

# DEPARTMENT OF GEOINFORMATICS

## Entrance Test Syllabus for 2-year M.Sc. Geoinformatics Course Academic Session 2026 based on NEP-2020 UG syllabus

The detailed syllabus for the Entrance Test admission to the 2-year M.Sc. Geoinformatics course at the University of Kashmir is outlined under the following 12 units based on the NEP-2020 UG syllabus.

60 MCQ questions shall be set from the entire syllabus for the Entrance Examination.

### **Unit 1 - Computer Science**

Concepts of hardware and software. Storage devices. User Interface. Database concepts. Number systems: Binary, Decimal. Common Application Software. Compilers and interpreters. Computer networks. Processors.

### **Unit 2 – Geology**

Origin, evolution, and structure of the Earth. Geological time scale. Earth's tectonics and plate movement. Causes and distribution of earthquakes. Rocks and rock types. Palaeoclimate proxies. Mass movements. Glacial landforms.

### **Unit 3 - Remote Sensing**

History of remote sensing. Types of remote sensing. Typical remote sensing system. Important satellite systems: Landsat and IRS. Resolution and its types. Elements of image interpretation.

### **Unit 4 – Hydrology**

Hydrologic cycle. Various hydrological processes. Hydrographs. Hydrological extremes - Floods, GLOFs, hailstorms, erratic snowfall. Hydropower estimation. Instrumentation for hydrometeorological monitoring.

### **Unit 5 - Geographic Information Systems**

Historical perspective of GIS. Components and types of GIS. Geospatial data models. Data sources. National Geospatial Policy.

### **Unit 6 - Digital Cartography**

Cartography - digital and analogue. Maps: introduction, types, and uses. Elements of maps. Concept of scale and projection. Survey of India topographic maps.

### **Unit 7 - Land Use Planning**

Land use and land cover classification. Land capability classification, Weathering, erosion and types of erosion, soil classification, soil formation, and soil conservation.

### **Unit 8 Physical Geography of Jammu and Kashmir**

Major rivers. Mountain ranges. Important glaciers and glacial catchments. Lakes and wetlands, including alpine lakes. Climate of Jammu and Kashmir.

### **Unit 9 - Physics of Earth**

Sources of electromagnetic radiation. Electromagnetic spectrum. Radiation Laws. Interaction of electromagnetic radiation with the Earth: reflection, absorption, and emittance. Gravitational law. Laws of thermodynamics.

**Unit 10 – Climatology**

Origin, composition, and structure of the atmosphere. Global atmospheric circulation patterns. Regional influences – Western Disturbances, Indian Summer Monsoon. Climate change – causes and impacts. IPCC climate change scenarios.

**Unit 11 – Statistics**

Measures of central tendency and dispersion. Skewness and kurtosis. Linear and multivariate regression analysis. Sampling methods. Time series analysis.

**Unit 12 – Mathematics**

Arithmetic, geometric, and harmonic progressions. Logarithms. Permutations and combinations. Quadric and polynomial equations. Matrices and determinants. Set theory. Boolean Algebra.