

## Syllabus for M.A. / M.Sc. Geography (PGQP17)

### **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 11: 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, binominal 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 - GIS analysis - Application of GIS

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