CENTRE OF EXCELLENCE IN WATER MANAGEMENT

PROPOSED SYLLABUS OF WRITTEN TEST FOR ASSISTANT PROFESSOR

GRADE II AGP 6000

Water Resources Engineering and Management

Evaporation and evapotranspiration;Infiltration;Surface run-off models; Unit hydrograph;Hydrograph analysis;Reservoir capacity; Flood estimation and routing, Pipe and open channel flow, Aquifers- porosity, permeability, transmissibility and storage coefficient; Steady state well hydraulics, Types of irrigation methods; Crop water requirements, Gravity Dams and Spillways; Uplift pressure, piping;Lined and unlined canals; Design of weirs on permeable foundation; Cross drainage structures, Integrated water shed management.

Water Quality Monitoring

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 treatment methods; Quality of domestic wastewater; Effluent discharge standards. Preliminary, primary, secondary and tertiary sewage treatment; Eutrophication and thermal stratification in lakes; River pollution and self purification.

Hydropower

Properties of fluids, Continuity, momentum and energy equations;Hydro power potential assessment; Hydraulic similitude; Types and components of hydropower plants and their layout, Flow duration curves ;Classification of turbines and pumps, Velocity triangles,Specific speed; Unit quantities;NPSH; Cavitation; Surge analysis; Performance characteristics.

Climate Change

Climate Change and Variability, Forcing Mechanism;Greenhouse gases; Global warming, urban heat islands, acid rain, ozone hole; Impact of climate change on water resources and urbanization;Global climate models; Downscalingtechniques, RCP scenarios;Data compression techniques; Trend detection techniques; Environmental impact assessment.