

## **DEPARTMENT OF CIVIL ENGINEERING**

### **PROPOSED SYLLABUS OF WRITTEN TEST FOR ASSISTANT PROFESSOR**

#### **GRADE II AGP 6000**

##### **Fluid Mechanics & Hydraulics**

Fluid Mechanics: Properties of fluids, fluid statics; Continuity, momentum and energy equations and their applications; Potential flow, Laminar and turbulent flow; Flow in pipes, pipe networks; Concept of boundary layer and its growth; Concept of lift and drag.

Hydraulics: Forces on immersed bodies; Flow measurement in channels and pipes; Dimensional analysis and hydraulic similitude; Channel Hydraulics - Energy-depth relationships, specific energy, critical flow, hydraulic jump, uniform flow, gradually varied flow and water surface profiles.

##### **Environmental Engineering**

Water and Waste Water Quality and Treatment: Basics of water quality standards – Physical, chemical and biological parameters; Water quality index; Unit processes and operations; Water requirement; Water distribution system; Drinking water treatment.

Sewerage system design, quantity of domestic wastewater, primary and secondary treatment. Effluent discharge standards; Sludge disposal; Reuse of treated sewage for different applications.

Air Pollution: Types of pollutants, their sources and impacts, air pollution control, air quality standards, Air quality Index and limits.

Municipal Solid Wastes: Characteristics, generation, collection and transportation of solid wastes, engineered systems for solid waste management (reuse/ recycle, energy recovery, treatment and disposal).

##### **RS & GIS**

Photogrammetry and Remote Sensing - Scale, flying height; Basics of remote sensing and GIS. Geomatics Engineering Principles of surveying, Basic Geomatics Engineering Mathematics. GNSS, Basics of remote sensing and GIS, Surveying and Mapping Maps, Land Surveying, Aerial Photogrammetry, Image Processing and Analysis- Data Quantization and Processing, Digital Image Processing, Radiometric and Geometric Corrections, Image Enhancement, Image Transformation, Image Segmentation and Classification