and Programmed. Problem of Unemployment. Forms of Unemployment. Employment Programmed and Poverty Alleviation.
3. Large Scale, Small Scale and Cottage Industries. Industrial Development during Five Year Plans. Public Sectors and Private Sector, Industrial Relations, Industrial Policy. Industrial Sickness, Industrial Finance. Money Market and Capital Market Structure. Capital Formation, Indian Money Market and Fiscal Policies, Deficit Financing and its Implications.
4. Problems of Economic Development in Uttarakhand: Migration, Unemployment, Poverty, Poor Infrastructure, Poor industrial development, Backwardness and Regional Disparity in Uttarakhand; Remedies to overcome the problems of Economic Development.
5. Growth Opportunities under Various Sectors in Uttarakhand: Role of Agriculture, Manufacturing & Service Sector in the Economic Development of Uttarakhand: Agro-based and Food Processing Industries, Floriculture and Horticulture, Pharmaceuticals and Biotechnology, Hydropower, Information Technology, Tourism etc.

### **Marketing Management**

1. Introduction: Nature and Scope of Marketing: Importance of Marketing as a Business Function and in the Economy; Marketing Concepts- Traditional and Modern; Selling vs. Marketing; Marketing mix; Marketing Environment.
2. Consumer Behavior and Market Segmentation; Nature, Scope and Significance of Consumer Behavior; Market Segmentation Concept and Importance; Basis for Market Segmentation.
3. Promotion; Methods of promotion; Optimum promotion mix; Advertising Media – their Relative Merits and Limitations; Characteristics of an Effective Advertisement; Personal Selling; Selling as a Career; Classification of a Successful Sales Person; Functions of Salesman.

4. Product: Concept of Product, Consumer and Industrial Goods; Product Planning and Development; Packaging – Role and Functions; Brand name and Trade Mark; after Sales Service; Product Life Cycle Concept. Price: Importance of Price in the Marketing mix; Factors Affecting Price of a Product/ Service; Discounts and Rebates.
5. Distribution Channels – Concept and Role; Types of Distribution Channels; Factors Affecting Choice of a Distribution Channel; Retailer and Wholesale; Physical Distribution of Goods; Transportation; Warehousing; Inventory Control; Order Processing.

### **Macro- Economics**

1. Concept – Definition and Scope of Macro-Economics, Statics and Dynamics, The Circular Flow of Income. The Analysis and Measurement of Economic Activity – National Income Accounting – Concept and Definitions of National Income. Various Component of National Income, Methods of Measurement of National Income and Welfare.
2. The consumption function – The Keynesian Consumption Function, Relative Income Hypothesis, Permanent Income Hypothesis Multiplier and the Process of Income – Propagation. The Investment Function – Autonomous and Induced Investment. Government and the Theory of Income Determination – Government Purchases and Income, Taxes and Equilibrium Level of Income, Tax Multiplier Determination of the Equilibrium Level of Income – The Simple Keynesian Model.
3. The Derivation and Shift in IS and LM Curves, the Interaction between IS and LM Curves. The Acceleration Principle. Theories of Employment – Say’s Law of Market and Classical Theory of Employment, Saving Investment Analysis. An Outline of Keynesian Theory of Employment.
4. Theory of Inflation – Concepts of Inflation, Inflationary Gaps Demand Pull and Cost Push Inflation. The Philips Curve, Effects of Inflation, Anti-Inflation Policies – Monetary and Fiscal Policies. Fluctuation and Growth – Schumpeter, Samuelson, Hicks. Theories of Population -Malthusian Theory and Theory of Optimum Population.

### **Development Banking**

1. Meaning, Determinant and Obstacles of Economic Development, Sources and Problems of Rural and Industrial Finance.
2. Meaning Objective, Characteristics and Functioning of Development Banks, Difference between Commercial and Development Banks.
3. Role of Commercial Banks in Agricultural and Industrial Finance. Terms Lending Operations of Land Development Banks.
4. National Bank for Agricultural and Rural Development (NABARD) – Objectives Organisation and Functions.
5. Structure of Development Banks in India, Progress of these Banks (terms lending institutions) and Deficiencies in their Working.
6. National Level Financial Corporation – IFCI, IDBI, ICICI & IRBI – their Objectives Functions and Evaluations of Performance.
7. Capital Market in India & Industrial Growth – Structure, Present Position, Problems and Steps taken by the Government to Active and Capital Market.

## **Basics of computer**

1. Introduction: Basic computer concepts; Meaning of computers; Types of computers; Essential components of a computer: Hardware and Software; Characteristics and uses of computer; Input Devices and Output Devices; Central Processing Unit (CPU); Memory Unit; Storage Devices; Computer Hardware setup: Setting up a Laptop Computer and Setting up a Desktop Computer.
2. Computer Networks: Meaning of computer network; objectives/ needs for networking; Applications of networking; Basic Network Terminologies; Types of Networks; Network Topologies; Distributed Computing: Client Server Computing, Peer- to- peer Computing; Wireless Networking; Securing Networks: firewall.
3. Operating Systems and Applications: Basic terminologies; Relationship between Hardware and Software; System Software; Operating System: Functions and difference types of Operating Systems; Commonly used Operating Systems; Installing and Starting Windows; Working with Windows; Security feature in Windows; User Account Control; Payment Gateway.
4. Basic Internet Terminologies: I.P. Address, Modem, Bandwidth, Routers, Gateways, Internet Service Provider (ISP), World Wide Web (www), Browsers, Search Engines, Proxy Server, Intranet and Extranet; Basic Internet Services; Internet Protocols, Uses of Internet to Society; Cyber Security.

## **Management Accounting**

1. Introduction to Management Accounting: Meaning, objectives, nature and scope of management accounting; Difference between different forms of accounting: Cost, Financial and Management accounting; Cost control and Cost reduction.
2. Budgetary Control and Standard Costing Systems:
  - (a) Budgeting and Budgetary Control: Concept, objectives, merits and limitations of budget, budgeting and budgetary control; Functional Budgets; Fixed and Flexible budgeting; An overview of different approaches to budgeting: Zero base budgeting, Performance budgeting and Programme budgeting.
  - (b) Standard Costing and Variance Analysis: Meaning, advantages, limitations and applications of standard cost and standard costing; Variance Analysis: material, labour, overheads and sales variances; Control ratios.
3. Marginal Costing: Concept of marginal cost and marginal costing; Absorption versus Marginal Costing: Distinctive features and income determination; Cost-volume-profit analysis; Break-even Analysis: mathematical and graphical approaches; Profit-volume ratio, angle of incidence, margin of safety, key factor, and determination of cost indifference point.
4. Decision Making: Steps in Decision making process; Concept of relevant costs; solving various short -term decision making problems using marginal costing and differential costing techniques: Profitable product mix, Acceptance or rejection of special/ export offers, Make or buy, Addition or elimination of a product line, sell or process further, operate or shut down and Pricing decisions

5. Responsibility Accounting and Ratio Analysis: Responsibility Accounting: Concept, Significance; Different Responsibility Centres; Divisional Performance Measurement: Financial and Non-Financial measures; Analysis of Financial Statement through Ratio Analysis: Computation of various ratios relating to liquidity, solvency, profitability, activity and ratios for investors.

### **Goods & services tax (GST)**

1. Structure, Registration and Exemptions: Constitutional framework of indirect taxes before GST; Rationale for GST; Structure of GST: SGST, CGST, UTGST & IGST; GST Council; GST Network; State compensation mechanism; Registration; Exemptions from GST.
2. Levy and Collection of GST: Scope of 'Supply'; Nature of supply: Inter-State, Intra-State; Classification of goods and services; Composite and Mixed supplies; Composition levy scheme; Place of supply; Time of supply; Value of supply.
3. Input Tax Credit and Reverse Charge Mechanism: Eligible and ineligible input tax credit; Apportionments of credit and blocked credits; Tax credit in respect of capital goods; Availability of tax credit in special circumstances; Reverse Charge Mechanism.
4. Tax Invoice and Payment of Tax: Tax Invoice, Credit and debit notes, and e-Way bills; Payment of taxes; Taxability of e-Commerce.
5. GST Audit, Assessment and Returns: Audit in GST; Assessment: Types of Assessment, Summary and Scrutiny, Payment of Taxes, Maintenance of Records; Various Returns of GST; Submission of Return.

### **Entrepreneurship**

1. Introduction: Entrepreneurs and professional manager; Entrepreneurship: concept, factors responsible for emergence of entrepreneurship; Emergence of entrepreneurial class; Relevance of entrepreneurship in career growth; Theories of entrepreneurship (Hawley, Knight and Schumpeter), Psychological theories- Maslow's and Mc Clelland's Motivation Theories; Problems in the growth of entrepreneurship; Misconceptions and myths about entrepreneurship.
2. Entrepreneurship in India: Concept of business houses and role of business houses and family business in India; The contemporary role models in Indian business: their values, business philosophy and Behavioural orientations; Conflict in family business and its resolution; Initiatives of Government of India to promote entrepreneurship: Entrepreneurial Development Programme (EDP); Start Up India, Stand Up India, Make in India, etc.
3. Entrepreneurship Ecosystem: Role of government, Institutions, industries/entrepreneur's associations and self-help groups in promoting entrepreneurship; Concept, role and functions of business incubators, angel investors, venture capital, start-up finance and private equity fund.
4. Sources of Business Ideas and Tests of Feasibility: Significance of writing the business plan/ project proposal, including feasibility analysis and tests of feasibility; Contents of business plan/ project proposal; Designing business processes, location, layout, operation, planning & control; preparation of project report: various aspects of the project report, such as size of investment, nature of product, sourcing of material, market potential, may be covered;

Project submission/ presentation and appraisal thereof by external agencies, such as financial/non-financial institutions.

5. Regional Economy and Entrepreneurship in Uttarakhand: Economy of Uttarakhand: An overview, present status of micro, small and medium scale enterprises; role of government and other promotional agencies in entrepreneurship development; Women Entrepreneurship: sources of finance, policies governing entrepreneurship and problems of entrepreneurship in the state.

### **E-commerce**

1. Introduction: Meaning, nature, concepts, advantages, disadvantages and reasons for transacting online; types of e- Commerce; e-commerce business models: introduction, key elements of a business model and categorizing major e-commerce business models; forces behind e-commerce.
2. Technology used in e-commerce: The dynamics of World Wide Web and internet: meaning, evolution and features; Designing, building and launching e-commerce website: A systematic approach involving decisions regarding selection of hardware, software, outsourcing vs in-house development of a website.
3. Security and Encryption: The e-commerce security environment: Dimension, definition and scope of e-security; security threats in the e-commerce environment: security intrusions and breaches, attacking methods, like hacking, sniffing, cyber-vandalism etc.; technology solutions: Encryption, security channels of communication, protecting networks and protecting servers and clients; Cyber Crime and offences; Laws relating to cyber-crime: IT Act 2000: Definitions, Main Provisions, Penalties and adjudication, Appellate Tribunal.
4. e-payment System: e-payment Methods: debit card, credit card, smart cards, e-Wallets; payment gateways; Electronic Fund Transfer; Emerging modes and systems of e-payment: M-Paisa, PayPal and other digital currency, UPI Apps, Aadhar-Enabled Payment Systems, BHIM App; Digital signatures: procedure, working and legal position; online banking: meaning, concepts, importance, electronic fund transfer, automated clearing house, automated ledger posting; risks involved in e-payments.
5. On-line Business Transactions: Meaning, purpose, advantages and disadvantages of transacting online; e-commerce applications in various industries, like banking, insurance; payment of utility bills; online marketing; e-tailing: popularity, benefits, problems and features; online services: financial, travel and career, auctions, online portal, online learning, publishing and entertainment; Online shopping: amazon, snapdeal, alibaba, flipkart, etc.

# SCHOOL OF EDUCATION

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT – B. ED.**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## B.Ed. Syllabus 2026

### As per Information Brochure 2025-26

1. प्रश्न पत्र में तीन भाग होंगे। भाग- 1 में सामान्य ज्ञान तथा सामान्य बुद्धि, भाग-2 में भाषा- सामान्य हिन्दी/सामान्य अंग्रेजी तथा भाग- 3 में विशिष्ट अभियोग्यता परीक्षण-कला/विज्ञान/वाणिज्य के प्रश्न होंगे। अभ्यर्थी को भाषा- सामान्य हिन्दी एवं सामान्य अंग्रेजी के प्रश्न पत्र में से किसी एक भाग का चयन करना होगा एवं भाग- 3 में विशिष्ट अभियोग्यता परीक्षण-कला विज्ञान तथा वाणिज्य में से चयनित वर्ग का ही चयन करना होगा।

## 2.

### GENERAL INTELLIGENCE SYLLABUS

#### B.Ed Entrance Examination

#### ● मौखिक तर्कशक्ति (Verbal Reasoning)

1. सादृश्य (Analogy)
  - शब्द सादृश्य (Word Analogy)
  - संख्या सादृश्य (Number Analogy)
  - अक्षर सादृश्य (Alphabet Analogy)
2. वर्गीकरण (Classification / Odd One Out)
  - शब्द (Words)
  - संख्या (Numbers)
  - अक्षर (Letters)
  - प्रतीक (Symbols)
3. श्रृंखला (Series)
  - संख्या श्रृंखला (Number Series)
  - अक्षर श्रृंखला (Alphabet Series)
  - मिश्रित श्रृंखला (Mixed Series)
  - लुप्त पद ज्ञात करना (Missing Term)
4. कोडिंग-डिकोडिंग (Coding-Decoding)
  - अक्षर कोडिंग (Letter Coding)
  - संख्या कोडिंग (Number Coding)
  - मैट्रिक्स कोडिंग (Matrix Coding)
  - प्रतिस्थापन कोडिंग (Substitution Coding)
5. रक्त संबंध (Blood Relations)
6. दिशा ज्ञान परीक्षा (Direction Sense Test)
7. क्रम एवं रैंकिंग (Order & Ranking)
8. न्याय (Syllogism)
9. कथन एवं निष्कर्ष (Statement & Conclusion)
10. कथन एवं धारणा (Statement & Assumption)
11. कथन एवं तर्क (Statement & Argument)

#### 12. कारण एवं प्रभाव (Cause & Effect)

#### ● अमौखिक तर्कशक्ति (Non-Verbal Reasoning)

1. आकृति वर्गीकरण (Figure Classification)
2. आकृति श्रृंखला (Figure Series)
3. आकृति सादृश्य (Figure Analogy)
4. दर्पण एवं जल प्रतिबिंब (Mirror & Water Images)
5. कागज मोड़ना एवं काटना (Paper Folding & Cutting)
6. आकृति पूर्ण करना (Figure Completion)
7. अंतर्निहित आकृतियाँ (Embedded Figures)
8. घन एवं पासा (Cubes & Dice)
9. आकृतियों की गणना (Counting Figures)
10. प्रतिरूप पहचान (Pattern Recognition)

#### ● विश्लेषणात्मक एवं तार्किक तर्कशक्ति (Analytical & Logical Reasoning)

- बैठक व्यवस्था (Seating Arrangement)
- पहेली परीक्षण (Puzzle Test)
- डेटा पर्याप्तता (Data Sufficiency)
- शब्दों का तार्किक क्रम (Logical Sequence of Words)
- इनपुट-आउटपुट (Input-Output)
- निर्णय लेना (Decision Making)
- दावा एवं कारण (Assertion & Reason)
- कार्यवाही का पाठ्यक्रम (Course of Action)

#### ● गणितीय तर्कशक्ति (Mathematical Reasoning)

1. अंकगणितीय तर्क (Arithmetic Reasoning)
2. संख्या संचालन (Number Operations)
3. गणितीय श्रृंखला (Mathematical Series)
4. वेन आरेख (Venn Diagrams)
5. डेटा विश्लेषण (Data Interpretation – Logical Level)

#### ● स्थानिक एवं दृश्य बुद्धिमत्ता (Spatial & Visual Intelligence)

1. स्थानिक अभिविन्यास (Spatial Orientation)
  - वस्तुओं की स्थिति, दिशा एवं दूरी को समझने की क्षमता।
  - Understanding the position, direction, and distance of objects in space.
2. मानसिक घूर्णन (Mental Rotation)
  - किसी आकृति या वस्तु को मन में घुमाकर उसका सही रूप पहचानना।
  - The ability to rotate objects or figures mentally to identify their correct form.
3. प्रतिरूप पहचान (Pattern Recognition)
  - आकृतियों, डिजाइनों या संख्याओं में छिपे पैटर्न की पहचान करना।
  - Identifying hidden patterns in figures, designs, or numbers.
4. मानचित्र-आधारित प्रश्न (Map-Based Questions)
  - मानचित्र के आधार पर दिशा, दूरी एवं स्थान संबंधी प्रश्न हल करना।
  - Solving questions related to direction, distance, and location using maps.

3. विशिष्ट अभियोग्यता परीक्षण तीन प्रकार का होगा  
(1) विशिष्ट अभियोग्यता परीक्षण—कला (2) विशिष्ट अभियोग्यता परीक्षण—विज्ञान  
(3) विशिष्ट अभियोग्यता परीक्षण—वाणिज्य।
4. प्रत्येक विशिष्ट अभियोग्यता परीक्षण के प्रश्न-पत्र स्नातक स्तर के तीन वर्गों (कला/विज्ञान/वाणिज्य) के अनुसार होंगे। अभ्यर्थी को तीनों में से एक जिसमें उसने स्नातक परीक्षा उत्तीर्ण की है उसका चयन करना होगा। विशिष्ट अभियोग्यता परीक्षण में कुल 50 प्रश्न होंगे तथा प्रत्येक प्रश्न 1 अंक का होगा।
  1. विशिष्ट अभियोग्यता परीक्षण—कला में 50 प्रश्न, कला संकाय के विषयों इतिहास, भूगोल, राजनीति शास्त्र, अर्थशास्त्र, समाजशास्त्र आदि से सम्बन्धित बुनियादी ज्ञान एवं अभिरुचि पर आधारित होंगे।
  2. विशिष्ट अभियोग्यता परीक्षण—विज्ञान में 50 प्रश्न, विज्ञान संकाय के विषयों—भौतिक शास्त्र, रसायन शास्त्र, वनस्पति विज्ञान, जीव विज्ञान, गणित आदि से सम्बन्धित बुनियादी ज्ञान एवं अभिरुचि पर आधारित होंगे।
  3. विशिष्ट अभियोग्यता परीक्षण—वाणिज्य में वाणिज्य संकाय के विषयों से सम्बन्धित बुनियादी ज्ञान एवं अभिरुचि पर आधारित होंगे।
4. सभी विषय कला, विज्ञान तथा वाणिज्य की पाठ्यवस्तु हेमवती नन्दन बहुगुणा गढ़वाल विश्वविद्यालय द्वारा अनुमोदित स्नातक स्तरीय पाठ्यक्रम पर आधारित होंगे।

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.ED.**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## M.Ed.

### SYLLABUS FOR M.ED ENTRANCE TEST

#### **UNIT-1–**

Education & its importance, Nature and Functions of Education, Agencies of Education: Formal, Informal and Non-Formal, Vedic Education System, Buddhism and Muslim Education System, Macaulay Minutes & Bentinck's Resolution 1835, Wood's Dispatch 1854, Indian Education-1882, Sadler Commission 1917, Wardha Education Scheme 1937.

#### **UNIT-2 –**

**Constitutional Provisions & Education-** The Preamble of Constitution, Fundamental Rights, Fundamental Duties and Directive Principles of State Policies, National Integration and Sociology of Education,

#### **UNIT-3 –**

**Philosophy of Education:** Naturalism, Idealism, Pragmatism,& Realism, Educational Thinkers: M.K.Gandhi, Aurobindo, J. Krishna Murti, Gijju Bhai, Tagore, John Dewey and J.J.Rousseau,.

#### **UNIT-4-**

**Contemporary Issues Related to Education-** Globalisation, Privatisation and Universalization of Education, Radha Krishnan Commission (1948-49), Mudaliar Commission (1952-53), Kothari Commission (1964-66), National Education Commission, New Education Policy 1986 & National Education Policy 2020 and Right to Education (RTE) 2009. Sarva Shiksha Abhiyan (SSA), Rashtriya Madhyamik Shiksha Abhiyan (RMSA), Rashtriya Uchatar Shiksha Abhiyan (RUSA), Recommendations of Education Commissions and Committees on the Education of Marginalized groups of Society and role of Teachers in the context of: Special, Integrated and Inclusive Education. Language; its nature and importance in human life, language and society Language policies related to School education and Secondary Education and recommendation of various commissions, Role of mother tongue: its nature and Importance & Three Language Formula. Education of children with special needs, Women's Education, Education of Weaker Sections

#### **UNIT-5-**

**Meaning, Nature, Methods and Functions and Scope of Educational Psychology-** Growth and Development of Child: Meaning, Concept, Characteristics, Principles of Growth and

Development, Stages of Development, Influence of socio-cultural realities on development, different theories of Cognitive Development, Moral Development, Psycho-sexual development and Psycho-social development, Learning: meaning, concept and nature, Theories of learning: Thorndike, Pavlov, Skinner & Kohler Teaching: meaning, principles, components of effective teaching, maxims and phases of Teaching, Taxonomy of educational objectives in cognitive domain, writing objectives in behavioural terms, Art of questioning: types and importance of questions.

#### **UNIT-6**

Intelligence: Theories and Measurement of Intelligence, Personality: Concept, Theories and Measurement of Personality., Adjustment, Motivation, Mental Health and Hygiene: Nature, Scope & types of Guidance and Counselling, School Administration and Management, Role of a Teacher and Principal, School Time Table & Discipline.

#### **UNIT-7**

Notion and Approaches of knowledge Concept of disciplinary knowledge and subjects Curriculum, syllabus, NCF-2005 & NCFTE-2009 Approaches of Curriculum construction Managing Curriculum- meaning, principles of construction, development of curriculum at elementary and secondary level, importance of co-curricular activities Innovations in teaching- Bloom's Taxonomy, Micro teaching, Simulated Social Skill Teaching (SSST), Team Teaching, Programmed Instruction & CAL, Action Research, Educational Management Information System (EMIS), MOOCS, Internship, Computer Assisted Teaching, Role of ICT in teaching learning process.

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.A. EDUCATION**

**(TWO YEAR / ONE YEAR)**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## Education

1. **Education** -Meaning,Nature and scope of education, education as a science, education as a social process, factors of education. Aims of education - Social, Vocational and Democratic. Functions of education – General, National functions of education. Agencies of Education – Formal, Informal and Non-formal. Relationship between school and society. Impact of society on Education, Impact of Education on Society, Duties of Society towards Education, Duties of Education towards Society. Education and Social Mobility, School as a sub social system.
2. **Philosophy of Education**-Relationship between Philosophy & Education.Major Philosophies of Education- Naturalism; Idealism; Pragmatism.Educational Thinkers & their Contribution indeveloping Principles of Education- M. K. Gandhi, Tagore, John Dewey.
3. **Sociology of Education**- Meaning and Scope of Educational Sociology,Culture - Concept & Dimensions of Culture; Relationship between Culture & Education, Social Change- Concept of social change and Roles of Education for social change. Value Education and National Integration.
4. **Psychology & Educational Psychology**: Nature & Meaning of Psychology; Nature, Meaning and functions of Educational Psychology.Growth and Development- Concept, Stages of development, Role of hereditary and environment in the development of individual. Learning & Motivation- Concept of learning & Motivation; Factors of influencing learning – Personal & Environmental, Techniques of enhancing learner’s motivation; S-R Theory of Learning (Thorndike), Classical conditioning (Pavlov), Operant Conditioning theory of learning (Skinner) and Gestalt theory of Learning (Kohler et al), Cognitive theory (Piaget), Social development theory (Vygotsky), Behaviorism, Constructivism and Eclectic approach. Intelligence- Nature & Meaning, Measurement of Intelligence – Concept of I.Q, Verbal, Nonverbal& Performance tests; Two-factor Theory (Spearman); Multifactor Theory (Thurston); Structure of intellect (Guilford), Multiple Intelligence (Gardner).Personality- Meaning & nature and Development of Personality – biological & socio-culture Determinants- a brief overview of Trait-theory of Personality (Allport), Factor-theory of Personality (Cattell), Psycho analytical theory of Personality (Freud), Maslow’s hierarchy of needs and their educational implication. Memory and Forgetting.
5. **Experimental Psychology**-Meaning, types, Methods, Scope, Characteristics. Reporting of a Problem- Selection, Objectives, Hypothesis Variables.
6. **Indian Education**- Vedic, Medieval and British Period, Macaulay’s Minutes, Wood Dispatch, Indian Education Commission-1882, Sadler Commission, Radha Krishnan Commission, Mudaliar Commission, Kothari Commission.
7. **Current issues related to Indian Education**- Universalization of Elementary Education with special reference to SarvaSiksha Abhiyan; Education of children with special needs, Women’s Education, Education of Weaker Sections,National Policy on Education-1986 and Acharya Rammurti Commission, Right to Education Act 2009. NEP-2020
8. **Curriculum**-Meaning, Types, Principles of Curriculum Construction, co-curricular activities.
9. **Teaching Process**: Concept of teaching; Characteristics & Functions of teaching; Principles & Maxims of teaching.Techniques of Teacher-Preparation: Microteaching -

Nature & Meaning, Main proposition, Phases, Steps, Merits & Limitations; Simulated - Nature & Meaning, Teaching Role Play, Advantages & Limitations; Programmed learning- Meaning & Characteristics, Learning - Principles & Development of the Programmed instructions. - Types. - Merits & Demerits.

10. **Taxonomy of Educational Objectives & Lesson Planning:** Bloom's Taxonomy of instructional objectives - Cognitive, Affective & Psychomotor domains; Meaning & Significance of lesson planning, Preparation of Lesson planning, Lesson plan in constructivist approach Methods of teaching: Play Way Method; Project Method; Discussion method, Heuristic Method, Activity method, Cooperative learning.
11. **Educational Management**-Meaning, Nature, Scope, Characteristics, Institutional Planning, Finance Management of the Institution, School Supervision and Inspection, School Infrastructure, Time table and discipline, Guidance and Counselling Programme in the Schools, Role of Principal.
12. **ICT:**Meaning, Basics in ICT, Multimedia approach, Use of ICT in teaching learning process.
13. **Measurement**- Meaning, types, Tools for measurement, and construction and standardization of tests.

# SYLLABUS FOR UNIVERSITY ENTRANCE TEST

SESSION 2026-27

## SUBJECT

- M.A./M.SC. YOGIC SCIENCE  
(TWO YEAR / ONE YEAR)
- PG DIPLOMA IN YOGIC SCIENCE



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## **SYLLABUS FOR ENTRANCE EXAM**

### **M.A. Two years programme in Yogic Science**

### **M.Sc. One year & Two Years programme in Yogic Science**

### **P.G. Diploma One Year programme in Yogic science**

#### **Section 1: Fundamentals of Yoga**

- Meaning, definition and aim of Yoga
- Types of Yoga: Raja Yoga, Bhakti Yoga, Karma Yoga, Jnana Yoga
- Bhagavad Gita (Karma Yoga, Bhakti Yoga, Jnana Yoga), Patanjali Yoga Sutras, Hatha Yoga Pradipika, Gheranda Samhita.

#### **Section 2: Human Anatomy & Physiology (Basic)**

- Introduction to human body systems: Nervous system, Respiratory system, Digestive system, Circulatory system and Endocrine system

#### **Section 3: Yoga Practices (Practical Knowledge)**

- Asana: Meaning and definition.
- Pranayama: Meaning, Definition and Types
- Shatkarma
- Mudra & Bandha
- Meditation

#### **Section 4: Indian Philosophy**

- Introduction to Indian Philosophy
- Six orthodox schools (Nyaya, Vaisheshika, Sankhya, Yoga, Mimamsa, Vedanta)
- Karma Sidhant and rebirth, Triguna (Sattva, Rajas, Tamas)

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT – B.P.ED.**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

**Department of Physical Education, Birla Campus Srinagar**

**Syllabus Topics for Entrance test ( B.P.Ed. & M.P.Ed.) -2026**

**1.) B.P.Ed. program:**

S.No.	Topic
1	Major Sports Tournaments and Leagues ( National & International)
2	Famous Sports Personalities ( National & International)
3	Sports Terminology
4	Sports Stadiums and Venues
5	Sports current Affairs
6	Indian Sports Awards
7	International Sports Awards
8	National & International Federations for games and sports
9	Basic Reasoning Aptitude
10	General awareness ( History, Geography, Culture and Politics)

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**M.P.ED.**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

Department of Physical Education, Birla Campus Srinagar

**Syllabus for M.P.Ed. Programme**

S.No.	Topic
1	History of Physical education
2	Anatomy, Physiology and Kinesiology
3	Officiating and Coaching
4	Olympic Games ( Modern & Ancient)
5	Methods of Teaching
6	Organization and Administration in Physical Education
7	Sports Nutrition and Health education
8	Basic Principles of Sports Training
9	Athletic care and Rehabilitation
10	Education Technology
11	Test and Measurement
12	Sports Psychology and Sociology
13	Basic Statistics
14	Major Sports Tournaments & Leagues ( national & International)
15	Sports Awards ( Arjuna, Dronacharya, Dhyanchand khel Ratna and Lifetime achievement)
16	Sports Governing Bodies ( National and International)
17	Terminology used in Sports

**SCHOOL OF LAW**

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**LLB**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

## 1) LL.B Program:

The UET for LL.B. will comprise questions from the following areas:

1. General Knowledge
2. English
3. Indian Polity
4. General Aptitude/Reasoning

**SYLLABUS FOR UNIVERSITY ENTRANCE  
TEST**

**SESSION 2026-27**

**SUBJECT**

**LLM**



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

**H.N.B. Garhwal University, Srinagar, Garhwal**

**School of Law**

**(LL.B. Three Years (6 Semesters) Course)**

**Applicable from Academic Session 2022-23**

**Important Instructions**

1. The admission to the above-mentioned Course shall be made in accordance with the guidelines laid down by the Bar Council of India (as amended from time to time) and the Ordinances of the University (as amended from time to time).
2. The examination shall be conducted to the above-mentioned courses as per the rules/guidelines laid down in the ordinances of the University.
3. Each Theory Paper and Practical Paper shall be of four (4) credits.
4. There will be 70 marks for written examination and 30 marks for the sessional work in each paper.
5. The division of marks of the practical paper as coming under this syllabus shall be as per the guidelines prescribed by the Bar Council of India.
6. Each theory paper will be divided in two Parts i.e. Part A and Part B. There will be Seven (07) Short Answer Type questions in Part A out of which a student will have to attempt five questions and each question will carry five (05) marks. In Part B there will be Six (06) Long Answer type questions out of which a student will have to attempt three (03) questions.
7. The duration of theory examination shall be Two (02) hours.
8. The total number of credits for LL.B. Three Years (Six Semesters) Course shall be 120.
9. The curriculum of study for the LL.B. Degree shall be spread over three academic years and shall be divided into six semesters for the examination purposes, called as First, Second, Third, Fourth, Fifth and Sixth Semesters.

**School/Department of Law**  
**H.N.B. Garhwal University, Srinagar, Uttarakhand**  
**Revised Course Structure -LL.B. 3 Years (6 Semesters) Course**  
**(Applicable from Academic session 2022-23) First**

**(Ist) Semester**

<b>Sl.No.</b>	<b>Name of the Paper</b>	<b>Paper Code</b>	<b>Maximum Marks</b>	<b>Credits</b>
1.	Constitutional Law-I- DSC	101111	100	4
2.	Law of Contract (Contract-I)- DSC	101112	100	4
3.	Law of Crimes-I (Bhartiya Nyaya Sanhitha 2023)- DSC	101113	100	4
4.	Law of Torts, M V Act and Consumer Protection Laws- DSC	101114	100	4
5.	English- DSC	101115	100	4
<b>Total Credits</b>				<b>20</b>

**Second (2nd) Semester**

<b>Sl. No.</b>	<b>Name of the Paper</b>	<b>Paper Code</b>	<b>Maximum Marks</b>	<b>Credits</b>
1.	Constitutional Law -II- DSC	102111	100	4
2.	Law of Contract-II (Special Contract)- DSC	102112	100	4
3.	Family Law-I – DSC	102113	100	4
4.	Public International Law-DSC	102114	100	4
5.	Company Law- DSC	102115	100	4
<b>Total Credits</b>				<b>20</b>

**Third (3rd) Semester**

<b>Sl.No.</b>	<b>Name of the Paper</b>	<b>Paper Code</b>	<b>Maximum Marks</b>	<b>Credits</b>
1.	Jurisprudence- DSC	103111	100	4
2.	Property Law (Transfer of Property Act and Easement Act)- DSC	103112	100	4
3.	Family Law-II- DSC	103113	100	4
4.	Land Laws Including Tenure and Tenancy System- DSE; or	103411	100	4
5.	Information Technology Law- DSE; or	103412	100	4
6.	Aviation Law-DSE	103413	100	4
7.	Professional Ethics and Professional Accounting System - DSC- P	103611	100	4
<b>Total Credits</b>				<b>20</b>

**Fourth (4th) Semester**

<b>Sl. No.</b>	<b>Name of the Paper</b>	<b>Paper Code</b>	<b>Maximum Marks</b>	<b>Credits</b>
1.	Administrative Law- DSC	104111	100	4
2.	Interpretation of Statutes & Principles of Legislation- DSC	104112	100	4
3.	Civil Procedure Code and Limitation Act- DSC	104113	100	4
4.	Banking Law-DSE; or	104411	100	4
5.	Competition Law- DSE; or	104412	100	4
6.	Insurance Law-DSE	104413	100	4
7.	Alternative Dispute Resolution- Arbitration, Mediation and Conciliation (Clinical/Practical Paper) DSE-P	104811	100	4
<b>Total Credits</b>				<b>20</b>

**Fifth (5th) Semester**

<b>Sl. No.</b>	<b>Name of the Paper</b>	<b>Paper Code</b>	<b>Maximum Marks</b>	<b>Credits</b>
1.	Law of Evidence (Bhartiya Sakshya Adhinyam, 2023) - DSC	105111	100	4
2.	Law of Crimes - II (The Bharatiya Nagarik Suraksha Sanhita,2023) - DSC	105112	100	4
3.	Labour Law and Industrial Law-I - DSC	105113	100	4
4.	Offences Against Children and Juvenile Offences- DSE; or	105411	100	4
5.	Women and Law- DSE; or	105412	100	4
6.	Human Rights Law and Practice- DSE	105413	100	
7.	Drafting, Pleading and Conveyancing (Clinical/Practical Paper)- DSC-P	105611	100	4
<b>Total Credits</b>				<b>20</b>

**Sixth (6th) Semester**

<b>Sl. No.</b>	<b>Name of the Paper</b>	<b>Paper Code</b>	<b>Maximum Marks</b>	<b>Credits</b>
1.	Labour Law and Industrial Law-II- DSC	106111	100	4
2.	Environmental Law- DSC	106112	100	4
3.	Principles of Taxation- DSC	106113	100	4
4.	Intellectual Property Rights Law- DSE; or	106411	100	4
5.	Health Care Laws-DSE; or	106412	100	4
6.	Private International Law-DSE	106413	100	4
7.	Moot Court Exercise and Internship (Clinical/Practical)- DSC- P	106811	100	4
<b>Total Credits</b>				<b>20</b>

**LL.B. Semester-I**

**Paper I**

**M.M.: 100**

**Code: 101111**

**Theory: 70**

**Credit: 4**

**Sessional: 30**

## **Constitutional Law-I**

### **Objectives of the Course**

1. The basic understanding of the Constitutional Principles and working of the fundamental rights and its relationship with the Directive Principles of State Policy.
2. To learn how various interpretations of Constitution are possible and why significant inter-relation was adopted in a particular situation.
3. To know the genesis, nature and special features and beware of the social, political and economic influence of the constitution.
4. To know the importance of the fundamental rights in real time in the administration of justice and governance of the country.

### **Outcomes of the Course**

Students will be able to:

1. Understand the salient features of the Constitution and fundamental concepts of Constitutional Law.
2. Critically assess the role and importance of fundamental rights in the governance of the country.
3. Put in practice acquired knowledge into their research on contemporary Constitutional law issues.

### **Course Content**

#### **Unit-I: Introduction**

Sources of the Indian Constitution

Preamble of the Indian Constitution

Nature of the Indian Constitution

Salient Features of the Indian Constitution

Rule of Law

Separation of Power

Citizenship

## **Unit-II: Fundamental Rights**

Definition of State for enforcement of Fundamental Rights- Article 12

Justifiability of Fundamental Rights

Article 13- Doctrine of Eclipse, Severability, waiver, distinction between Pre-Constitutional and Post-Constitutional Law

Article 14- Right to Equality: Doctrine of Reasonable Classification and Principle of Arbitrariness

Article 15- Prohibition of Discrimination on grounds of religion, race, caste, sex or place of birth

Article 16- Equality of Opportunity in matters of Public Employment

## **Unit-III: Fundamental Rights**

Article 17- Abolition of Untouchability

Article 18- Abolition of Titles

Articles (19) (1) (a) to Article (19) (1) (g)- Right to Freedoms

Article 20- Protection in respect of conviction for offences

Article 21- Right to Life and Personal Liberty

Article 21-A- Right to Education

## **Unit- IV: Fundamental Rights**

Article 22- Protection against Arrest and Detention in certain Cases

Article 23 & 24- Protection and Exploitation

Articles 25 to Article 28- Right to Freedom of Religion

Article 29 & 30- Cultural and Educational Rights

Article 32 to Article 32- Right to Constitutional Remedies

Public Interest Litigation

## **Reference Books**

D.D. Basu, Introduction to Constitution of India, Lexis Nexis, 2021

H.M. Seervai, Constitutional Law of India, Universal Law Publishing Co., 2021

M.P. Jain, Indian Constitutional Law, Lexis Nexis, 2018

## **Text Books**

V.N. Shukla, Constitution of India, Eastern Book Company, 2021

J.N. Pandey, Constitutional Law of India, Central Law Agency, 2020

Narender Kumar, Constitutional Law of India, Allahabad Law Agency, 2021

B.K. Sharma, Introduction to Constitution of India, PHI Learning, 2019

**LL.B. Semester-I**

**Paper II**

**M.M.: 100**

**Code: 101112**

**Theory: 70**

**Credit: 4**

**Sessional: 30**

### **Law of Contract (Contract-I)**

#### **Objectives of the Course**

1. To equip the students with fundamental knowledge of Contract Law.
2. This course is intended to acquaint the students with the conceptual and theoretical aspects of various general contractual principles.
3. To analyze the various definitions of 'Contract' in order to identify the best approach of understanding the subject.
4. To develop research, analysis, reasoning and presentation skills in students.
5. To enable the students to apply the knowledge of contract law in legal practice.

#### **Outcomes of the Course**

Students will be able to:

1. Understand the fundamentals of contract law with commitment towards learning.
2. Interpret the conceptual basis of legal principles of contract law with comparative analysis.
3. Research, analyze, rationalize and present effectively.
4. Apply the legal principles and procedures in practice.

#### **Course Content**

##### **Unit-I: Formation of Contract**

Contract: definitions, elements and kinds

Proposal and Acceptance- their various forms, essential elements, communication and revocation - proposal and invitations for proposal-floating offers-tenders, Agreement

Consideration - its need, meaning, kinds, essential elements - nudum pactum -privity of contract and of consideration- its exceptions- adequacy of consideration-present, past and adequate consideration- unlawful consideration and its effects

##### **Unit-II: Capacity to Contract and Void Agreements**

Capacity to enter into a contract

Meaning- incapacity arising out of status and mental defect-minor's agreements-definition of 'minor, Nature of Minor's Contract

Free consent- Need and definitions, Factors vitiating free consent –Coercion, Undue influence, Fraud, Misrepresentation, Mistake

Legality of Objects and Consideration

Void Agreement- Agreements without consideration, Agreements in restraint of marriage, Agreements in restraint of trade - its exceptions- sale of goodwill, Agreements in restraint of legal proceedings- its exceptions, Uncertain agreements, Wagering agreement -its exception

### **Unit-III: Discharge and Performance of Contract, Quasi-Contract, Discharge**

By performance- conditions of valid tender of performance- How? By whom? Where? When? In what manner? Performance of reciprocal promises-time as essence of contract.

By breach - anticipatory breach and present breach.

Impossibility of performance - Specific grounds of Frustration, Theories of frustration, Effect of frustration, Frustration and restitution.

By period of limitation

By agreement- Rescission and Alteration

### **Unit-IV: Quasi-Contract and Remedies**

Quasi-Contracts or certain relations resembling those created by contract

Remedies available under the Indian Contract Act, 1972- Meaning, nature, remoteness etc, Quantum meruit

Remedies available under the Specific Relief Act- Specific Performance of Contract- What contracts can be specifically performed and what not

Injunction- when granted and when refused-Why?, Kinds of Injunction

### **Text Books**

Indian Contract Act, 1872 (Bare Act)

Indian Contract Act - Pollock and Mulla, Lexis Nexis, 2014

Law of Contract & Specific Relief - Avtar Singh, EBC, Reprinted with Supplement, 2021

संविदा विवि एविं विविदि स्तअितुष अविवियम – एक परिचय by Avtar

Singh, EBC, Reprint 2020 Samvidha Vidhi (Hindi) - S. K. Kapoor, Central Law Agency, 2019

Law of Contract- Kailash Rai, Central Law Publisher, 2014

Beatson, J., Anson's Law of Contract, Oxford University Press, 2020

Bhadbade, Nilima, Mulla Indian Contract and Specific Relief Acts, Vol. 1 & 2, Butterworths, LexisNexis Butterworths, 2013

**Reference Books**

Law of Contract – Anson, LexisNexis Butterworths, 2017

R. K. Abichandani, (ed.), Pollock and Mulla on the Indian Contract and the Specific Relief Act., N.M. Tripathi, Bombay, 1994

Mc Kendrick, Ewan, Contract Law, Text, Cases and Materials, Oxford University Press, Ninth Edition, 2020

## Paper-III

LL.B. Semester-I

M.M:100

Code-101113

Theory:70

Credit-4

Sessional:30

### **Law of crimes-I (Bhartiya Nyaya Sanhitha2023)**

#### **Course Objective**

1. To provide a comprehensive understanding of the Bharatiya Nyaya Sanhita, 2023.
2. To analyse the fundamental principles and concepts of criminal laws of India.
3. To develop skills for interpreting and applying provisions of the Bharatiya Nyaya Sanhita, 2023.
4. To critically evaluate the reforms and updates in the Bharatiya Nyaya Sanhita, 2023.
5. To enable the students to apply the knowledge in legal practice.

#### **Learning outcomes**

##### **Students will be able to:**

1. Understand the key provisions and principles of the B.N.S.2023
2. Apply the legal provisions to hypothetical and real-world scenario.
3. Analyse case laws and judicial interpretations related to B.NS.
4. Critically assess the effectiveness of 2023 reforms in BNS.

#### **Outline of the course**

##### **Unit: I**

#### **Introduction**

- Crime- meaning, elements and stages of Crime.
- Principles of criminal liability -actus reus and Mens rea and other Maxims.
- Preliminary (Sec. 1) and various definitions Sec. 2(1) to (39), Punishments including community services (Sec. 4 to 13), General explanations and expressions (Sec. 3) common intention Sec. 3(5), Principle of joint and constructive liability, Repeal and saving clause (Sec. 358)
- **General exceptions**- Mistake of fact (Sec. 14, 17), Judicial Act (Sec. 15, 16), accident (Sec. 18), act done without criminal intention and to prevent more harm (Sec. 19), act of a child (Sec. 20, 21), act of person of unsound mind (Sec. 22), act under intoxication (Sec. 23, 24), acts with consent (Sec. 25 to 28), trivial acts (Sec. 33), Right of private defence of body and property (Sec. 34 to 44).
- **Abetment** (Sec. 45 to 60), **criminal conspiracy** (Sec. 61), **attempt to commit offences** (Sec. 62).

##### **Unit: II**

- **Offences against women and children:**  
Rape (Sec. 63 to 66), Marital rape (Sec. 67), custodial rape (Sec. 68), sexual intercourse by employing deceitful means etc (Sec. 69), Gang rape (Sec. 70), Assault to women with intent to outrage her modesty (Sec. 74), sexual harassment (Sec. 75), to disrobe (Sec. 76), voyeurism (Sec. 77), stalking (Sec. 78), To insult modesty of women (Sec. 79), Dowry death (Sec. 80), Bigamy (Sec. 82), Cruelty by husband (Sec. 85, 86), Miscarriage (Sec. 88 to 92), Hiring, employing or engaging a child to commit an

offence(Sec. 95), procurement of child(Sec. 96, 97),selling and buying of child for prostitution(Sec. 98, 99).

- **Offences against human body:**

Culpable homicide(Sec. 100, 102, 105, 107),Murder(Sec. 101, 103, 104),Mob-lynchingSec. 103(2),causing death by negligence(Sec. 106),Abetment of suicide of child of unsound mind(Sec. 107),Abetment of suicide(Sec. 108),Attempt to murder(Sec. 109),Organised crime(Sec. 111),Petty organised crime(Sec. 112),Terrorist act(Sec. 113),Hurt(Sec. 114, 115),Grievous hurt(Sec. 116 to 123),Acid attack(Sec. 124),wrongful restraint(Sec. 126), wrongful confinement(Sec. 127), criminal force(Sec. 128 to 129), assault(Sec. 130 to 136),Kidnapping(Sec. 137),Abduction(Sec. 138 to 142), trafficking (Sec. 143, 144).

### Unit: III

- **Offences against state**

Waging war against government & its conspiracy(Sec. 147 to 158), acts endangering sovereignty, unity and integrity of India(Sec. 152).

- Of offences relating to elections(Sec. 169 to 177),
- Of offences relating to coin, currency note, government stamps(Sec. 177 to 188).
- Of offences against public tranquillity (unlawful assembly Sec. 189, Rioting 191, Affray 194, common object Sec. 190).
- Contempt of the lawful authority of public servant(Sec. 206 to 226).
- False evidence and offences against public justice(Sec. 227 to 269),Offence affecting public health,safety,convenience etc(Sec. 270 to 297).
- Offences relating to religion(Sec. 298 to 302).

### Unit: IV

- **Offences against property**

Theft(Sec. 303 to 307), Snatching(Sec. 304),Extortion(Sec. 308),Robbery(Sec. 309),Dacoity(Sec. 310 to 313),Dishonest misappropriation of property(Sec. 314, 315), criminal breach of trust (Sec. 316),stolen property(Sec. 317), Cheating(Sec. 318, 319),Mischief(Sec. 324 to 327), Criminal trespass and house trespass (Sec. 329), house trespass and house breaking (Sec. 330 to 333), Criminal offences relating to document and property marks(Sec. 335 to 350).

- Criminal intimidation(Sec. 351), insult,annoyance(Sec. 352 to 355),defamation(Sec. 356).

#### **Bare Act:**

- The Bhartiya Nyay Sanhitha 2023

#### **Text Books:**

- RatanLal and Dhirajlal, The Indian Penal Code, Lexis Nexis, 2019
- S.N. Mishra, Indian Penal Code, CLP, 2019
- B M Gandhi, Indian Penal Code, EBC, 2017

#### **Reference Books:**

- Williams Glanville, Text Book of Criminal Law, Universal Law Publishing Co., 2012
- K.D. Gaur, A Text Book on the Indian Penal Code, Universal Publishing Co., 2012
- P.S.A. Pillai- Criminal Law, Lexis Nexis, 2017
- K.D. Gaur, Criminal Law Cases and Materials, Lexis Nexis, 2019

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**LL.B. Semester-I**

**Paper IV**

**M.M.: 100**

**Code: 101114**

**Theory: 70**

**Credit: 4**

**Sessional: 30**

**Law of Tort, M.V. Act and Consumer Protection Laws**

**Objectives of the Course**

1. To equip the students with fundamental knowledge of Law of Torts.
2. To elucidate and familiarize the students with the nature and extent of liability of the private enterprises, multinationals and the government authorities for the civil wrongs committed against the individual and identify the remedies available.
3. To understand and the essential principles of Tortious liability.
4. To develop sound knowledge, skills and disposition on some of the contemporary issues Product Liability, Motor Vehicles Act, Consumer Protection Act etc.

**Outcome of the Course**

Students will be able to:

1. Explain the conceptual knowledge of Law of Torts, MV Act and Consumer Protection Act.
2. Examine the fundamentals and elements of Law of Torts, MV Act and Consumer Protection Act.
3. Illustrate the operation and application of Law of Torts, MV Act and Consumer Protection Act.
4. Research and analyze issues related to Law of Torts, MV Act and Consumer Protection Act.

**Course Content**

**Unit-I: General Principles of Tort**

Tort: Definition, Nature and Distinction from Crime, Contract and quasi contract, Constituents of Tort: Wrongful Act, Injuria sine damnum, Damnum sine injuria, Ubi jus ibi remedium; General Principles of Tortious Liability: Two Competing Theories- Pigeon-Hole Theory, Justification in Tort- Volenti non fit injuria, Act of God, Inevitable Accident, Necessity, Plaintiff's Default, Private Defence

Mental Elements in Tort- Motive, Intention, Malice, Malfeasance, Misfeasance and Non-feasance, Fault

**Unit-II: Specific Torts (Torts against Person, Property, Freedom & Reputation) & MV Act**

Tresspass to Person: Assault, Battery, False Imprisonment, Malicious Prosecution

Tresspass to Land, Nuisance

Torts related to Reputation: Defamation

Negligence, Contributory Negligence, Res ipsa loquitur

Salient Features of MV Act with special reference to Compulsory Insurance

Third party liability of owner under the Motor vehicle Act.

**Unit-III: Principles of Liability in Torts and Legal Remedies**

Vicarious Liability

Strict Liability and Absolute Liability

Kinds of Damages, Remoteness of Damage, Novus Actus Interveniens, Nervous Shock

General Remedies in Tort- Judicial and Extra Legal Remedies Joint-Tort Feasors

**Unit-IV: Concept of Consumer and Consumer Protection Act**

Definition of Consumer and Object of Consumer Protection Act, Rights and Duties of Consumers, Unfair Trade Practices, Defects in Goods and Services, Types of Services, Deficiency-Meaning, Consumer Protection Councils, Consumer Disputes Redressal Agencies: District Forum, State Commission, National Commission

**Text Books**

R.K. Bangia, Law of Tort Allahabad Law Publication, 2020

S.P. Singh, Law of Tort Universal Publication, 2015

Siddhartha Dubey, Law of Tort & Consumer Protection, Central Law Agency, 2017

Pillai P.S.A., Law of Tort, 9<sup>th</sup> ed., EBC, 2008

**Reference Books**

Wienfield And Jolowicz, Torts, Sweet & Maxwell 2010

Iyer, Ramaswamy; The Law of Torts, Lexis Nexis, 2007

Taxmann's, Consumer Protection Law Manual with Practical Manual, 2008 Taxmann Publication.

**LL.B. Semester-I**

**Paper V**

**M.M.: 100**

**Code: 101115**

**Theory: 70**

**Credit: 4**

**Sessional: 30**

**English**

**Objectives of the Course**

1. To make the students conversant with legal maxims
2. To ensure the student understand the importance of English
3. To ensure that the students have a basic understanding of tenses
4. To hone their skills of writing 'legal essays'

**Outcomes of the Course**

Students will be able to:

1. Appreciate the need and importance of English
2. Demonstrate enhanced understanding of tenses
3. Analyse and rectify the errors made by them in Spoken English
4. Demonstrate the understanding and applicability of important legal maxims

**Course Content**

**Unit-I: Introduction**

- a. Need for and Importance of English
- b. One word Substitution
- c. Homonyms, antonyms, synonyms
- d. Some Common Errors in English

**Unit-II: Proficiency in General English**

- a. Parts and Types of Sentences
- b. Parts of Speech-A Brief Introduction
- c. Tenses-Forms and Uses
- d. Active and Passive Voice
- e. Direct and Indirect (or Reported) Speech

### **Unit-III: Legal Terminology**

#### **Meaning and use of the following shall be explained:**

a. Ab Initio, Ad Idem, Ad Infinitum, Ad Valorem, Ad Nauseam, Alibi, Ambiguitas Latens, Ambiguitas Patens, Amicus Curiae, Animus Possidendi, Audi Alteram Partem, Bonafide, Caveat Emptor, De Facto, De Jure, De Novo, Ejusdem Generis, Ex Gratia, Ex Parte, Ex Post Facto, Factum Valet, Fait Accompli, Fiat Justitia, Inter Alia, In Limine, Jus Ad Rem, Jus In Personam, Letter Rogatory, Locus Standi, malafide, Modus Operandi, Mutatis Mutandis, Nudum Pactum, Obiter Dicta, Onus Probandi, Parens Patriae, Pari Passu, Per Incuriam, Prima Facie, Pro Bono Publico, Quid Pro Quo, Ratio Decendi, Raison D'etre, Res Integra, Res Nullius, Sine Qua Non, Intra- Vires, Ultra Vires

b. Actus non facit reum nisi men sit rea, Damnum sine injuria esse potest, Extra territorium jus dicenti non paretur impune, Actus non facit reum nisi mens sit rea, Audi alteram partem, Commodum ex injuria sua memo habere debet, Delegatus non potest Delegare, Pacta sunt servanda, Res ipsa loqitor, Ubi jus ibi remedium, Executio juris non habet injuriam, Nemo dat quod non habet, Quid pro quo

### **Unit-IV: Factor Pricing**

- a. Essay Writing in English on topic of Legal Interest
- b. Letter Writing in English

#### **Text Books**

S.K. Mishra, Legal Language, Legal Writing & General English, Allahabad Law Agency, 2017

G.S. Sharma, Legal Language Legal Writing and General English, University Book House, 2018

Alok Yadav, Legal Studies and General English, Mewar University Press, 2016

#### **Reference Books**

Wren & Martin, English Grammar, S Chand & Company, 2017

J.S. Singh, Legal Language, Writing and General English, Allahabad Law Agency, 2018

Herbert Broom, A Solution of Legal Maxims, Cornell University, 1874

Ministry of Law, Justice and Company Affairs Government of India, Legal Glossary

**LL.B. Semester-II**

**Paper VI**

**M.M.: 100**

**Code: 102111**

**Theory: 70**

**Credit: 4**

**Sessional: 30**

### **Constitutional Law-II**

#### **Objectives of the Course**

1. The basic understanding of the constitutional principles.
2. The enable students in understanding the Constitutional Governance of the Country and working of the Constitutional bodies.
3. To enable students in exploring the importance of the working of the constitutional institutions.

#### **Outcomes of the Course**

Students will be able to:

1. Assess the role and importance of Constitutional bodies, functionaries, and institutions.
2. Analyze working of Judiciary, Executive and Legislative bodies
3. Put in practice the acquired knowledge into their research.

#### **Course Content**

##### **Unit-I: Directive Principles of State Policy and Writs**

Article 36 to Article 51- Directive Principles of State Policy Nature and Justiciability of Directive Principle of State Policy, Interrelationship between Fundamental Rights and Directive Principles of State Policy

Article 51-A- Fundamental Duties

Article 226- Power of High Court to issue certain Writs

Writs- Habeas Corpus, Mandamus, Certiorari, Prohibition and Quo-Warranto

##### **Unit-II: Distribution of Powers Between Centre and States**

Legislative Powers

Doctrines of Territorial Nexus

Doctrines of Harmonious Construction

Doctrines of Pith and Substance

Doctrines of Repugnancy

Doctrines of Colorable Legislation

Administrative Powers Financial  
Powers

**Unit-III: Constitutional Organs**

Union Parliament and State Legislature- Constitution and Function, Parliamentary Sovereignty, Parliamentary Privilege, Anti-Defection Law, Collective Responsibility of Cabinet  
Union and State Executive  
Supreme Court and High Courts- Constitution and Jurisdiction, Power of Judicial review, Independence of Judiciary

**Unit-IV: Liability of the State**

Contractual and Tortious Liability of  
State Freedom of Trade, Commerce and Intercourse,  
Services under the Union and States,  
Emergency Provisions  
Amendment of the Constitution

**Reference Books**

D.D. Basu, Introduction to Constitution of India, Lexis Nexis, 2021  
H.M. Seervai, Constitutional Law of India, Universal Law Publishing Co., 2021  
M.P. Jain, Indian Constitutional Law, Lexis Nexis, 2018

**Text Books**

V.N. Shukla, Constitution of India, Eastern Book Company, 2021  
J.N. Pandey, Constitutional Law of India, Central Law Agency, 2020  
Narender Kumar, Constitutional Law of India, Allahabad Law Agency, 2021  
B.K. Sharma, Introduction to Constitution of India, PHI Learning, 2019

**LL.B. Semester-II**

**Paper VII**

**M.M.: 100**

**Code: 102112**

**Theory: 70**

**Credit: 4**

**Sessional: 30**

### **Law of Contract-II (Special Contract)**

#### **Objectives of the Course**

1. This will enable the students to better appreciate the law governing special contracts like indemnity, guarantee, agency etc. which are more relevant in the contemporary society.
2. To equip the students to better appreciate the legal services required in a corporate office so that they can enhance their relevance as a lawyer in the society.
3. To enhance knowledge of students regarding special type of contracts.
4. The main focus is to ingrain in the students a critical understanding of the context and importance of such contracts from an economic, social and legal perspective.

#### **Outcomes of the Course:**

Students will be able to:

1. Understand the fundamentals of special contract with commitment towards learning.
2. Interpret the conceptual basis of legal principles of special contract with comparative analysis.
3. Research, analyze, rationalize and present effectively.
4. Identify the principles and doctrines that guides such contracts.
5. Exhibit an understanding of the legal concepts involved in such contracts.

#### **Course Content**

##### **Unit-I: Contract of Indemnity and Guarantee (Ss. 124-147)**

Indemnity (Ss. 124-125) –the Concept, Definition, Methods Commencement of liability of the indemnifier, Nature of indemnity clauses, Right and liabilities of Indemnifier and Indemnity-Holder, difference between indemnity contract and Contingent contract, distinction between contract of indemnity and guarantee

Guarantee- (S. 126-147) Definition, Nature, and scope, Kinds of Guarantee, essential elements, Extent of Liability of guarantor, co-existence of surety and principal debtor's liabilities, joint and separate liability of surety, continuing guarantee, Rights of surety, Discharge of Surety's liability

## **Unit-II: Contract of Bailment, Pledge and Agency (Ss. 148-128)**

Contract of Bailment Ss. 148-171)- (Definition, Kinds, Rights and Duties of Bailor and Bailee, termination of bailment, Rights and responsibility of finder of goods, Provisions relating to lien, Pledge (Ss. 172-181)- Definition, Essential elements, Pledge: comparison with bailment, Rights of Pawnor, Rights of Pawnee

Contract of Agency (S.182-238) -Definition-Creation of Agency, Kinds of Agents, Ratification, Rights and duties of Agent, Relation of Principal with third parties, Termination of Agency

## **Unit-III: Law Relating to Partnership**

Definition, Nature and Essentials, Test of Determining, Relation of Partner to another partner, Rights and duties of partner, relation of partners to third parties, Incoming and outgoing partners dissolution of a firm, Registration of firms, Limited Liability Partnership-Meaning, Nature, a limited liability partnership and a company

## **Unit-IV: Sales of Goods**

Concept of sale as a contract, Definition, Conditions and Performance, Formation of Contract, Effect of Contract, concepts of caveat emptor, Right of Parties and Remedies, Performance of Contract, Rights of Unpaid Seller, Remedies for breach of contract

### **Prescribed Legislations**

The Indian Partnership Act, 1932

The Limited Liability Partnership Act, 2008 (6 of 2009) The Indian Contract Act, 1872

The Sale of Goods Act, 1930

### **Text Books**

H. K. Saharay: Dutt on Contract-The Indian Contract Act, 1872, Eastern Law House, 2013

A.G. Guest(ed.), Benjamin's Sale of Goods, Sweet & Maxwell, 1992

Mulla, The Sale of Goods Act and The Indian Partnership Act, Lexis Nexis,2019

Venkoba Rao (revised by S. C. Srivastava): Law of Agency, LexisNexis India, Butterworth,2001

Sanjiv Agarwal and Rohini Agarwal, Limited Liability Partnership: Law and Practice, LexisNexis Butterworths, 2009

Bharuka, The Indian Partnership Act, LexisNexis Butterworths, 2007

Avtar Singh, Introduction to Law of Partnership, EBC, 2019

**Reference Books**

Deepa Paturkar, Avtar Singh's Law of Sale of Goods, EBC, 2021

Fedrick Pollock and Mulla, Pollock and Mulla on Sale of Goods Act Lexis Nexis, 2021

Madhusudan Saharay, Textbook on Sale of Goods and Hire Purchase, Universal Publication, 2017

Benjamin, Sale of Goods, Sweet and Maxwell, 2010

**LL.B. Semester-II**

**Paper VIII**

**M.M.: 100**

**Code: 102113**

**Theory: 70**

**Credit: 4**

**Sessional: 30**

### **Family Law-I**

#### **Objectives of the Course**

1. To equip the students with fundamental knowledge of Family Law.
2. To Prepare the students with strong conceptual and comparative analytical skills.
3. To develop research, analysis, reasoning and presentation skills in students.
4. To enable the students to apply the knowledge in legal practice.

#### **Outcomes of the course**

Students will be able to:

1. Understand the fundamentals of personal law with commitment towards learning.
2. Interpret the conceptual basis of legal principles of personal law with comparative analysis.
3. Research and present effectively.
4. Apply the legal principles and procedures in practice.

#### **Course Content**

##### **Unit-I: Concept of Family and Development of Family System**

Patriarchal Family, Matrilineal Family, Nuclear family, Joint family, Joint Hindu Family  
(*Mitakshara and Dayabhaga*)

Source of Hindu Law and Sources of Muslim Law

Schools of Hindu Law and Schools of Muslim Law

##### **Unit-II: Introduction to Marriage Laws**

Concept of Marriage, Nature of Marriage, Essential Conditions of Marriage, Registration of Marriages (Hindu Marriage Act, 1955; Muslim Marriage, Special Marriage Act, 1954)

##### **Matrimonial Reliefs**

Annulment, Restitution of conjugal Rights, Judicial separation, Theories of Divorce, Conditions for grant of matrimonial remedies, (Hindu Marriage Act, 1955, Special Marriage Act, 1954)

Matrimonial Remedies for Muslims (*Talaq, Ila, Zihar, Tafwiz, khula, Mubara*), Muslim wife's grounds of divorce, Dissolution of Muslim Marriage Act, 1939, The Muslim Women (Protection of Rights on Marriage) Act, 2019

Barsto Matrimonial Relief.

### **Maintenance**

Maintenance of divorced wives, neglected wives, minor children and parents (Hindu Marriage Act, 1955, Hindu Adoptions and Maintenance Act; 1956)

Maintenance of Muslims wives during and after divorce; Muslim Women (Protection of Rights on Divorce) Act, 1986,

Maintenance under Sec.125 of Cr.P.C.

Maintenance of Parents and Senior Citizens Act, 2007

### **Unit-III: Child and the Family**

Parentage and Legitimacy, Legal status of Child born of void and voidable Marriage under Hindu Law, Acknowledgement of Paternity, Legitimacy and Legitimation, Legitimacy under Sec.112 of Indian Evidence Act, 1872

Adoption and Custody, Hindu Law (Hindu Adoption and Maintenance Act, 1956) Juvenile Justice Care and Protection Act, 2015, Inter-Country Adoption

Guardianship (Hindu Minority and Guardianship Act, 1956 and Muslim Law)

### **Customary Practice and the Law**

Dower, Types of Dower, Nature of Dower, Muslim Women's right on non-payment of Dower Dower-whether heritable or transferable

Offences against Marriage-Adultery, Bigamy, Same Sex Marriages, Demand of Dowry (Dowry Prohibition Act, 1961, Protection of Women from Domestic Violence Act, 2005) Child Marriage (Prohibition of Child Marriage Act, 2006)

### **Unit-IV: Family Court and the Need for UCC**

Composition, Power and functions of Family Courts (Family Courts Act, 1984)

Article 44 of the Indian Constitution

### **Recent Trends in Family Law**

Live-in relationship, Concept of Palimony, Surrogacy

### **TextBooks**

Aquil Ahmad, Mohamedan Law, Central Law Agency,2006  
Paras Diwan, Family Law, Allahabad Law Agency,2009  
Prof.G.C.V. Subba Rao's, Family Law in India, S. Georgia & Company, 2010  
Kusum, Family law lectures-family Law-I, Lexis Nexis Butterworths, 2008  
Mamta Rao, Law relating to Women & Children, Eastern Book Co., 2008

### **Reference Books**

Asaf A.A. Fyzee, Outline of Mohammedan Law, Oxford University Press,2008  
D.D. Basu, Commentary on the Constitution of India, (Vol.3), Lexis Nexis Butterworths Wadhwa, 2008  
Poonam Pradhan Saxena, Family Law II lecturers, Lexis Nexis,2019  
Flavia Agnes, Marriage, Divorce and Matrimonial Litigation, Oxford University Press, 2011  
Flavia Agnes, Marriage, Family Laws and Constitutional Claims, Oxford University Press, 2011  
Mayne's, Hindu law & usages, Bharat Law House, 2008  
Mulla, Hindu Law, Lexis Nexis Butterworths, Wadhwa, 2012  
Mulla, Principles of Mahomedan Law, Lexis Nexis Butterworths, Wadhwa, 2012  
R.V. Kelkar, Criminal Procedure,5th Edn. 2008  
S.A. Desai, Mulla, Hindu Law, LexisNexis ButterworthsWadhwa, 2008  
S.C. Tripathi and Vibha Arora, Law Relating to Women and Children, Central Law Publications, 2010  
Syed Khalid Rashid's, Muslim Law, Eastern Book Company, 2008

**LL.B. Semester-II**

**Paper IX**

**M.M.: 100**

**Code: 102114**

**Theory: 70**

**Credit: 4**

**Sessional: 30**

### **Public International Law**

#### **Objectives of the Course**

1. The aim of the course is to help the student develop a learning approach that combines critical thought and applied knowledge to the study of international law.
2. It will introduce public international law and focus on its essentials with an emphasis on problem-solving approach.
3. It will begin with an introduction to the traditional approaches to international law and understand its nature, scope and functions. We will then look into the processes and institutions of international law formation, key principles, international organisations, and dispute settlement mechanism in international law.

#### **Outcomes of the Course**

Students will be able to:

1. Analyse the necessary knowledge and skills of international law.
2. Develop capacity to apply international law in concrete cases.

#### **Course Content**

##### **Unit-I: Nature, Scope, and Development of International Law**

Definition, Nature & Basis of International Law

Codification of International Law

Subjects of International Law

Relationship between International and Municipal Law

Third World and International Law

##### **Unit-II: Recognition of State**

Nature of State

Recognition (De facto and De jure recognition)

Succession

Acquisition and Loss of Territory

### **Unit-III: Jurisdiction, Power and Immunities in International Law**

Nationality

Extradition

Asylum

Diplomatic Agents

Treaties

### **Unit-IV: International Organizations**

International Organizations

United Nations Organizations

Security Council

International Court of Justice

International Criminal Court

Regional Organizations (EU, SAARC and ASEAN)

### **Text books**

Starke's International Law, Oxford, New York, 2008

Ian Brownlie, Principles of Public International Law, Oxford University Press, 2008

H.O. Aggarwal, International Law & Human Rights, Central Law Publication, 2018

S. K. Kapoor, International Law & Human Rights, Central Law Agency, 2018

### **Reference books**

Malcolm N. Shaw, International Law, Cambridge Publications, 2002

Oppenheim's International Law, Volume 1 & 2. Oxford University Press, 2008

B.S. Chimni, International Refugee Law: A Reader, Sage Publications, New Delhi, 2005

**LL.B. Semester-II**

**Paper X**

**M.M.: 100**

**Code: 102115**

**Theory: 70**

**Credit: 4**

**Sessional: 30**

### **Company Law**

#### **Objectives of the Course**

1. To enable students to understand the Laws, Rules & Regulations relating to the companies.
2. To appreciate the issues and challenges of companies with the development of students' skills in legal reasoning, analysis and presentation through research by relying on study of statutes, case law and regulatory practice governing companies.
3. To understand the legal protection available to shareholders and their rights and to examine corporate social responsibility in India as a mandatory requirement.
4. To enable students to understand the intricacies of the different offices operating in the company set up like promoters, directors, independent directors etc. and their rights and duties.
5. To enable the students to apply the knowledge in practice.

#### **Outcomes of the Course**

Students will be able to:

1. Demonstrate strong insight of the formation and incorporation of a company, including the foundational understanding of the general role of promoters.
2. Appreciate the significance of company as a corporate entity compared to other form of corporate and non-corporate organizations.
3. Appreciate the varied methods of raising capital, other than shares, like borrowing and debentures etc.
4. Critically evaluate the existing legal framework relating to companies in accordance with the Companies Act (2013) including the Companies Amendment Act, (2017) and the Companies Amendment Act, (2020)
5. Understand the process of winding up of a corporate person and its dissolution and also appreciate the recently introduced Insolvency and Bankruptcy Code

## **Course Content**

### **Unit- I: Formation, Registration and Incorporation of Company**

Need of Company for development, Definition, meaning, nature and kinds of Company including one person company, comparison between Company and Partnership and Company and Limited Liability Partnership, theory of corporate personality, Advantages and disadvantages of corporate form of enterprise, Lifting of corporate veil, position of promoters and pre-incorporation contracts, formation of company and registration of company.

### **Unit-II: Memorandum of Association and Prospectus**

Clauses in Memorandum of Association including the doctrine of Ultra Vires, alteration of Memorandum, Articles of Association and its contents, relationship of Articles with Memorandum, alteration of Articles, doctrine of constructive notice with its exceptions.

Prospectus- Definition; contents; Shelf-Prospectus and Red Herring Prospectus; remedies against misrepresentation in Prospectus, Liability- Civil and criminal.

### **Unit- III: Shares/Debentures and Meetings**

Equity finance- Shares and their kinds including equity and preference shares, general principles of allotment and statutory restrictions on allotment, share certificate, transfer of shares. Share capital and its kinds. Debt Finance- Definition, kinds and remedies of debenture holders. Directors- Position and Powers, Director Identification Number, Corporate social responsibility. Meetings- Kinds, Procedure, Voting.

### **Unit -IV: Winding Up and Adjudicatory Bodies**

Winding up under the Companies Act 2013- Winding up by the Tribunal, grounds for compulsory winding up, who can make petition, company liquidator and winding up committee, consequences of winding up order.

Winding up under the Insolvency & Bankruptcy Code, 2016- Voluntary liquidation of a company, Default in payment of debts, Corporate Insolvency Resolution Process, Interim Resolution professional, committee of creditors.

National Company Law Tribunal and National Company Law Appellate Tribunal-powers, jurisdiction and Judicial review

**Text Books**

Avtar Singh, Indian Company Law, EBC, 2018

Kailash Rai, Principles of Company Law, Allahabad Law Agency, 2019

G.K. Kapoor & Sanjay Dhamija, Company Law and Practice, Taxman, 2021

**Reference Books**

A. Ramaiya, Guide to the Companies Act, Lexis Nexis, 2021

N.C. Jain, Company Law: Principles and Practices, Allahabad Law Agency, 2010

L.C.B. Grower, Principles of Modern Company Law, Maxwell, 2015

S.C. Tripathi, New Company Law, Central Law Publications, 2018

**LL.B. Semester-III**

**Paper XI**

**M.M.: 100**

**Code: 103111**

**Theory: 70**

**Credit: 4**

**Sessional: 30**

## **Jurisprudence**

### **Objectives of the Course**

1. To understand the historical evolution of legal thought and legal theory.
2. To acquaint students with the growth and development of law in different countries under different social and political conditions.
3. To understand the various fundamental legal concepts such as Rights, Duties, Property, Liability, Persons etc.
4. To acquaint students with the theories, attitude and insights of various jurists.

### **Outcomes of the Course**

Students will be able to:

1. Understand, define and explain the jurisprudential understanding of the legal concepts.
2. Explain and correlate the diverse origins and conceptualizations of law and develop a keen sense of objectivity while dealing with various laws.
3. Critically analyse various legal theories and to distinguish them into broader history of thought.
4. Put in practice the acquired knowledge and will use logical, analytical and decision-making ability to deal with contemporary challenges.

### **Course Content**

#### **Unit-I: Meaning and Importance of Jurisprudence**

Jurisprudence, Law and State, Nature and Scope of Jurisprudence, Meaning and Definition and Classification of Law, Definition, Elements and Functions of State, Relation of Law and State, Law and Morals

#### **Unit-II: Sources of Law and Administration of Justice**

Classification of Sources, Custom, Legislation, Judicial Precedent  
Administration of Justice

#### **Unit-III: Schools of Jurisprudence**

Natural Law School, Analytical School, Historical School,  
Sociological School, The Pure Theory of Law

#### **Unit-IV: Concepts of the Law**

Rights and Duties, Ownership, Possession, Person, Property, Liability

#### **Text Books**

B.N. Mani Tripathi, Jurisprudence (The Legal Theory), Allahabad Law Agency, 2012

N.V. Paranjape, Studies in Jurisprudence and Legal Theory, Central Law Agency, 2013

Nomita Aggarwal, Jurisprudence, Central Law Publication, 2010

S.N. Dhyani, Fundamentals of Jurisprudence (The Indian Approach), Central Law Agency, 2004

#### **Reference Books**

Michael Doherty, Jurisprudence: The Philosophy of Law, Old Balley Press, 2003

P.J. Fitzgerald, Salmond on Jurisprudence, Thomson Sweet & Maxwell Universal, 2008

R.W.M. Dias, Jurisprudence, Lexis Nexis (Indian Edition) 2013

Suri Ratnapala, Jurisprudence, Cambridge University Press (First South Asian Edition) 2009

W. Friedmann, Legal Theory, Universal Law Publishing Co., 2008

**LL.B. Semester-III**

**Paper XII**

**M.M.: 100**

**Code: 103112**

**Theory: 70**

**Credit: 4**

**Sessional: 30**

**Property Law (Transfer of Property Act & Easement Act)**

**Objectives of the Course**

1. To make the students understand basic principles and concepts related to transfer of property.
2. To enable the students, understand and analyse various modes of alienation under Transfer of Property act, 1882 and related legal requirements.
3. Be acquainted with the questions of law involved in the transfer of property.
4. Be acquainted with the concept, creation, scope and application of easement.
5. To enable the students to apply legal principles in practice.

**Outcomes of the Course**

Students will be able to:

1. Understand basic principles and concepts related to transfer of property.
2. Understand and analyse various modes of alienation under Transfer of Property Act and related legal requirements.
3. Understand and answer the questions of law involved in the transfer of property.
4. Understand and apply the concept, creation and scope of easement.
5. Integrate the different laws with the law of transfer of property and apply them towards problem solving.

**Course Content**

**Unit- I: Introduction**

Definitions

Essentials of valid transfer

Condition restraining alienation

Transfer for benefit of unborn person

Rule against perpetuity

Vested & Contingent interest  
Conditional Transfer

### **Unit-II: General Principles**

Election  
Apportionment  
Ostensible owner  
Doctrine of Lis-pendence  
Fraudulent transfer  
Part performance

### **Unit-III: Specific Transfers**

Sale: Definition and Essential  
Rights & liabilities of buyer and seller  
Mortgage: Definition and types of Mortgage  
Rights & Liabilities of Mortgage and Mortgagee Exchange  
Gift  
Actionable claims

### **Unit-IV: Lease and Easement Lease**

Nature & Kinds of Easement  
Imposition & Acquisition  
Disturbance  
Extinction, Suspension & Revival  
Difference between License and Easement

### **Text Books**

Poonam Pradhan Saxena, Property Law, Lexis Nexis, 2012, Nagpur  
R.K. Sinha, The Transfer of Property Act, CLA, 2021, Allahabad  
G.P. Tripathi, The Transfer of Property Act, CLA, 2014, Allahabad

T.P Tripathi, The Transfer of Property Act,1882, ALA, 2011, Allahabad  
S.N. Shukla Transfer of Property Act, Allahabad law Agency, 2020

**Reference Books**

G.C. Bharuka ,Mulla's Transfer of Property Act 1882 , Lexis Nexis Buttherworths, 2006, New Delhi.  
Vepa P. Sarthi, Transfer of Property, Eastern Book Publication,5th Ed, Lucknow, 2012  
Subbarao, Transfer of Property, Eastern Book Publication,2012  
Hari Singh Gour and A.R. Lakshmanan, Commentary on Transfer of Property Act, Delhi Law House ,2011, Delhi.  
M.R. Mallick, Goyle's A Commentary on the Transfer of Property Act, Delhi Eastern Law House,200, Delhi.  
157<sup>th</sup> Law Commission Report  
181<sup>st</sup> Law Commission Report  
Transfer of Property Act, 1882  
Indian Easement Act, 1882

**LL.B. Semester-III**

**Paper XIII**

**M.M.: 100**

**Code: 103113**

**Theory: 70**

**Credit: 4**

**Sessional: 30**

## **Family Law-II**

### **Objectives of the Course**

1. The course is designed to analyse the presence of different personal laws for different community.
2. A critical and comparative study of different personal laws governing testamentary and intestate succession i.e., their diversities, similarities, affinities and paradoxes.
3. Examine in particular, fundamental concepts dealing with the joint family, coparcenary, partition, interstate succession as well as the law relating to gifts, wills, and inheritance.

### **Outcomes of the Course**

Students will be able to:

1. Understand that personal laws owe their diversity to their varied origin, distinct principles and the bulk of substantive law itself.
2. Analyse that personal laws play a vital role in governing the conflicting interest of the individuals.
3. Interpret that personal law of a person is not determined by his domicile or his nationality but by his membership of the community to which he belongs.
4. Examine and correlate the intricacies and applicability of personal laws in handling the disputes.

### **Course Content**

#### **Unit-I: Introduction**

*Mitakshara* Joint Family: *Mitakshara coparcenary* formation and incidents Property under *Mitakshara* Law: separate property and coparcenary property *Dayabhaga coparcenary*: formation and incidents, Property under *Dayabhaga* Law *Karta* of the Joint Family : who can

be *Karta*, His/ Her position, powers, privileges and obligation. Difference between *Mitakshara* and *Dayabhaga Coparcenary* Alienation of property: Separate and coparcenary  
Debts: Doctrine of Pious Obligation and Antecedent debt  
Partition- Concept, subject matter, modes, how partition effected family and its Changing Patterns  
Processes of social change in India

## **Unit-II: Intestate Succession and Testamentary Succession**

Devolution of interest in *Mitakshara Coparcenary* property under the HSA,1956 General Principle of Inheritance under Hindu Law  
Succession to property of Hindu male dying intestate under the Hindu Succession Act,1956, The Repealing and Amending Act, 2015  
Succession to property of Hindu female dying intestate under the Hindu Succession Act,1956, *Stridhan* and Women Estate  
Disqualifications of heirs relating to succession  
General rules of succession & exclusion from succession under Islamic law: Shia & Sunni  
Classification of heirs under Hanafi and Ithna Asharia School; Their shares and distribution of property, Disqualified heirs  
Testamentary Succession  
Will under Indian Succession Act, 1925- Of will and Codicil Execution of unprivileged & privileged wills  
Attestation, revocation, alteration & revival of will, Will under Hindu law-Sec 30, HSA 1956; Will under Islamic Law- Competence of Testator, testamentary limitations

## **Unit-III: Disposition Inter-vivos**

Gift under Hindu Law-Transfer of Property Act,1882  
Hiba- meaning & characteristics, who can make and to whom Hiba, classification of Hiba  
Hiba during Marz-ul-maut, revocation of Hiba, Musha, Distinction between Hiba, Ariya, Sadaqa & Wakf, Hiba-ba-Shartul-iwaz, Hiba-bil-iwaz  
Pre-emption under Islamic Law  
Pre-emption – Definition, Classification, Subject matter Formalities & legal effects, when right lost, Constitutional validity

#### **Unit-IV: Hindu Religious Endowments and Muslim Law of *Wakf***

Traditional Religious principles of creation, Administration & Offices, Statutory methods of creation of trust, Powers & functions of Trustees, *Wakf*- meaning, essentials & formalities for creation Powers of *Mutawalli* Muslim Religious institutions & Offices

#### **Text Books**

Poonam Pradhan Saxena, Family Law II Lecturers, LexisNexis, 2019  
Aquil Ahmad, Mohammedan Law, Central Law Agency, 2006  
Paras Diwan, Family Law, Allahabad Law Agency, 2011  
G.C.V. Subba Rao, Family Law in India, S. Georgia & Company, 2010

#### **Reference Books**

Asaf A. A. Fyzee, Outline of Mohammedan Law, Oxford University Press, 2008  
Flavia Agnes, Marriage, Divorce, and Matrimonial Litigation, Oxford University Press, 2011  
Mayne's, Hindu law & usages, Bharat Law House, 2008  
Mulla, Hindu Law, Lexis Nexis Butterworths Wadhwa, 2012  
Mulla, Principles of Mohammedan Law, LexisNexis Butterworths Wadhwa, 2012  
S.A. Desai, Mulla, Hindu Law, LexisNexis Butterworths Wadhwa, 2008  
Syed Khalid Rashid's, Muslim law, Eastern Book Company, 2008

**LL.B. Semester–III**

**Paper: XIV(A)**

**M.M:100**

**Code: 103411**

**Theory:70**

**Credit:4**

**Sessional:30**

## **Land Laws Including Tenure & Tenancy System**

### **Objectives of the Course**

1. To familiarize with the fundamental principles of Land Laws and Tenancy System.
2. To make them understand the nuances of the Land Laws and Tenancy system.
3. To make them understand the applicability of legal principles in order to handle nitty -gritties of the Land laws and Tenancy system.

### **Outcomes of the Course**

Students will be able to:

1. Possess knowledge of different types of land property and related concepts.
2. Define how to transfer the immovable property to the other person.
3. Explain and interpret various principles of land Laws.
4. Apply the principles in legal practice.

### **Course Content**

#### **Unit-I: U.P. Zamindari Abolition and Land Reforms Act, 1950**

- a. Aims and object of the Act
- b. Salient features of the Act
- c. Reasons for abolition of Zamindari system
- d. Definitions
  - (i) Agriculture year
  - (ii) Estate
  - (iii) Gram Panchayat
  - (iv) Improvement
  - (v) Intermediary
  - (vi) Land
  - (vii) Rent free guarantee
  - (viii) Sir and Khudkast
- e. Acquisition of the interest of intermediaries and its consequences, Consequences of Vesting

#### **Unit-II: U.P. Zamindari Abolition and Land Reforms Act, 1950**

- a. Acquisition of the interest of intermediaries and its consequences
  - i) Rights retained by intermediaries
  - ii) New land tenures

- iii) Status conferred on Old Tenants
- b. Compensation and Rehabilitation grant
- c. Gram Panchayat and Land Management Committee
- d. Allotment of Land and declaratory suit

### **Unit-III: U.P. Zamindari Abolition and Land Reforms Act, 1950**

- a. Tenure-Holders
  - i) Classes of Tenure holders
  - ii) Rights of Tenure holders
  - iii) Ejectment of Tenure holders
- b. Abandonment, surrender, extinction and lease.
- c. Succession

### **Unit-IV: Land Revenue**

- a. Liability to pay, First charge, Collection and Recovery, Settlement of land Revenue (S.243 to 272 U.P.Z.A. & L. R. Act, 1950).
  - b. The U.P. Land Revenue Act, 1901
    - i) Maintenance of maps and records
    - ii) Revision of maps and records
    - iii) Procedure of Revenue Courts and Revenue Officers
    - iv) Appeal, Revision, Review and Reference

### **Text Books**

R.R. Maurya, Uttar Pradesh Land Law, Central Law Publication, 2020.

Yatendra Singh, The Uttar Pradesh Imposition of Ceiling on Land Act, 1960, Central Law Publication.

### **Reference Books**

S.R. Myneni, Land Laws Asia Law House, 2020.

N. Maheswara Swami, Land Laws Asia Law House, 2020.

Sheetal Kanwal, Land Law including Tenure & Tenancy System, Amar Law Publication.

**LL.B. Semester–III**

**Paper: XIV(B)**

**M.M:100**

**Code: 103412**

**Theory:70**

**Credit:4**

**Sessional:30**

## **Information Technology Law**

### **Objectives of the Course**

1. The primary object of this course will introduce students to the information technology law.
2. To provide insight into the applicability of other laws in the digital environment.

### **Outcomes of the Course**

Students will be able to:

1. Analyse the provisions of Information Technology laws and its peculiarities.
2. Understand the concept of electronic commerce - electronic signatures, data protection, cyber security; penalties & offences under the IT Act, dispute resolution, and other contemporary issues.

### **Course Content**

#### **Unit-I: Introduction**

Information Technology, Understanding cyber space, Interface of technology and law, Information Technology Act, 2000, Legal recognition & authentication of electronic records under Information Technology Act and UNCITRAL model law on Electronic Commerce & e-signatures.

#### **UNIT-II: Civil Liabilities**

Data protection, Damage to computer, Online defamation and Dispute resolution under I.T act.

#### **UNIT-III: Criminal Liabilities**

Financial frauds, hacking, obscenity and pornography, identity theft, IPR related crime, cyber stalking, cyber terrorism, internet service provider liability and cyber security. UNIT- IV: Applicability of other laws on e-commerce, E-contracts, United Nations Convention on the Use of Electronic Communication in International Contract, trademarks and domain name, and concept of jurisdiction in cyber space.

### **Text Books**

Pavan Duggal, Legal Framework on Electronic Commerce and Intellectual Property Rights in Cyberspace, (Universal, 2014)

Kamath Nandan, Law Relating to Computers Internet & E-commerce - A Guide to Cyber laws & The Information Technology Act, Rules, Regulations and Notifications along with Latest Case Laws (Universal, 2019)

Ishita Chatterjee, Law and Information Technology, (Central Law Publications, 2018).

**Reference Books**

Pavan Duggal, An exhaustive section-wise commentary on the Information Technology Act, 2000 (Universal 2014)

S.K. Verma and Raman Mittal (Eds.), Legal Dimensions of Cyberspace, (ILI 2004).

Aparna Viswanathan, Cyber Law (Indian & International Perspectives on key topics including Data Security, E-commerce, Cloud Computing and Cyber Crimes (LexisNexis 2015)

**LL.B. Semester–III**

**Paper: XIV (C)**

**M.M:100**

**Code: 103413**

**Theory:70**

**Credit:4**

**Sessional:30**

### **Aviation Law**

#### **Objectives of the Course**

1. To equip students with the basic understanding of the various international conventions that affect Aviation law.
2. To apprise students with the concept of carrier and product liability in Aviation.
3. To make the students understand national laws governing aviation industry.
4. To equip the students with the basic understanding of legal regime governing crimes on board.

#### **Outcomes of the Course**

Students will be able to:

1. Explain comprehensively the Aviation industry sector.
2. Understand the international laws governing civil aviation applicable as between sovereign States.
3. Understand the domestic law of India governing the issues related to civil aviation.
4. Comprehend the rules governing liability in event of death, or injury to persons and cargos.
5. Demonstrate the intellectual and creative skills to research, interpret and synthesize relevant legal matters.

#### **Course Content**

##### **Unit -I: Introduction to Air Law**

Origin of air law  
Theories of airspace  
Freedom v. Sovereignty debate  
The development of international legal regime

##### **Unit- II: International and National Frame work**

Chicago Convention and the Fundamental Principles Scheduled and non -scheduled air traffic  
Airline cooperation  
Nationality of aircrafts  
Rules on airports, Jurisdiction, International Civil Aviation Organization

##### **National Laws**

Aircraft Act of 1934, The Aircraft Rules, 1937

##### **Unit -III: Legal Regime Governing Crimes on Board Aircrafts**

Problem of jurisdiction and applicable law to try the offenses on board aircrafts  
The Tokyo Convention  
The Hague Convention to combat hijacking  
The Montreal Convention and the safety of civil aviation

## **Unit -IV: Carriers' Liability and Product Liability in Aviation**

### **Carriers' Liability under the Warsaw Convention**

Debate over the applicability Carriage documents

Extent of the liability of carrier Duration of the Liability Jurisdiction and procedural aspects Related instruments

### **Product Liability in Aviation**

Concept of product liability

Move towards strict liability in aviation Crashworthiness Punitive damages

Codification of product liability

### **Reference Books**

Lawrence B. Goldhirsch, The Warsaw Convention Annotated: A Legal Hand Book, The Hague: Kluwer Law International, 2000.

Elmar Giemulla, et al., Montreal Convention, The Netherlands: Wolters Kluwer, 2010.

Chia-Jui-Cheng and Doo Hwan Kim, The Utilization of the World's Airspace and Free Outer Space in the 21<sup>st</sup> Century, The Hague: Kluwer Law International, 2000.

### **Text Books**

Peter Martin, et al., Air Law, Vol. 1, Butterworths, 1977.

P.P.C. Haanappel, The Law and Policy of Air Space and Outer Space, The Hague: Kluwer Law International, 2003.

J. C. Batra, International Air Law, New Delhi: Reliance Publishing House, 2003.

Air Law and Policy in India S. Bhatt, VS Mani, V. Balakista Reddy, Lancer Books 2008

**LL.B. Semester–III**

**Paper: XV**

**M.M:100**

**Code: 103611**

**Theory:70**

**Credit:4**

**Sessional:30**

**Professional Ethics & Professional Accounting System  
(Clinical/Practical Paper)**

**Objectives of the Course**

1. To have a discourse on the legal provisions, guidelines, and judicial decisions on the subject of professional conduct for advocates and on Contempt of Court Act.
2. It will also aim to discuss the opinions/decisions of the State Bar Councils/Bar Council of India on professional misconduct.

**Outcomes of the Course**

Students will be able to:

1. Identify situations of professional dilemmas.
2. Understand the concept of contempt of court and its implications on legal profession.
3. Analyze and evaluate the law and principles of legal ethics under the Advocates Act, 1961.

**Course Content**

**Unit-I: Introduction**

Brief History of Legal Profession in India

Its Nature, Evolution and Development in India

Meaning of Ethics, Object of Legal Ethics, Necessity for an Ethical Code

**Unit -II: Admission & Enrollment of Advocate**

Right to Practice

Conduct of Advocates and Disciplinary Proceedings

**Unit-III: Rights and Duties of Advocates**

Rights, Privileges, Duties, Disabilities and Social Responsibilities of an Advocate

Standard of Professional Conduct and Etiquette

Professional and other Misconducts

#### **Unit-IV: Relation with Bar& Bench**

Powers and Procedure of Disciplinary Committees of the Bar  
Accountancy for Lawyers. Bench Bar Relations  
Legality of Lawyers Strike in the Right-Duty Discourse  
Contempt Law and Practice: The Contempt of Courts Act, 1971

#### **Text Books**

C.L. Anand: Professional Ethics of the Bar, Allahabad Law Books, 1987.  
B.K. Goswami: Legal Profession and Its Ethics, Gogia Law Publisher, 1995.  
Anirudh Prasad, Principles of the Ethics of Legal Profession in India, 2004, Universal Book House, 2005.  
S.K. Mookerji, Iyer's Law of Contempt of Court, Delhi Law House, 2011.  
Krishnaswami Iyer's Professional Conduct and Advocacy, (1945)

#### **Reference Books**

G.C.V. Subba Rao, Commentary on Contempt of Courts Act 1971, 2014.  
Ranadhir Kumar De, Contempt of Court Law & Practice, Wadhwa Book Company, 2012.  
Francis L. Wellman, The Art of Cross Examination, Simon & Suchester, 1997.  
Kailash Rai, Legal Ethics, Accountability for Lawyers and Bench-Bar Relations, Central Law Publication, 2015.

**LL.B. Semester–IV**

**Paper: XVI**

**M.M:100**

**Code: 104111**

**Theory:70**

**Credit:4**

**Sessional:30**

### **Administrative Law**

#### **Objectives of the Course**

1. To expose to the guiding principles and applicable doctrines of select sub-fields of Administrative Law.
2. To foster an informed perspective on the nature and limit of Judiciary in the development of the Administrative Law.
3. To cultivate ability to identify latent issues in Administrative Law.
4. To equip students with the intellectual tools necessary to properly conceptualize and analyse issues in Administrative Law.

#### **Outcomes of the Course**

Students will be able to:

1. Understand and explain the principles of Administrative Law covered in the course.
2. Apply the critical thinking required to bring about solutions to complex Administrative Law Problems/lacunae/uncertainties.
3. Predict and construct how unresolved or ambiguous Administrative Law questions could be resolved by the courts through an analysis of case law and the judicial method.

#### **Course Content**

##### **Unit-I: Introduction**

Definition, Nature and Scope of Administrative Law, Reasons for the growth of Administrative Law, Relation between Administrative Law and Constitutional Law, The impact and implications of the Doctrine of Separation of power and the Rule of Law on Administrative Law, Droit Administrative

##### **Unit-II: Administrative Action**

Classification of Administrative Action – the necessity, Delegated Legislation: Meaning, Kinds and causes of its growth, Constitutionality of Delegated Legislation, Control Mechanism: Legislative Control, Procedural Control and Judicial Control

##### **Unit-III: Principles of Natural Justice and Liability**

Administrative Tribunals, Principle of Natural Justice, Exception to Natural Justice, Judicial Review of Administrative Discretion: Meaning, nature and scope, Doctrine of Promissory

Estoppels, Doctrine of legitimate expectation, Doctrine of proportionality, Liability of Administration in Tort and Contract

**Unit-IV: Review of Administrative Action**

Judicial Review of Administrative Action, Writs, Ombudsman in India (Lokpal and Lokayukta), Central Vigilance Commission, Constitutional Protection to Civil Servants, Parliamentary Committees – Commission of Enquiry

**Text Books**

I.P. Massey, Administrative Law, EBC, 2019

Jain & Jain, Principles of Administrative Law, Lexis Nexis, 2015

C.K. Takwani, Lectures on Administrative Law, EBC. 2019,

**Reference Books**

H.W.R. Wade, Administrative Law, Oxford University Press, 2019

P.P. Craig, Administrative Law, Sweet & Maxwell, 2003

De. Smith, Judicial Review of Administrative Action, Sweet & Maxwell, 2004

V.N. Shukla's, Constitution of India, EBC ,2020

S.P. Sathe, Administrative Law, Lexis Nexis, 2010

**LL.B. Semester–IV**

**Paper: XVII**

**M.M:100**

**Code: 104112**

**Theory:70**

**Credit: 4**

**Sessional:30**

## **Interpretation of Statutes and Principles of Legislation**

### **Objectives of the Course**

1. To equip the students with various tools of interpretation of statutes.
2. To provide understanding and working knowledge about interpretation of statutes.
3. To make students understand certain rules, doctrines and principles of interpretation.

### **Outcomes of the Course**

Students will be able to:

1. To know the techniques adopted by courts in construing statutes.
2. Interpret the conceptual basis of legal principles with comparative analysis.
3. Research, analyse, rationalize and present effectively.
4. Apply the legal principles and procedures in practice.

### **Course Content**

#### **Unit-I: General and Rules of Statutory Interpretation**

Basic Principles of Interpretation, Statutes, Parts of Statutes, Kinds of Statutes, Intention of Legislature, Meaning of Construction and Interpretation, Purpose of interpretation, Guiding rules of interpretation

#### **Unit-II: Aids to the Interpretation**

**Internal Aids to Interpretation-** Title, Preamble, Heading, Marginal Note, Section, Sub-section, Punctuation mark, Illustration, Exception, Proviso, Explanation, Saving Clause, Schedule, Non - obstante clause

**External Aids to Interpretation-** Dictionaries, Translations, Constituent Assembly debate for Constitutional Interpretation, Legislative History, Legislative intention, Statement of objects and

reasons, Legislative Debate, Law Commission Reports, Stare Decisis, Contemporanea Expositio, General Clause Act

### **Unit-III: Rules and Principles of Statutory Interpretation**

**Primary rules-** Literal rule, Golden rule, Mischief rule (rule in the Heydon's case), Rule of harmonious construction

**Secondary Rules** - Noscitur a sociis, Ejusdem generis, Reddendo Singula Singulis, Principle of Constitutional interpretation, ut res magis valeat quam pereat, In bonam partem.

### **Unit-IV: Interpretation with Reference to the Subject Matter and Purpose**

Restrictive and beneficial construction - Taxing statutes, Penal statutes, Welfare legislation  
Interpretation of substantive and adjunctive statute, Interpretation of directory and mandatory provisions, Interpretation of enabling statutes, Interpretation of codifying and consolidating statutes, Interpretation of statutes conferring rights, Interpretation of statutes conferring powers.

### **Text Books**

G. P. Singh, Principles of Statutory Interpretation, Wadhwa, 1999

P. St. Langan (Ed.). Maxwell on the Interpretation of Statutes, Lexis Nexis, 2006

N.M. Tripathi, Bombay K. Shanmukham, N.S. Bindras's Interpretation of Statutes, The Law Book Co., 2007

V. Sarathi, Interpretation of Statutes, Eastern Book Company, 2010

M.P. Jain, Constitutional Law of India, Wadhwa & Co., 2008

M.P. Singh, (Ed.) V.N. Sukla's Constitution of India, Eastern Book Company, 2017

### **Reference Books**

Narotam Singh Bindra, N.S. Bindra's Interpretation of Statutes, LexisNexis Butterworths, 2007

Sandeep Bhalla, Principles of Interpretation in India: (with Legal Maxims), IEbooks Inc., 2015

U. Baxi, Introduction to Justice K.K. Mathew's, Democracy Equality and Freedom, EBC, 1978

**LL.B. Semester–IV**

**Paper: XVIII**

**M.M:100**

**Code: 104113**

**Theory:70**

**Credit: 4**

**Sessional:30**

### **Civil Procedure Code and Limitation Act**

#### **Objectives of the Course**

1. To equip students with the fundamental knowledge of civil procedure code
2. To familiarize students with certain important concepts of civil procedure code such as place of suit, pleadings, particular suits, trial of suits, order, decree so on and so forth.
3. To acquaint students with the knowledge of procedural aspects of working of civil courts.
4. To equip students with the fundamental knowledge of the Limitation Act, 1963

#### **Outcomes of the Course**

Students will be able to:

1. Understand the fundamentals of Civil Procedure Code with commitment towards learning.
2. Interpret the conceptual basis of legal principles of Civil procedure code with comparative analysis
3. Research, analyze, rationalize and present effectively.
4. Apply the legal principles and procedures in practice.

#### **Course Content**

##### **Unit- I: Introduction**

Background and Significance of the CPC, 1908

Definitions: Decree, Judge & Judgment, Order, Foreign Court & Judgment, Mesne Profits, Public Officer, Affidavit, Plaint, Suit, Written Statement

Jurisdiction and Place of suing

Doctrine of *Res sub judice*, Doctrine of *Res Judicata*, Caveat, Inherent Power of Courts, Restitution

Transfer of Proceedings

##### **Unit -II: Civil Suits**

Parties to Suit, Framing of suits

Pleadings: Definition and Fundamental Rules of Pleading

Plaint: General Rules of Plaint, Return and Rejection of a Plaint

Limitation for Filing Written Statement under CPC  
Joinder, Re-joinder, Misjoinder, set-off and counter claim  
Summoning under the CPC  
Incidental Proceedings  
Appearance and Non-Appearance of Parties  
Ex-parte decree, Dismissal for Default

### **Unit -III: Particular Suits and Trial of Suits**

Particular Suits: Suits by or against Governments, Suits by or against a foreigner, Suits by or against minors, Suits by or against firms, Suits by or against indigent person, Suits relating to public matters, Interpleader suits  
Trial of Suits: Examination of the Parties, Admission and Affidavit, Adjournment, Withdrawal and Compromise of suits  
Judgment: Judgment, decree and order, Execution of order and decree, Appeal from order and decree

### **Unit -IV: Interim Orders, Supplementary Proceedings and the Limitation Act**

Commissions  
Arrest and Attachment before Judgment  
Temporary Injunction and Interlocutory orders  
Appointment of Receiver  
Reference, Review and Revision  
**The Limitation Act, 1963:** Limitation of suits, Appeal and Application [Section 3-11], Computation of Periods of Limitation [Section 12- 24], Acquisition of Ownership by Possession [ The Schedule of period of Limitation is excluded]

### **Text Books**

Dinshaw Fardausi Mulla, Mulla's Code of Civil Procedure, Lexis Nexis , 2017  
Sudipto Sarkar & V.R. Manohar, Sarkar's Code of Civil Procedure (2 Vols), Lexis Nexis India (11th Edn)  
M. P. Jain, The Code of Civil Procedure, LexisNexis Butterworth India, 2019

### **Reference Books**

Universal's Code of Civil Procedure, 1908 (Bare Act)  
C.K. Takwani, Code of Civil Procedure, Eastern Book Company, 2010  
M.R. Malik, Ganguly's Civil Court, Practice and Procedure, Eastern Law House, 2012  
M.P. Tandon, Code of Civil Procedure, Allahabad Law Agency, 2005

**LL.B. Semester–IV**

**Paper: XIX (A)**

**M.M:100**

**Code: 104411**

**Theory:70**

**Credit:4**

**Sessional:30**

### **Banking Law**

#### **Objectives of the Course**

1. To equip the students with fundamental knowledge of Banking Law.
2. To acquaint the students with the historic development of banking industry in India.
3. To ascertain the laws applicable to banking sector.
4. To acquaint the students with the recent and emerging dimensions of banking system.
5. To develop research, analysis, reasoning and presentation skills in students.
6. To enable the students to apply the knowledge of banking law in legal practice.

#### **Outcomes of the Course**

Students will be able to:

1. Understand the fundamentals of banking law with commitment towards learning.
2. Interpret the conceptual basis of legal principles of banking law with comparative analysis.
3. Research, analyze, rationalize and present effectively.
4. Apply the legal principles and procedures in practice.

#### **Course Content**

##### **Unit- I: Introduction**

History & Evolution of Banking in India  
Nationalisation of Banks  
Meaning & Definition of Banking  
Kinds of Banks & their functions

##### **Unit -II: Laws relating to Banking in India**

###### **Banking Regulation Act, 1949**

Definitions of bank, banker, banking and banking companies  
Control Over Management  
Prohibition of certain activities in relation to Banking Company  
Acquisition of Undertakings of Banking Companies in Certain cases  
Suspension of Business and Winding up of Banking Companies  
Special Provisions for Speedy Disposal of Winding up proceedings

###### **The Central Bank: Reserve Bank of India**

Evolution of RBI  
Organization and Management  
Functions of RBI

## **Unit -III: Banker and Customer**

### **Relationship between Banker & Customer**

Definition of Banker and Customer  
General and Special Relationship  
Legal Character  
Contract between banker & Customer  
Banks duty to customers  
General lien & Persons entitled to General lien  
Types of Accounts

### **Special classes of Customers**

Minor  
Partnership  
Company  
Married Women  
Trust  
Illiterate persons  
Joint Hindu Family  
Executors  
lunatics

## **Unit -IV: E- Banking and Ancillary Services**

### **E-Banking-**

Definition  
Internet Banking- Retail & Corporate  
Mobile banking  
ATM Banking  
E-Cheque-authentication

### **Remittances-**

General, Demand Draft, Money Transfer  
Traveler's Cheques, Bank orders, credit cards/debit cards  
Safe deposit vaults, gift cheques

## **Banking Ombudsman**

### **Text Books**

M.L. Tannan, Tannan's Banking Law and Practice in India, LexisNexis, 2017  
Avatar Singh, Banking and Negotiable Instruments, Eastern Book Company (P) Ltd, 2018  
Ross Cranston, Principles of Banking Law, New York: Oxford University Press, 1997  
R.K. Gupta, Banking Law and Practice, Modern Law Publications, 2004  
Paget's, Law of Banking, LexisNexis, 2015  
R.N. Chaudhary, Banking Laws, Central Law Publications, 2016

### **Reference Books**

Basu, Review of Current Banking: Theory and Practice, Macmillan, 1974  
L.C. Goyle- The Law of Banking and Bankers, Eastern Law House Pvt. Ltd., 1995

S.N. Gupta, The Banking Law in Theory and Practice, Universal Publishing Co. Pvt.  
Ltd, 2017

**LL.B. Semester–IV**

**Paper:XIX (B)**

**M.M:100**

**Code: 104412**

**Theory:70**

**Credit:4**

**Sessional:30**

## **Competition Law**

### **Objectives of the Course**

1. To develop an understanding about the concept of monopoly, constitutional perspectives pertaining to state monopoly.
2. To trace historical development of the competition law regime and learn about the need for having competition law.
3. To provide an analysis of the legal developments, from MRTP to the Competition Act.
4. To learn the nuances of the competition law and the various guidelines issued within its purview by the regulatory bodies.
5. To study and enhance the knowledge pertaining to the working of the competition commission of India and identify the areas where competition law has marked its presence.

### **Outcomes of the Course**

Students will be able to:

1. Explain the concept of monopoly, constitutional directives against monopoly and the practice of monopolization.
2. Illustrate the evolution, object and functions of Competition law.
3. Compare the types of anti-competitive agreements and testing its validity; the practices covered by abuse of dominant position; practices in connection with combinations.
4. Examine the enforcement mechanisms and regulatory framework envisaged under the Competition Law.

### **Course Content**

#### **Unit-I:**

The Concept of Monopoly: Advantages and Disadvantages, The Role of monopoly in Indian economy, Constitutional directives regarding concentration of economic power, The Right of the state to set up a monopoly in trade or business, Monopolies in the Private and Public Sectors, Monopolization of certain trades and services - Magnitude and trends.

#### **Unit-II:**

History and Development of Competition Law/ Antitrust Law, Liberalization and Globalization - Raghavan Committee Report, Competition Act 2002; Difference between MRTP Act and Competition Act, 2002, Historical Introduction to Monopolies and Antitrust Legislation in U.S.A. and U.K. -The Sherman Act, the Clayton Act and the Monopolies and Mergers Act; Monopolies Inquiry Commission Recommendations: Constitutional directive, MRTP Commission: Policy and Law.

**Unit-III:**

Enforcement Mechanisms under The Competition Law, 2002: Establishment and Constitution of Competition Commission of India, Powers and Functions- Jurisdiction of the CCI – adjudication and appeals, -Competition Appellate Tribunal (CompAT), Director General of Investigation (DGI) Regulation of Anti-competitive Agreements, Abuse of Dominant Position, Combinations under the Act

**Unit-IV:**

The Competition Act, 2002- Penalties for Contravention (Chapter VI) and Role of Competition Advocacy (Chapter VII)

**Textbooks**

T. Ramappa, Competition Law in India: Policy, Issues and Development, Oxford University Press, New Delhi

Avtar Singh, Competition Law, Eastern Book Company, Lucknow

Abir Roy & Jayant Kumar, Competition Law in India, Eastern Law House, Kolkata

Dr. Souvik Chatterji, Competition Law in India and USA, Allahabad Law Agency, Faridabad

Versha Vahini, Indian Competition Law, Lexis Nexis, Gurgaon

**Reference Books**

J.M. Blair, Economic Concentration - Structure, Behaviour and Public Policy

Rowley, International Mergers Anti-Trust Process. Evel and Little: Concentration in British Industry

J.B. Health, (ed.) International Conference on Monopolies - Mergers and Restrictive Practices

C. Kaysen and Turner, Anti-Trust Policy

W.F. Muller, A. Primer on Monopoly and Competition

A. Sutherland, The Monopolies Commission in Action

Government of India, Report of the Industrial Licensing Policy Inquiry Committee (1969)

Government of India, Report of the High-Powered expert Committee on the Companies Act

V.K. Singania, Economic Concentration through Intercorporate

S.M. Jhala, Monopolies and Restrictive Trade Practices in India

**LL.B. Semester–IV**

**Paper: XIX (C)**

**M.M:100**

**Code: 104413**

**Theory:70**

**Credit:4**

**Sessional:30**

## **Insurance Law**

### **Objectives of the Course**

1. To equip the students with fundamental knowledge of Insurance Law.
2. To acquaint the students with the general and specific principles of law of insurance.
3. To familiarize with the various types of insurances and the laws governing insurance in India.
4. To develop research, analysis, reasoning and presentation skills in students.
5. To enable the students to apply the knowledge of insurance law in legal practice.

### **Outcomes of the Course**

Students will be able to:

1. Understand the fundamentals of insurance law with commitment towards learning.
2. Interpret the conceptual basis of legal principles of insurance law with comparative analysis
3. Research, analyze, rationalize and present effectively.
4. Apply the legal principles and procedures in practice.

### **Course Content**

#### **Unit-I: Principles of Contract of Insurance**

Meaning, Definition & Nature of Insurance Contract,  
Parties and Premium under Contract of Insurance  
General Principles: - Essentials of Contract of Insurance  
    Proposal and Acceptance  
    Competence of Parties  
    Consideration  
    Free Consent  
    Legality of Object  
    Capacity to Contract

Specific principles:

    Principle of utmost good faith (Duty of Disclosure, uberrima fides)  
    Principle of Insurable Interest  
    Principle of Subrogation  
    Principle of Contribution  
    Principle of Proximate Cause  
    Principle of Indemnity  
    Material facts  
    Double Insurance & Re-insurance

## **Unit -II: Life Insurance**

### Life Insurance:

History & Evolution

Nature and definition of life Insurance Contract

Kinds of Life Insurance Contracts

Formation of Life Insurance Contract

Factors affecting the risk

Amounts recoverable and persons entitled to payment under Life Insurance

Policy

Settlement of Claims and payment of Money

Important Provisions of LIC Act, 1956

## **Unit- III: Marine & Fire Insurance**

### Marine Insurance

Nature & Characteristics of Marine Insurance

Indemnity

Kinds of Marine Insurance policies

Warranties & Breach of Warranties

Voyage & Deviations

Maritime perils

Settlement of Claim

### Fire Insurance

Nature, Scope & Importance of Fire Insurance

Contract of Indemnity

Types of Fire Insurance

Perils insured against and proximate cause

Excepted perils

Inclusions & Exclusions under Fire Insurance Policy

Manipulated Fire and its effects

Settlement of Claim

## **Unit -IV: Legislations Governing Insurance in India**

### Insurance Act, 1938

Assignment & Transfer of Policies

Nomination

Difference between Assignment & Nomination

Misstatement & Concealment

### Insurance Regulatory and Development Authority (IRDA)

Duties, Powers & Function of the authority

Registration, Cancellation of Registration and Requirements as to Capital

Redress of Public Grievances Rules, 1998: Insurance Ombudsman

## **Text Books**

K.S.N. Murthy & Dr. K.V.S. Sarma, Modern Law of Insurance, LexisNexis, 2014

Avtar Singh, Law of Insurance, Eastern Book Company, 2017

J.V.N. Jaiswal, Law of Insurance, Eastern Book Company, 2008

M.N. Srinivasan, Principles of Insurance Law, LexisNexis Butterworth Wadhwa, 2009

### **Reference Books**

Taxmann's, Insurance Law Manual, 2015

B.C. Mitra, Law Relating to Marine Insurance, 2012

E.R. Hardy Ivamy, General Principles of Insurance

**LL.B. Semester–IV**

**Paper: XX**

**M.M:100**

**Code: 104811**

**Theory:70**

**Credit:4**

**Sessional:30**

**Alternative Dispute Resolution- Arbitration, Mediation and Conciliation  
(Clinical / Practical Paper)**

**Objectives of the Course**

1. The intent of the course is to provide a strong academic understanding of the various modes of Alternative Dispute Resolution (ADR) systems.
2. Discuss the procedural aspects of the different modes of ADR.
3. Inculcate the practical approaches through the case study on Domestic Arbitration and International Arbitration.
4. Developed the practical approaches, participation and report writing skills through the participation in Lok Adalats and Legal Awareness Camps.

**Outcomes of the Course**

Students will be able to:

1. Understand various modes of ADR with procedure and practice.
2. Evaluate the sophisticated understanding of ethical and legal issues surrounding Dispute Resolution models and practice including case study.
3. Formulate the modalities and techniques of resolution of disputes through outside court settlement.

**Course Content**

**Unit- I: Introduction & General Concept of Alternative Dispute Resolution and Arbitration**

Meaning, Nature and Scope of ADR.

Arbitration- Definitions with related Sections description, New York Convention and Geneva Convention.

**Unit -II: Other Modes of Alternative Dispute Resolution**

Conciliation, Mediation, Negotiation, Section 89 of the Civil Procedure Code, 1908 and Plea Bargaining.

**Unit -III: Institution and Case Analysis**

One leading case on Domestic Arbitration and one on International Arbitration.

Indian Council of Arbitration (ICA) – Its system and working.

**Unit- IV: Report Writing**

Reports on participation in Legal Awareness Camps organized by department and/or with other institutions.

Reports on participation in Lok Adalats.

**Text Books**

Avtar Singh: Law of Arbitration & Conciliation and Alternative Resolution Systems, Eastern Book company, 2021

K.V. Satyanarayana, Law of Arbitration and Conciliation in India, Asia Law House, 2021

Madsudan Sahary, Text book on Arbitration and Conciliation with Alternative Dispute Resolution, Universal Law Co. Pvt.Ltd.,2017

NV Paranjpe, Law relating to Arbitration & Conciliation in India, Central Law Agency, 2016

**Reference Books**

Rohit M. Subramaniam, Eastern Book Co.2021

Anirban Chakraborty, Law & Practice of Alternative Dispute Resolution in India, Lexis Nexis, 2016

Justice S.M. Jhunjhunwala, Law of Arbitration and Conciliation, Snow white Publications Pvt. Ltd. 2021

Shashank Garg, Alternative Dispute Resolution, Oxford, 2018

## Paper XXI

**LL.B. Semester-V**  
**Code: 105111**  
**Credit-4**

**M. M: 100**  
**Theory: 70**  
**Sessional : 30**

### **Law of Evidence** **(Bhartiya SakshyaAdhiniyam, 2023)**

#### **Course Objectives:**

1. To make the students understand nature and functions of the law of evidence.
2. To demonstrate to students the quality and type of proof needed to prevail in litigation.
3. To inculcate in them the skills of an Advocate by exposing them to the techniques of cross examination.
4. Students will be able to exhibit skills in practices and procedures of law.
5. To explore the latest developments and grey areas of evidence law.

#### **Outcomes of the Course**

##### **Students will be able to:**

1. Acquire the knowledge of the basics of law of evidence and will develop an understanding of the law of evidence and its operation.
2. Demonstrate a coherent and fundamental knowledge of the rules of evidence, evidential concepts and principles.
3. Develop communication skills to present a clear and coherent understanding of the rules of evidence to a legal audience.
4. Discuss the facts of complex legal principles pertaining to evidence.
5. Demonstrate a detailed knowledge of the specific areas of current importance and to analyse the evolving nature of law of evidence.

#### **Outline of the Course**

##### **Unit-I**

##### **Introduction and Interpretation Clause**

Definition, Nature, Functions and relationship of Law of Evidence with the substantive and procedural laws

Principles of rules of Best Evidence

Evidence (Sec.2(1)(e), Document (Sec.2(1)(d), Proved(Sec.2(1)(j),Disproved(Sec.2(1)(c), Not proved(Sec.2(1)(i),

Relevant Facts{(Section 2(1) (k)} and Fact in Issue{(Section 2 (1)(g)}

May Presume{(Section 2(1)(h)}, Shall Presume{(Section 2(1)(l)} and Conclusive Proof{(Section 2(1)(b)}

##### **Relevancy of Facts**

Res Gestae (Section 4)  
Occasion, Cause & Effect (Section 5)  
Motive, Preparation, Conduct & Introductory Facts (Sections 6 & 7)  
Relevancy of facts constituting Conspiracy (Section 8)  
Alibi (Section 9)

## **Unit-II**

### **Definition of Admission and Relevancy**

Admission Defined & Persons who can make Admissions (Sections 15 -18)  
Proof of Admissions against the Persons making them (Sections 19- 20)  
Admissions in Civil cases (Section 21)

### **Definition of Confession and Relevance of Confessions, Dying declaration**

Confession (Section 22)  
Confession to Police, Confession in the presence of Magistrate &  
Discovery Statement (Section 23)  
Confession by Co-accused & Evidentiary value of Retracted Confession (Section 24)  
Dying Declaration (Section 26)  
Relevancy of Previous Judgements (Sections 34- 38)  
Relevancy of Opinion of Experts (Sections 39- 45)  
Relevancy of Character (Sections 46-50)

## **Unit-III**

### **Documentary Evidence**

Facts Which Need Not be Proved (Sections 51-53)  
Oral and Documentary Evidence (Sections 54-77)  
Exclusion of Oral by Documentary Evidence (Sections 94-99)

### **Production and Effect of Evidence**

Burden of Proof (Sections 104-114)  
Presumptions (116-120)  
Estoppel (121-123)  
Competence of Witnesses (Sections 124-127)  
Privileged Communications (Sections 128 -137)  
Accomplice as a Witness (Section 138)  
Hostile Witness (Section 157)

## **Unit-IV**

### **Examination of Witnesses**

Types of Examinations (Section 142)  
Leading Questions {(146 (1)(2)(3) & (4)}  
Questions which can be asked during different type of Examinations (Section 168)  
Impeaching the Credit of Witnesses (Section 158)  
Refreshing Memory (Section 162)  
Improper Trial or Rejection of Evidence (Section 169)

Digital Signatures & Digital Certificates (Sections 61-66)  
Recent Developments – Introduction to Electronic and Forensic Evidence

**Bare Act-**

- The Bhartiya Sakshya Adhiniyam, 2023

**Text Books**

- Batuk Lal, Law of Evidence, Central Law Agency, 2023
- Ratan Lal Dhiraj Lal, The Law of Evidence, Lexis Nexis, 2019
- Dr. Avtar Singh, Principles of the Law of Evidence, Central Law Publications, 2022
- Chief Justice M. Monir, Text Book on the Law of Evidence, Universal Law Publishing, 2018

**Reference Books**

- Vepa P. Sarathi, Law of Evidence, EBC, 2021
- Richard D. Friedman, Wigmore on Law of Evidence
- Chief Justice M. Monir, The Law of Evidence (In 2 Volumes)- Sarkar and Manohar, Sarkar on Evidence, Lexis Nexis, 2010
- Albert S. Osborn, The Problem of Proof, Nabu Press, 2010
- Ali and Woodroffe, Law of Evidence, Lexis Nexis, 2016

## Paper: XXII

**LL.B. Semester-V**

**Code: 105112**

**Credit-4**

**M. M: 100**

**Theory : 70**

**Sessional: 30**

### **Law of Crimes- II (The Bharatiya Nagarik Suraksha Sanhita,2023 )**

#### **Course objectives:**

1. To understand the criminal Justice system in India.
2. The course will acquaint the student with organization of the functionaries under the Sanhita, their power and functions at various stages and the procedure according to which these powers and functions are to be exercised.
3. To understand how procedural law will promote and protect the interests of a common man, especially during police investigation.
4. The students will also undertake the study of two cognate Acts as a part of this course viz.; Juvenile Justice Act and Probation of Offenders Act.

#### **Outcomes of the Course:**

##### **Students will be able to:**

1. Understand the fundamentals of law with commitment towards learning.
2. Identify the stages of Investigation, Inquiry and Trial.
3. Research, analyze, rationalize and present effectively.
4. Apply the legal principles and procedures in practice.

#### **Outline of the course**

##### **Unit – I**

Objects, Scope and extent of the Act, Definitions( Section 2), Constitution of Criminal Courts and Offices( Sections 6-20), Powers of Courts( Sections 21-29), Powers of superior officers of police and aid to the Magistrates and the Police ( Sections 30-34).

##### **Unit – II**

Arrest of Persons( Sections 35- 62), Processes to Compel Appearance ( Section 63-93), Process to compel the production of things( Section 94-110) , Reciprocal arrangements for assistance in certain matters and procedure for attachment and Forfeiture of property( Sections 111-124), Security for keeping the peace and for good behavior( Sections 125-143) , Order for Maintenance of Wives, Children and Parents(Sections 144-147), Maintenance of Public order and Tranquility ( Sections 148-167), Preventive Action of the Police( Sections 168-172), Information to the Police and their Powers to Investigate ( Sections 173-196), Jurisdiction of the Criminal Courts in Inquiries and Trials( Sections 197-209).

##### **Unit – III**

Conditions requisite for initiation for proceedings (Sections 210-222), Complaint to Magistrate ( Sections 223-226), Commencement of proceedings before Magistrates ( Sections 227-233), Limitations for taking Cognizance for certain offences ( Sections 513-519), The

charge ( Sections 234-247), ,Types of Trial ( Session, Warrant, Summon and Summary trial , Sections 248-288), Plea bargaining( Sections 289-300), Attendance of persons confined or detained in person ( Sections 301-306), Evidence in Inquiries and trials( Sections 307-336) ,General Provisions as to Inquiries and trials( Sections 337-366).

#### **Unit – IV**

The Judgment ( Sections 392-406), Submission of Death Sentences for Confirmation ( Sections 407-412), Appeals ( Sections 413-435) , Reference and Revision ( Sections 436-445 ), Transfer of criminal cases ( Sections 446-452), Execution, Suspension, Remission and Commutation of Sentences ( Sections 453-477), Provision as to Bail and Bonds ( Sections 478-496), Irregular proceedings ( Sections 506-512), Inherent powers of High Court ( Section 528), Salient features of the Juvenile Justice (Care & Protection of Children) Act, 2015 with latest Amendment, Salient features of the Probation of Offenders Act, 1958.

#### **Bare Acts:**

- The Bharatiya Nagarik Suraksha Sanhita, 2023
- Probation of Offenders Act, 1958
- Juvenile Justice (Care & Protection of Children) Act, 2015

#### **Text Books:**

- J.K. Verma, Bharatiya Nagarik Suraksha Sanhita, 2023 (Criminal Procedure) : A Commentary, EBC, 1<sup>st</sup> Edition, 2024.
- R.V. Kelkar- Criminal Procedure, EBC 2021.
- Ratanlal & Dhiraj Lal- The Code of Criminal Procedure, Lexis Nexis,2020
- S.N.Mishra- The Code of Criminal Procedure,1973 Central Law Publication, 2020,

#### **Reference Books:**

- P. S. A. Pillai, Criminal Law, Lexis Nexis, 2017
- S.C. Sarkar, Code of Criminal Procedure (Volume –I &II), Lexis Nexis, 2018
- S.R. Myneni, Criminal Procedure Code Law of Juvenile Justice & Probation Of Offenders, ALA, 2022

**LL.B. Semester-V**

**Paper: XXIII**

**M.M:100**

**Code:105113**

**Theory:70**

**Credit:4**

**Sessional:30**

### **Labour Law and Industrial Laws-I**

#### **Objectives of the Course**

1. This course aims to introduce fundamental principles and regulations relevant in the domain to labour and industrial law.
2. It will focus on developing research, analysis and presentation among the students.
3. It also aims to disseminate legal awareness about the relevant legislation such as trade unions act, industrial dispute act, and employee's state insurance act particularly in the context of Uttarakhand.

#### **Outcomes of the Course**

Students will be able to:

1. Possess the necessary legal knowledge in the domain of Labour Laws.
2. Develop capacity to apply these regulations in industrial disputes.

#### **Course Content**

##### **Unit-I: Trade Union Act, 1926**

Trade Unionism in India

Definition of trade union and trade dispute

Registration of trade unions

Legal status of registered trade union

Mode of registration

Powers and duties of Registrar

Cancellation and dissolution of trade union

Procedure for change of name

Amalgamation and dissolution of trade union

Disqualifications of office-bearers, Right and duties of office-bearers and members

General and Political funds of trade union

Civil and Criminal Immunities of Registered trade unions  
Recognition of trade union  
Collective bargaining

**Unit-II: The Industrial Dispute Act, 1947**  
**Resolution of Industrial Dispute**

Industrial dispute and individual dispute  
Arena of interaction and Participants– Industry, workman and employer  
Settlement of industrial dispute  
Works Committee  
Conciliation Machinery  
Court of Enquiry  
Voluntary Arbitration  
Adjudication – Labour Court, Tribunal and National Tribunal settlement bodies and techniques  
Powers of the appropriate Government under the Industrial Disputes Act, 1947  
Unfair Labour Practice

**Unit-III: The Industrial Dispute Act, 1947**  
**Instrument of Economic Coercion**

Concept of strike  
Gherao  
Bandh and Lock-out  
Types of strike  
Rights to strike and Lock-out  
General Prohibition of strikes and lock-outs  
Prohibition of strikes and lock-outs in public utility services  
Illegal strikes and lock-outs  
Justification of strikes and lock-outs  
Penalties for illegal strikes and Lock-outs  
Wages for strikes and lock-outs

**Unit-IV: Employee's State Insurance Act, 1948**

Historical Background  
Aims, Objects & Application  
Definitions  
Security Measures (Benefits Available)  
Employment Injury

General Rules concerning benefits  
Authorities under the Act

### **Bare Acts**

Trade Union Act, 1926, Industrial Employment (Standing Orders) Act, 1946  
Industrial Dispute Act, 1947  
Employee's State Insurance Act, 1948

### **Text Books**

S.C. Srivastava, Labour Law and Industrial Relations, Vikas Publishing House, 2012.  
S.K. Puri, Labour and Industrial Laws, Allahabad Law Agency, 2017.  
G.B. Pai, Labour Law in India, Butterworths, 2001.  
V.G. Goswami, Labour Law and Industrial Law, Central Law Agency, 2019.

### **Reference Books**

S.N. Misra, Labour and Industrial Law, Central Law Agency, 2020  
O.P. Malhotra, Industrial Disputes Act, Vol. I & II, Lexis Nexis, 2004  
Indian Law Institute, Cases and Materials on Labour Law and Labour Relations, Indian Law Institute, 2007

**LL.B. Semester–V**

**Paper: XXIV (A)**

**M.M:100**

**Code: 105411**

**Theory:70**

**Credit-4**

**Sessional:30**

## **Offences Against Children and Juvenile Offences**

### **Objectives of the Course**

1. To understand the meaning of Juvenile Delinquency and the factors responsible for its causation
2. To enable the students to understand the meaning of crime related to child
3. To introduce the student to various aspects of criminal liability and the logical classification of offences according to their gravity
4. To acquaint them to available National and International legal regimes pertaining to child protection.

### **Outcomes of the Course**

Students will be able to:

1. Understand the various dimensions of the various aspects of crime and criminal behavior and the implementation of the law through Judicial interpretation
2. Work efficiently and with critical engagement with various concepts of Criminal law in relation to child protection, having due regard to the practical implementation of the principles in actual cases
3. Put in practice the acquired knowledge, procedural and practical aspects of jurisprudential law and will use logical, analytical and decision-making ability to deal with challenge

### **Course Content**

#### **Unit-I: Constitutional and International Legal Status of Child**

Constitutional Concern-Articles 15(3), 21(A), 24, 39(e) & (f) and 45

International concern and endeavour for the welfare of children:

Minimum Age conventions

Child rights conventions

U.N. Declaration of the Rights of the Child, 1924,1959

Contributions – UNESCO, UNICEF, CEDAW

## **Unit-II: Legal Control of Child Labor**

International conventions and recommendations of the ILO

The Factories Act, 1948

The Child Labor (Prohibition and Regulation) Act, 1986

## **Unit-III: Child and Criminal Liability: Statutory provisions**

Sections 82, 83, 299 (Explanation 3), 312, 313, 314, 315, 316, 317, 318, 363A, 372, 376 and 377 of IPC.

Section 27 of the Cr.P.C.

The Prohibition of Child Marriage

Act, 2006

The Children Act, 1960

The Child Abuse Prevention and Treatment Act, 1974

## **Unit-IV: Juvenile Offence, Juvenile Delinquency and Sexual Abuse of Children**

Concept of Juvenile Delinquency

### **Legal Position in India**

The Juvenile Justice (Care and Protection of Children) Act, 2015

General Principles of Care and Protection of children

Juvenile Justice Board: Procedure, Powers and functions

Procedure in relation to children in conflict with law

Children's Court and its Powers

Child welfare committee: Procedure, Powers and functions

Procedure in relation to children in need of Care and Protection

Rehabilitation and Social Re-Integration. - Offences against Children.

Probation of Offenders Act, 1958 (benefit of Section 6 of the Act)

### **Sexual Abuse of Children**

Meaning, Definition, Nature and different types of Sexual Abuses

Protection of Children from Sexual Offences Act, 2013

Preventive Sexual Assault and Aggravated Penetrative Sexual Assault (3 to 6)

Sexual Assault and Aggravated Sexual Assault (7 to 10)

Sexual Harassment (11, 12)

Using Child for Pornographic Purpose (13 to 15)

Abetment and Attempt to commit an offence (16 to 18)

Procedure for Reporting Case (19 to 23) - Procedure for recording Statement (24 to 27)

Special Courts and Procedure and Powers of Special Courts (28 to 38)

### **Text Books**

- S.C. Tripathi and Vibha Arora, Law relating to Women & Children, Central Law Publications, 2017
- R.N. Choudhary, Law relating to Juvenile Justice in India, Orient Publishing House, 2015
- Mamta Rao, Law relating to Women & Children, Eastern Book Company, 2018
- S.N. Jain (Ed.), Child and Law, Indian Law Institute, 1979

### **Reference Books**

- K.D. Gaur, Textbook on Indian Penal Code, Universal Law Publishing Co., 2012
- K.I. Vibhuti, PSA Pillai's Criminal Law, LexisNexis, Butterworths Wadhwa, 2012
- S.R. Myneni, Offences against Child and juvenile Offences, New Era Law Publication, 2018
- S.K. Chatterjee, Offences against Child and Juvenile Offences, Central Law Publication, Allahabad, 2012
- Ved Kumari, The Juvenile Justice System in India: From Welfare to Rights, Oxford University Press India, 2010
- M.S. Sabnis, Juvenile Justice and Juvenile Correction, Somaiya Publications Pvt. Ltd., 1996 edition, 1996
- N.K. Chakrabarty, Juvenile Justice in the Administration of Criminal Justice, Deep & Deep Publications, N 2000

**LL.B. Semester-V**

**Paper: XXIV (B)**

**M.M:100**

**Code: 105412**

**Theory:70**

**Credit:4**

**Sessional:30**

## **Women and Law**

### **Objectives of the Course**

1. To create awareness and to make the students familiar with women's issues and women's rights
2. To enable them to critically analyse women's issue on human right perspective
3. To familiarize the students with the major historical developments of women's movement in their onward march to freedom and equality
4. To understand the nature and growth of women's movement in the modern age, covering arrange of issues pertinent to women's emancipation, dignity and status.

### **Outcomes of the Course**

Students will be able to:

1. Appreciate the norms of equality and liberty as the basis of just and fair society.
2. Demonstrate that how and in what manner the laws relating to women should be considered in proper perspective.
3. Analyse the radical transformation in the position of women internationally as well as nationally.
4. Able to put in practice the acquired knowledge.

### **Course Content**

#### **Unit-1: Introduction: Status of Women : International and National Perspective**

Women Rights as Human Rights

Universal Declaration of Human Rights, 1948

Convention on the Elimination of all forms of Discrimination against Women, 1979

Declaration on the Elimination of Violence against Women, 1993

### **Gender Equality and Constitution**

Preamble

Political Rights, Economic Rights and Social Justice

Fundamental Rights

Equality, Right to Livelihood, Right to Live with Dignity, Right against Exploitation

### **Directive Principles of State Policy**

Equal Justice and Free Legal aid, Provision for Just and Humane Conditions of Work and

Maternity Relief, Uniform Civil Code

Fundamental Duties- Art. -51-A[e]

Women's Representation in Local Bodies

### **Unit-II: Personal Laws and Women**

Marriage

Divorce

Adoption

Maintenance

Succession

Guardianship

### **Unit-III: Criminal Laws and Women**

Adultery

Rape (Custodial Rape, Gang Rape, Marital Rape)

Outraging Modesty

Domestic Violence

Dowry Deaths

Sexual Harassment

### **Unit-IV: Women Welfare Laws**

The Dowry Prohibition Act, 1961

Pre-conception and pre-natal diagnostic techniques (Prohibition of Sex Selection) Act, 1994

Indecent Representation of Women (Prohibition) Act, 1986  
Immoral Traffic (Prevention) Act, 1986

Protection of Women against Sexual Harassment at Workplace Act, 2013

Protection of Women Against Domestic Violence Act, 2005

### **Labour Welfare Legislations:**

Maternity Benefit Act, 1961

Factories Act, 1948

Equal Remuneration Act, 1976

### **Text Books**

S.C. Tripathi and Vibha Arora, Law relating to Women & Children, Central Law Publications, 2017

Mamta Rao, Law relating to Women & Children, Eastern Book Company, 2018

S.N. Jain (Ed.), Child and Law, Indian Law Institute, 1979

### **Reference Books**

Anjani Kant, Women and the Law, A.P.H Publishing Corporation, 2008

Arunima Baruah, The Soft Target-Crime Against Women, Kilsa Books, 2004

Dalbir Bharathi, Women and the law, A.P.H Publishing Corporation, 2008

P.D. Kaushik, Women Rights- Access to Justice, Bookwell, 2007

National Commission for Women, Gender Equity-Making it Happen, Strategies and Schemes of Government of India, NCW, 2001

**LL.B. Semester– V**

**Paper: XXIV (C)**

**M.M:100**

**Code:105413**

**Theory:70**

**Credit:4**

**Sessional:30**

## **Human Rights Law and Practice**

### **Objectives of the Course**

1. To expose students about concepts and ideas of Human rights.
2. To focus on the study of Law relating to Human rights in National and International perspectives.
3. To understand the development of Human rights Law in practice.
4. To understand the Conventions related to Human rights.

### **Outcomes of the Course**

Students will be able to:

1. Understand the fundamentals of law with commitment towards learning.
2. Interpret the conceptual basis of legal principles with comparative analysis.
3. Research, analyze, rationalize and present effectively.
4. Expose the students about Enforcement of Human Rights in India

### **Course Content**

#### **Unit-I: Introduction**

Concept and nature of Human Rights, History, Evolution and Growth of Human Rights, Development of Human Rights in International Law, Human Rights & U.N. Charter.

#### **Unit-II: International Conventions**

International Protection of Human Rights: Universal Declaration on Human Rights, International Covenant on Civil & Political Rights 1966, International Covenant on Social, Cultural and Economic Rights 1966, Regional Protection of Human Rights: European Convention on Human Rights, American Convention on Human Rights, African Charter on Human and People's Rights, Amnesty International.

#### **Unit-III: Enforcement and Development of Human Rights in India**

Enforcement of Human Rights, Development of Human Rights in India, Human Rights under the Indian Constitution and their Enforcement, Fundamental Rights Conventions against Torture, Inhuman and Degrading Behaviour, Directive Principles of State Policies

#### **Unit -IV: Protection of Human Rights Act, 1993**

Protection of Human Rights Act, 1993: Characteristics features, Promotion and Protection of Human Rights in India: National Human Rights Commission, State Human Rights Commission, Human Rights Courts. Human Rights during Armed Conflict, Awareness and Education of Human Right .

#### **Text Books**

S.K. Kapoor, Human Rights under International Law & Indian Law, Central Law Agency, 2017

D.D. Basu - Human Rights in Constitutional Law, Lexis Nexis,2008

H.O. Agarwal, Human Rights, Central Law Publicationc,2020

Rashee Jain, Textbook on Human Rights Law and Practice, Universal Law Publishing, 2016

#### **Reference Books**

H.O. Agarwal, -International Law & Human Right, CLP, 2018

S.K. Kapoor- International Law and Human Rights, Central Law Agency, 2021  
Bare Act, The Protection of Human Right Act,1993.

**LL.B. Semester-V**

**Paper: XXV**

**M.M:100**

**Code:105611**

**Theory:70**

**Credit-4**

**Sessional:30**

### **Drafting, Pleading and Conveyancing (Clinical/Practical Paper)**

#### **Objectives of the Course**

1. This course aims to introduce basic principles of drafting and pleading to the students.
2. During the course, format of applications, plaint and other forms of legal writing will be discussed in the class.

#### **Outcomes of the Course**

Students will be able to:

1. Understand the format and requirements of drafting in the legal proceedings.
2. Draft legal documents such as legal notices, applications and plaint etc. which will be useful in litigation.

#### **Course Content**

##### **Unit-I: General Principles of Drafting and Pleading**

Drafting rules

Forms of Pleading

##### **Unit-II: Criminal Pleading**

Bail Application

Complaint

Criminal Revision

Criminal Appeal

##### **Unit-III: Civil Pleading**

Plaint

Written Statement

Interlocutory Applications  
Original Petition  
Execution Petition  
Memorandum of Civil Appeal  
Petition Under Article 226 and Article 32 of The Constitution of India.

**Unit-IV: Conveyancing**

Essentials of Deeds  
Sale Deed  
Mortgage Deed  
Lease Deed  
Gift Deed  
Affidavit  
Promissory Note  
Power of Attorney (General)  
Power of Attorney (Special)  
Will  
Agreements  
Partnership Deed

**Text Books**

M.C. Agarwal and G.C. Mogha, Mogha's Law of Pleadings in India, Eastern Law House, 2016.  
M.R. Mallick, Ganguly's, Civil Court: Practice and Procedure, Eastern Law House, 2016.

**Reference Books**

J.M. Srivastava and G.C. Mogha, Mogha's The Indian Conveyancer, Eastern Law House, 2008.  
C.R. Datta and M.N. Das, De Souza's, Forms and Precedents of Conveyancing, Eastern Law House, 1999.

**LL.B. Semester–VI**

**Paper: XXVI**

**M.M:100**

**Code: 106111**

**Theory:70**

**Credit:4**

**Sessional:30**

## **Labour & Industrial Law–II**

### **Objectives of the Course**

1. This course aims to introduce fundamentals principles and regulations relevant in the domain to labour and industrial law.
2. It will focus on developing research, analysis and presentation among the students.
3. It also aims to disseminate legal awareness about the relevant legislation such as minimum wages act, payment of wages act, factories act and workman's compensation act particularly in the context of Uttarakhand.

### **Outcomes of the Course**

Students will be able to:

1. Equip graduate student with the necessary legal knowledge, expertise in labour and industrial law.
2. Develop capacity to apply these regulations in industrial disputes.

### **Course Content**

#### **Unit-I: Minimum Wages Act, 1948**

Concept of minimum wage, fair wage, living wage and need based minimum wage

Constitutional validity of the Minimum Wages Act, 1948

Procedure for fixation and revision of minimum wages

Fixation of minimum rates of wages by time rate or by piece rate

Procedure for hearing and deciding claims

#### **Unit-II: Payment of Wages Act, 1936**

Object, scope and application of the Act

Definition of wages

Responsibility for payment of wages

Fixation of wage period

Time of payment of wage

Deductions which may be made from wages

Maximum amount of deduction

### **Unit-III: Workmen's Compensation Act, 1923**

Definition of dependent, workman, partial disablement and total disablement

Employer's liability for compensation

Employer's Liability when employee is employed under any contract or is engaged independently or by an independent contractor

Amount of Compensation

### **Unit-IV: Factories Act, 1948 & Maternity Benefits Act, 1961**

Concept of "factory", "manufacturing process" "worker" and "occupier"

General duties of occupier

Measures to be taken in factories for health, safety and welfare of workers

Working hours for adults

Maternity Benefits Act: Aims and Objects & Application, Definitions, Restriction of work, Right to Payment, Forfeiture of Maternity Benefits (v) Other Provision (Leaves etc.), Authorities, Powers & Duties of Inspectors and Penalty

### **Text Books**

S.C. Srivastava, Labour Law and Industrial Relations, Vikas Publishing House, 2012.

S.K. Puri, Labour and Industrial Laws, Allahabad Law Agency, 2017.

G.B. Pai, Labour Law in India, Butterworths, 2001.

V.G. Goswami, Labour Law and Industrial Law, Central Law Agency, 2019.

### **Reference Books**

S.N. Misra, Labour and Industrial Law, Central Law Agency, 2020.

O.P. Malhotra, Industrial Disputes Act, Vol. I & II, Lexis Nexis, 2020.

Indian Law Institute – Cases and Materials on Labour Law and Labour Relations, Indian Law Institute, 2007.

**LL.B. Semester–VI**

**Paper: XXVII**

**M.M:100**

**Code: 106112**

**Theory:70**

**Credit:4**

**Sessional:30**

## **Environmental Law**

### **Objectives of the Course**

1. To acquaint students of Indian approach to the problem of environmental pollution.
2. To explore the international obligations of the country for protection of environment.
3. To make the students aware about the legislative measures for protection of environment and spirit of Indian Constitution for protection of environment.
4. To make students understand the activist role played by Indian Judiciary in protection of environment and evolution of different principles such as polluter pay principle, precautionary principle, inter-generational equity and sustainable development.

### **Outcomes of the Course**

Students will be able to:

1. Understand and explain the importance and basic principles of environmental law in India with current developments.
2. Analyze the social, historical, constitutional and legal developments on environmental law in India vis-a-vis international developments in the field.
3. Comprehend and appreciate the applicable legal regime specifically legislated for environmental protection and pollution in India.
4. Understand and appreciate the structure, functioning and jurisprudence of Special Courts and Tribunals in India on environmental issues.

## **Course Content**

### **Unit-I: Concepts of Environmental Protection**

Environmental Protection & its Importance, Global Warming and Depletion of Ozone Layer, Constitutional Provision and Environment Protection in India, Sustainable Development, International Concern for Environment Protection and Role of Judiciary in India, WTO and Environment Protection.

### **Unit-II: Environmental Legislations**

Environmental Protection Act 1986  
The National Green Tribunal Act, 2010  
Hazardous Waste Management Rules, 2016

### **Unit-III: Air and Water Legislations**

Water (Prevention and Control of Pollution) Act 1974  
Air (Protection and Control of Pollution) Act 1981

### **Unit-IV: Wildlife and Forest Legislations**

Wildlife (Protection) Act 1972  
Forest (Conservation) Act 1980  
Indian Forest Act, 1927.

## **Text Books**

- S.C. Shastri, Environmental Law, Eastern Book Company, Lucknow, 2005
- I.A. Khan, Environmental Law, Central Law Agency, Allahabad, 2002
- Amod S. Tilak, Environmental Law, Snow White Publication, Mumbai.
- Shyam Divan and Armin Rosencranz , Environmental Law and Policy in India, Oxford University Press, New Delhi, 2005
- Maheshwara Swamy, Textbook on Environmental Law, Asia Law House, Hyderabad, 2008
- P Leelakrishnan, Environmental Law in India, Lexis Nexis, New Delhi, 2005
- S. Shantakumar, Introduction to Environmental Law, Wadhwa & Company, Nagpur, 2005

## **Reference Books**

- Indra Priya, Environmental Law sustainable Development Asia Law Agency, 2010
- K. Uma Devi, Sustainable Development, Asia Law House, 2010
- Ratan Joshi, Environmental Study, Sahitya Bhawan Publication, Allahabad, 2019
- Philippe Sands, Principles of International Environmental Law: Frameworks, Standards and Implementation, Cambridge University Press,2003
- Stuart Bell & Donald Me Gillivray, Environmental Law – The Law and Policy Relating to the Protection of the Environment, Oxford University Press,2006
- Daniel Budansky, The Art and Craft of International Environmental Law, Harvard University Press,2010

**LL.B. Semester–VI**

**Paper: XXVIII**

**M.M:100**

**Code: 106113**

**Theory:70**

**Credit:4**

**Sessional:30**

## **Principles of Taxation**

### **Objectives of the Course**

1. To analyse the basics of Income Tax Laws.
2. To apply the basics of heads of Incomes and computation procedures.
3. To explanation of legal solution for the problems relating to computation of Heads of Incomes and computation procedures.
4. To elucidate Tax authorities and recovery of taxes.

### **Outcomes of the Course**

Students will be able to:

1. Explain canon of taxation including exemption & deductions of taxes.
2. Apply general principles of Heads of Incomes and its computational procedures on Assesses.
3. Evaluate basic concepts of Tax Authorities and Recovery of taxes.
4. Design a tax-payer friendly modality for practical and procedural legal issues, involve under taxation system.

### **Course Content**

#### **Unit-I: Introduction**

Definitions.

Basis of Incomes- Charge of Income Tax, Scope of Total Income, Residential Status of an Assessee, Income deemed to accrue or arise in India and Foreign Income & its taxability.

#### **Unit-II: Incomes which do not form part of Total Income**

Incomes not included in total income.

Special provision in respect of newly established industrial undertaking in free trade Zone.

Special provision in respect of newly established hundred percent export-oriented undertaking

Income from property held for charitable or religious purpose.  
Income of trusts or Institutions from contributions.  
Section 11 not to apply in certain cases.  
Special provisions relating to incomes of Political parties.

### **Unit-III: Heads of Income**

Salaries  
Income from House Property  
Profit and Gains of Business or Profession Capital Gains  
Income from other sources.

### **Unit -IV: Tax Authorities**

Powers and Procedures for adjudication & settlement, Collection and recovery of Taxes Appeal, Reference and Revision.  
Constitutional framework for GST and Salient Features of Goods & Services Laws.

### **Text Books**

Pradeep S Shah, Taxmann's Master Guide to Income Tax Act, Taxmann Publications Pvt.. Ltd., 2021  
H.C Mahrotra, Income Tax Law, Sahitya Bhawan Publications, 2020  
Singhania, BK: Students Guide to Income Tax including GST, Taxmann Publications Pvt.Ltd.,2021  
Vinod K Singhania, Taxmann's Direct Taxes Law, Taxmann Publications Pvt.Ltd., 2021

### **Reference Books**

Girish Ahuja, Ravi Gupta, Systematic Approach to Income tax, Wolters Kluwer India Pvt. Ltd., 2019  
Vinod K Singhania, Direct Taxes & Practice, Taxmann Publications Pvt.Ltd., 2021  
Arvind P. Datar, Palkhiwalas' The Law and Practice of Income tax , 2 Vol., Lexis Nexis, 2014  
Dr. P.K. Jain, Income Tax Law and Accounts, SBPD Publishing House, 2020

**LL.B. Semester–VI**

**Paper: XXIX (A)**

**M.M:100**

**Code:106411**

**Theory:70**

**Credit-4**

**Sessional:30**

## **Intellectual Property Rights Law**

### **Objectives of the Course**

1. To introduce fundamental aspects of Intellectual property Rights to students.
2. To disseminate knowledge on copyrights and its related rights.
3. To disseminate knowledge on patents, patent regime in India and abroad.
4. To disseminate knowledge on trademarks.

### **Outcomes of the Course**

Students will be able to:

1. To get an adequate knowledge on patent and copyright for their innovative research works.
2. Interpret the conceptual basis of legal principles with comparative analysis.
3. Research, analyse, rationalize and present effectively.
4. Apply the legal principles and procedures in practice.

### **Course Content**

#### **Unit-I: IPR and International Conventions**

Basic concept of IPR, The meaning of Intellectual property, Nature, the forms of intellectual property, Introduction to the leading international instruments concerning intellectual property rights: the Berne Convention, Universal Copyright Convention, the Paris Union TRIPS the World Intellectual Property Rights Organisation (WIPO) and the UNESCO

#### **Unit-II: Copyright Act, 1957**

Historical evolution of the copyright law in India, Meaning and Nature of copyright, Copyright in literacy, dramatic and musical works, Copyright in sound records and cinematograph films, Registration Procedure, Ownership of copyright, Assignment and licence, Copyright authorities, Performer's Right, Author's Special Right, Infringement of Copy right and remedies including Anton Pillor, injunctive relief in India

### **Unit-III: Patents Act, 1970**

Concepts and Historical view of the patents, Nature and object of patent law and its scope in India; Elements of Patentability: Novelty, Non Obviousness (Inventive Steps), Industrial Application, Non-Patentable Subject Matter, Process of obtaining a patent: application, examination, opposition and sealing of patents: general introduction, Prior publication or anticipation, Procedure for filing patents, Rights and obligations of a patentee, Compulsory licences, Infringement, defences, Injunctions, Remedies & Penalties - Patent office and Appellate Board

### **Unit-IV: Trade Marks Act, 1999**

Concept of Trademarks - Different kinds of marks (brand names, logos, signatures, symbols, well known marks, certification marks and service marks) - Non Registrable Trademarks - Registration of Trademarks - Rights of holder, assignment and licensing of marks, Passing off and infringement, Remedies & Penalties - Trademarks registry and appellate board

### **Text Books**

W.R Cornish, Intellectual Property, Patents, Trademarks, Copy Rights and Allied Rights Asia Law House, 2019

Vikas Vashishth, Law & Practice of Intellectual Property Bharat Law House, 2002

P. Narayanan, Intellectual Property Law, Eastern Law House, 2020

Bibeck Debroy (ed) Intellectual Property Rights Rajiv Gandhi Foundation, 2004

W.R. Cornish, Intellectual Property, Sweet and Maxwell, 2007

M.K. Bhandari, Law relating to Intellectual Property Rights, Central Law Publication, 2021

### **Reference Books**

P. Neeraj, & Khusdeep, D. Intellectual Property Rights, India, IN: PHI learning Private Limited, 2014

B.L. Wadhera, Patents, trademarks, copyright, Designs and Geographical Judications, Universal Law Publishing, 2007

A. K. Yadav, Copyright in Digital Era, Scholar's Press, 2014

Ahuja, V K. Law relating to Intellectual Property Rights. India, IN: Lexis Nexis. 2017

Ashwani Kumar Bansal, Design Law, Universal Law Publishing Company, 2012

**LL.B. Semester-VI**  
**Code:106412**  
**Credit:4**

**Paper: XXIX (B)**

**M.M:100**  
**Theory:70**  
**Sessional:30**

## **Health Care Laws**

### **Objectives of the Course**

1. To develop basic understanding of the Health Law.
2. To contextualize the constitutional dimension to 'right to health', obligations of medical professionals and complex issues such as 'consent', 'confidentiality' and 'medical negligence.
3. To acquaint the students with both the conceptual and practical application of medico-legal guidelines, medical ethics and develop effective strategies to prevent and defend medical negligence litigation.
4. To enable the students to apply the knowledge in legal practice.

### **Outcomes of the Course**

Students will be able to:

1. Understand the basic rules and doctrines of Health Law.
2. Understand the importance of the values and policies underlying Health law.
3. Research, analyse, rationalize and present effectively.
4. Apply the Health law to real-world problems.

### **Course Content**

#### **Unit-I: Introduction**

- a. Healthcare as an issue at the national and international level
- b. Constitutional provisions:  
Right to Health as a Fundamental Right; Remedies available under the Indian Constitution;  
Right to health vis-à-vis the right to confidentiality; Access to medical records
- c. National Health Policy
- d. Medical insurance
- e. Medical Ethics & Etiquettes

#### **Unit-II:**

- a. Problem of Drug Abuse & Drug Addiction Causes,
- b. Consequences & Remedial Measures
- c. The Problem of AIDS and its Socio-Medico Legal Aspects

### **Unit- III:**

#### **a. Medical Negligence**

Essential features of Medical Negligence; Role of consent in medical practice; Confidentiality and medical practice; Error of judgment and gross negligence; Wrongful diagnosis and negligent diagnosis

#### **b. Remedies for Medical negligence**

Law of Torts; Law of Crimes; Consumer Protection Law

### **Unit-IV:**

Legal Regulation of Transplantation & Human Organs

Legal Regulation of Prenatal Diagnostic Techniques

Medical Termination of Pregnancy, Artificial Insemination

Reproductive technology – surrogate motherhood

#### **Bare Acts**

The Drugs and Cosmetics Act, 1940

The Indian Medical Council Act, 1956

The Indian Medicine Control Council Act, 1970

Medical Termination of Pregnancy Act, 1971

Transplantation of Human Organs Act, 1994

Pre-Natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994

Vijay Malik, Drug and Cosmetic Act, 1940

#### **Text Books**

Anoop K. Kaushal, Medical Negligence & Legal Remedies, Universal Law Publishing, 2016

Jagdish Singh, Medical negligence & Compensation, Bharat Law Publications, 2014

P.K. Dutta, Drug Control, Eastern Law House, 2003

#### **Reference Books**

Jonathan Herring, Medical Law and Ethics, Oxford University Press, 2020

S. V. Joya Rao, Current Issues in Criminal Justice and Medical Law, Eastern Law House, 1999

**LL.B. Semester–VI**  
**Code:106413**  
**Credit-4**

**Paper: XXIX (C)**

**M.M:100**  
**Theory:70**  
**Sessional:30**

## **Private International Law**

### **Objectives of the Course**

1. To introduce the concepts of jurisdiction, choice of law and the recognition and enforcement of judgments and their role in the reconciling conflict of laws.
2. To make students familiar with the concept of adoption and family law matters and their interface with the principles of private international law.
3. To develop the ability to apply the knowledge gained through this course in relevant cases and identify solutions.

### **Outcomes of the Course**

Student will be able to:

1. Understand the principles of conflict of laws and its application in cases involving foreign element.
2. Apply the principles of conflict of laws in relation to the Indian legal mechanism and its practices.
3. Analyze the issue of jurisdiction and application of foreign laws in a case where foreign element are involved.

### **Course Content**

#### **Unit-I: Introduction**

Application and subject matter of Private International Law, Hague Convention on Private International law.

Distinction with Public International Law,

Characterization and theories of characterization,

Concept of Renvoi, Double Renvoi (Doctrine of Court)

Application of foreign law.

Domicile

Jurisdiction of courts, Introduction to *lex-loci* and *lex-fori* concepts.  
Depeçage

### **Unit-II: Family Law matters**

Material and formal validity of marriage under Indian and English law.  
Hague Convention on Recognition of Divorces and Legal Separations and Civil Abduction  
Aspects of Child abduction Bill 2016, India.  
Choice of law and jurisdiction of courts in matrimonial causes: dissolution of marriage,  
grounds of divorce, restitution of conjugal rights, recognition of foreign judgments.

### **Unit – III: Adoption**

Recognition of foreign adoptions, Hague Convention on Protection of Children and Co-  
operation in Respect of Inter country Adoption.  
Hague Conference on Private International Law on Family Law, and Child Abduction  
Convention.  
Adoption by foreign parents.  
Jurisdiction under Indian and English law.

### **Unit – IV: Indian Law relating to foreign judgment**

Basis of recognition, recognition.  
Finality, Failure.  
Recognition and enforcement for foreign arbitral awards.  
Direct execution of foreign decrees.

### **Bare Acts**

Civil Procedure Code, 1908  
Indian Succession Act, 1925

### **Text Books**

North and Fawcett, *Cheshire and North's Private International Law*, 13<sup>th</sup> ed., Butterworths: New  
Delhi, 1999

### **Reference Books**

Abla Mayss, *Principles of Conflict of Laws*, 3<sup>rd</sup> ed. Cavendish Publishing Ltd., U.K., 1999  
John O'Brien, *Smith's Conflict of Laws*, Cavendish Publishing Ltd., U.K., 1999  
Nandan Kamath, *Law Relating to Computers Internet and e-commerce*, Universal Law Publishing,  
New Delhi, 2001  
Paras Diwan and Peeyushi Diwan, *Private International Law*, 9<sup>th</sup> ed., Deep and Deep Publications,  
Delhi, 1998

**LL.B. Semester–VI**

**Paper: XXX**

**M.M:100**

**Code:106811**

**Project/File+Vivavoce=60+10=70**

**Credit:4**

**Sessional=30**

### **Moot Court Exercise and Internship (Clinical/Practical Paper)**

#### **Objectives of the Course**

1. To promote the growth and knowledge of practical skills in students.
2. To develop the ability in students in researching and arguing.
3. To make the student understand and appreciate court room mannerisms.
4. To expose students as nearly as possible to court room situations.
5. To develop in them subtle techniques to interview clients.

#### **Outcomes of the Course**

Student will be able to:

1. Participate in Intramural and Intermural moot court competitions.
2. Demonstrate the skills set for effective argumentation.
3. Identify legal issues and address them.
4. Learn to work in teams and develop the co-operative nature essential for then legal practice.
5. Interview clients and advise them on the procedural aspects of litigation, costs and possible legal and social consequences.

This paper will have three components of 20 marks each, which will be prepared by the student in the form of a project/file. The fourth component of this paper will be viva-voce examination of 10 marks. There will also be a sessional examination of 30 marks conducted by the department/college.

#### **(A) Moot Court**

Every student will do at least two moot courts during this semester with 10 marks for each. The moot court work will be on assigned problems and it will be evaluated for 5 marks for written submissions (to be recorded in a diary of the sessional work) and 5 marks for oral Advocacy.

**(B) Observance of Trial in two cases – One Civil and One Criminal**

Students will attend two trials in the VI Semester. They will maintain a record and enter the various steps observed during their attendance on different days in the Court assignment. Every student will attend the court for two weeks in the whole semester. This scheme will carry 20 marks.

**(C) Internship/Interviewing techniques and Pre-trial preparations**

This part will require the students to be attached with a practicing lawyer of at least 10 years practice. Preparation of this has to begin from the first semester. Each student is required to spend at least one month doing internship during the summer vacation/winter break etc. Each student will observe two interviewing sessions of clients at the Lawyer's Office/Legal Aid Office and record the proceeding in a diary which will carry 10 marks. Each student will further observe the preparation of documents and court papers by the advocates and the procedure for the filing of the suit/petition. This will be recorded in the diary, which will carry 10 marks.

**(D)** The fourth component of this paper will be viva-voce examination on all the above three aspects. This will carry 10 marks.

**SCHOOL OF  
MANAGEMENT**

# SYLLABUS FOR UNIVERSITY ENTRANCE TEST

SESSION 2026-27

## SUBJECT

- MBA / MBA (TOURISM AND TRAVEL  
MANAGEMENT (TWO YEAR / ONE YEAR)
- MBA (HRM) / MBA  
(INTERNATIONAL BUSINESS / MBA  
FINANCIAL MANAGEMENT (TWO YEAR)
- PG DIPLOMA TOURISM AND  
HOTELIERING



**HEMVATI NANDAN BAHUGUNA GARHWAL UNIVERSITY  
(A CENTRAL UNIVERSITY)  
SRINAGAR (GARHWAL)  
UTTARAKHAND**

**ENTRANCE EXAMINATION 2026-27 SYLLABUS  
M.B.A. (TOURISM AND TRAVEL MANAGEMENT)**

**Tourism Fundamentals:** Definition, Nature, and Scope of Tourism. Types of Tourism: Domestic/International. Eco/Cultural/Adventure/Medical/Pilgrimage. 5A's Framework: Attraction, Accessibility, Accommodation, Amenities, Activities.

**Tourism Products & Destinations:** UNESCO World Heritage Sites in India. Popular Global Destinations. Tourism Circuits in India: Golden Triangle. Buddhist Circuit. Coastal & Himalayan Tourism.

**Tourism Industry Operations:** Key Stakeholders: Travel Agencies, Tour Operators, DMCs (Destination Management Companies). Transport in Tourism: Airlines (IATA Codes, Major Airlines). Cruise Tourism (Popular Cruise Lines). Rail Tourism (Palace on Wheels, Deccan Odyssey). Travel Documents: Visa, Passport, Health Regulations. Key Organizations: WTO (World Tourism Organization), ICAO (International Civil Aviation Organization). Ministry of Tourism (India), IATA (International Air Transport Association).

**Tourism Business & Economics:** Global & Domestic Tourism Trends: Contribution to GDP & Employment. Major Tourism Businesses: Top Global/National Hotels. Top Airports. Leading Airlines. Adventure & Cultural Tourism: Popular Adventure Activities. Key Cultural Sites. World Heritage Sites & Capitals: Currency & Capitals of Major Countries. Indian States & Their Capitals.

**Itinerary Planning & Tour Operations:** Types of Itineraries (FIT, GIT). Tour Costing: Tariffs, Confirmation, Vouchers. Operational Procedures: Reconfirmation (Airlines, Hotels). Guest Feedback Analysis. WATA Guidelines & Supplier Relations.

**Tourism Economics & Policies:** Macro & Micro Economic Impact on Tourism. Demand & Supply in Tourism. Tourism Multiplier Effect. Monetary Policies: Repo Rate, Reverse Repo Rate, CRR.

**Management:** Functions of Management: Planning, Organizing, Staffing, Directing, Controlling. Leadership Styles: Autocratic, Democratic, Laissez-faire. 4P's of Marketing: Product, Price, Place, Promotion. SWOT Analysis. Recruitment & Training. Conflict Resolution Techniques

The syllabus for the entrance into the two year MBA programme will be as follows.

- Verbal Ability & Reading Comprehension (VARC), 25 marks
- Data Interpretation & Logical Reasoning (DILR)- 25 marks
- Quantitative Aptitude (QA)- 25 marks
- Indian and Global Business Environment- 25 marks

## ENTRANCE EXAMINATION 2026-27 SYLLABUS

### PG DIPLOMA TOURISM AND HOTELIERING

**General Awareness:** Current Affairs (National & International). History: Indian and World History (focus on cultural and tourism-related history). Geography: Physical, Economic, and Tourism Geography (important locations, heritage sites, and natural attractions).

**Mathematical Reasoning and Aptitude:** Types of Reasoning: Verbal, Non-Verbal, Logical. Number & Letter Series. Codes and Relationships.

**Mathematical Aptitude:** Fractions, Decimals, Percentages. Time, Speed, and Distance. Ratio, Proportion, and Averages. Profit & Loss, Simple & Compound Interest. Discounts.

**Data Interpretation:** Sources and Classification of Data (Primary & Secondary). Quantitative & Qualitative Data.

**Graphical Representation:** Bar Charts, Histograms, Pie Charts. Line Graphs.

**English Language:** Comprehension Passage (Reading & Interpretation). Grammar: Tenses, Articles, Prepositions, Sentence Correction. Vocabulary: Synonyms, Antonyms, Idioms & Phrases.

**Tourism Products:** Natural Tourism Products: Landforms (Mountains, Beaches, Deserts). Waterbodies (Rivers, Lakes, Waterfalls). Wildlife (National Parks, Sanctuaries).

**Man-Made Tourism Products:** Monuments & Heritage Sites (UNESCO Sites). Temples & Religious Structures. Palaces & Forts. Fairs & Festivals (Cultural & Regional).

**Information and Communication Technology (ICT):** ICT Basics: Abbreviations & Terminology Internet & Intranet: Concepts & Applications. E-mail, Audio & Video Conferencing. Digital Initiatives in Tourism & Hospitality. ICT in Governance (E-Governance, Smart Tourism).

**Current Events:** Recent developments in the Tourism and Hospitality Industry. Global and national tourism trends. Government policies and initiatives related to tourism. Major events, conferences, and exhibitions in tourism.