

Department of Climate Variability and Aquatic Ecosystem

Kerala University of Fisheries and Ocean Studies

Entrance Test Syllabus for M. Tec. Geoinformatics Course (Academic Session 2025)

Unit-1 Physical and Chemical Science: Concepts of Light, Forms of Energy, Reflection, Refraction and Emission, Properties of Waves, Types of Motion and Forces, Magnetism and Electromagnetism, Gravitational Laws, Spectroscopy. Atomic Structure, Electronic Configuration, Types of Chemical Reactions, Heat and Temperature in Chemical Changes, Basic Concepts of Chemical Bonding, Concept of Acids and Bases, Endothermic and Exothermic Reactions.

Unit-2 Spatial Science: Definition of Remote Sensing, Applications of Remote Sensing, Sources of Electro Magnetic Energy, Electro Magnetic Spectrum, Geographical Information System (GIS) and Its Applications, General Features of Survey of India Topographical Sheets, Map Scale, Introduction to Map Projections, Introduction to Cartography. Topographic and Geologic Maps, Aerial Photo Formats, Scale of Aerial Photograph, Relief Displacement, Elements of Photogrammetry, Stereoscopic Products and Applications.

Unit-3 Climate Science: Atmosphere: Origin, Layer of the Atmosphere, Atmospheric Composition in Climate, Major Climate Types, Solar Radiation and Albedo Effect, Heat Transfer, Wind Systems, Concept of Humidity, Condensation and Cloud Types, Factors Affecting Precipitation Distribution, Climate Change and its Causes, Paleoclimatology, Impacts of Climate Change.

Unit-4 Geology and Geography: Origin, Age and Internal Structure of the Earth, Plate Tectonics, Geological Time Scale. Surface Process and Landforms- Weathering, Erosion and Deposition by Water Wind and Ice, Mass Wasting and Landslides, Earthquakes and Volcanoes, Definition and Classification of Rocks, Folds, Faults and Joints. Soil Erosion and Conservation. Population and Settlements- Growth Density and Distribution, Demographic Cycle, Migration: Causes and Effects, Primate City Concepts, Economic Geography- Agriculture Types, Major Crops, Fishing and Animal Resources; Industries- Factors of Location, Green Revolution in India.

Unit-5 Hydrology: Hydrologic Cycle, River System and their Features. Physical, Chemical, and Biological Properties of Water, Groundwater Movement and Aquifers, Porosity and Permeability of Rocks, Groundwater Flow and Darcy's Law, Hydrographs, Factors Effecting Runoff, Hydrological Instrumentation, Floodplains and Flooding, Source of Water Pollution.

Unit-6 Ecology and Environment: Concept of Ecosystem and their Types, Environmental Ethics, Biodiversity and its Conservation, Types of Natural Resources, Sustainable Management of Water, Soil, and Forest Resources, Global Environmental Issues, International Conventions: UNFCCC, UNCCD, CBD; Environmental Pollutions - Air, Water, Soil, Waste, Noise and Thermal, Water Resources Management, Greenhouse Effect and Global Warming, Disaster Management, Concept of Sustainability, Environmental Laws In India.

Unit-7 Ocean Science: Properties of Sea Water, Ocean Circulation, Ocean Atmospheric Interactions, Structure of the Ocean Floor, Oceanic Profile, Marine Sediments and their Types, Marine Organisms, Marine Ecosystem Food Chains, Renewable and Non- Renewable Marine Resources, Pollution and Climate Change Effects on Oceans.

Unit-8 Computer Science and Statistics: Basic Components of a Computer, Hardware and Software, Memory and Storage Devices, Operating Systems, Types of Programming Languages, Graphic User Interface, Database Concepts, Programming Functions and Basic Algorithms, Number Systems: Binary, Decimal, Common Application Software's, Types of Computer Networks, Internet Tools and Browsers, Relational and Non-Relational Database. Introduction to statistics: Descriptive statistics- Mean – Median – Mode – Standard Deviation - Probability distribution - Binomial, Poisson and Normal - Parametric and Nonparametric statistics, Confidence Interval, Errors – Test of significance – t-test, chi square test and F-test – Correlation and Regression – One way and Two-way ANOVA. Design of sample surveys - Data collection - experiments and surveys, collection of primary and secondary data, selection of appropriate method for data collection, data preparation and interpretation.