

## **Paper II**

Total Marks: 100

### **Ph.D. Course Examination Syllabus (Environment Science)**

#### **Gravimetric analysis, titrimetric analysis and instrumental analysis:**

Significance of pH, Solids, Acidity, Alkalinity, COD, DO, BOD, Hardness, Sulphate, Fluoride, Chloride, Turbidity, spectrophotometry, colorimetry, chromatography.

#### **Water supply & sewage system:**

Design of water distribution system, design of sewage collection system, sources of water & its quality.

#### **Water & Wastewater treatment:**

Primary, secondary & tertiary treatment, screens, grit chamber, coagulation, flocculation, sedimentation, biological treatments of wastewater (aerobic & anaerobic), adsorption, disinfection, filtration, water softening, reverse osmosis, ion exchange method, sludge treatment & disposal.

#### **Air pollution:**

Sources & effects of air pollutants, criteria air pollutants, effects of meteorological parameters on ambient air quality, thermal inversion, control of particulates, Ambient Air quality Standards & limits.

#### **Noise Pollution:**

Noise as a pollutant, measurement of noise, units of expressions, effects of noise, permissible limits.

#### **Environmental Impact Assessment & Legislation:**

Sustainable Development, EIA as a four step activity, Need for EIA, EIA Notification 2006 & its requirement, EPA 1986, Water Act 1974, Air Act 1986 Hazardous Waste Management Rules, Environmental Audit.

#### **Industrial Water Pollution:**

Principles of water pollution control-Reduction of strength & volume, Neutralization, Equalization, Discharge standards, Effluent Standards, Stream Standards, Effluent Quality and treatment flow sheet for dairy industry, textile process house and distillery.

**Municipal solid waste management:**

Municipal solid waste characteristic, Quantities, composition and generation, engineered system for solid waste management, secured landfill site, energy recovery.