

**Department of Geography**  
Punjabi University, Patiala 147002  
(Established under Punjab Act No. 35 of 1961)

**Syllabus for Ph. D. Entrance Test for Session 2024-25**

**Section-A**

**(Research Methodology )**

1. Types of data, Primary & Secondary Methods of primary data collection, framing of schedule & questionnaire sampling techniques in geography, types of sampling, Source of Secondary Data, Hypothesis and Objectives.
2. **REMOTE SENSING & GIS:**  
Visual image interpretation, Digital image processing, Global Positioning System, Development of GIS, Components of GIS, Types of GIS Data, Functions of GIS, DEM (Inclusive of TINs), Interpretation of Air photographs, Mapping from Air photograph, Difference between map and aerial photograph, and Photogrammetry.
3. **CARTOGRAPHIC METHODS:**  
Field of Cartography, Recent trends, map designing Principles of shading, lettering, Dot map, Choropleth map, Dasyymmetric map, Isarithmic mapping, Mapping of Population data, Agricultural data, Industrial data, Class Intervals, Lorenz Curve.
4. **MORPHOMETRIC ANALYSIS & DRAINAGE BASIN MORPHOMETRY:**  
Profile drawing: Longitudinal & Transverse Profile, Serial, Superimposed, Composite, and Projected Profiles; Methods of Slope Analysis; Hypsographic, Clinographic and Altimetric Frequency Curves. Methods of Stream Ordering, Bifurcation Ratio, Drainage Density & Frequency, Basin Circularity Ratio & Form Factor.
5. **QUANTITATIVE METHODS:**  
Significance of quantitative technique in geography Mean, medium & mode, central tendency in Areal Distributions, Mean Centre, Median point, Dispersion in spatial distribution, Correlation Analysis, Nearest Neighborhood Analysis.

**Section-B**

**(Subject)**

6. **GEOMORPHOLOGY & CLIMATOLOGY:**  
Fundamental concepts, recent trends in geomorphology, Earth movements, plate tectonics, structural landforms, processes & landforms, cyclic, & non cyclic views about landform development, role of geomorphology in identification & management of natural hazards-soil erosion, floods, landslides.  
  
Composition & structure of Atmosphere, Insolation, Heat budget of earth, Pressure Systems & Winds, Mechanism of Indian Monsoon, El-Nino Southern Oscillation (ENSO), Upper Air Circulation, Precipitation- formation, types & world patterns, Air mass & Fronts, Atmospheric Disturbances; Evidences, Theories and Anthropogenic Causes of Climatic Change, Koppen's and Thornthwaite's Climatic Classifications, Climatic types.
7. **MAN AND ENVIRONMENT:**  
Approaches to study of Man Environment, Ecology & Ecosystems, Man's impact on geomorphic features, soils, water & atmosphere, Man's impact on vegetation & animals, Environmental laws, Theories of man habitat interaction, Sustainable development.
8. **FUNDAMENTALS OF REMOTE SENSING & GIS:**  
Relevance of Remote Sensing to Geography, Historical development of Remote Sensing Technology, Electromagnetic spectrum in remote sensing, Resolution and Its Types, Types of Remote Sensing, Platforms & Sensors, Indian & Foreign Satellite series.
9. **GEOGRAPHICAL THOUGHT:**  
Character of geography in ancient and medieval period, Role of explorations and discoveries in revival of scientific geography in 16<sup>th</sup> & 17<sup>th</sup> centuries, Development of geography in modern period, Impact of Darwin's theory on geography, Contributions of Kant, Humboldt, Ritter, Davis, Hettner, Hartshorne. Changing paradigms of geography in the 20<sup>th</sup> century- (man environment, areal differentiation, spatial organization) Response to positivism, behaviouralism, humanism, post modernism etc.
10. **POPULATION, SETTLEMENT, PLANNING & MEDICAL GEOGRAPHY:**  
Recent trends in Population Geography, Factors affecting different attributes of population, density, distribution & growth, concept of overpopulation, under population optimum population.  
  
Models of distribution of settlements, Christaller's & Losch, urbanization process, Concept of Regional Planning, Town & Country Planning.  
Recent Trends in Medical Geography, Epidemiology, International Classification of diseases, Environmental Medicine, Medical Pluralism, Geographical factors and patterns of diseases: Cholera, Malaria, Tuberculosis and HIV/AIDS. Geography of nutrition.