

Department of Civil Engineering

Syllabus for the admission of Ph.D programmes 2020

*Part B (Subject core) - 60 % weightage – Candidate to attempt **one section** based on area of interest. Questions will be to assess the ability to apply and /or analyse. Only brief and relevant answers are expected. Use of calculator is permitted.*

Section-1 (Environmental Engineering)

Fundamentals of Engineering mechanics and solid mechanics.

Water Quality parameters

Water supply scheme - Population forecasting, water demand, water transmission

Water treatment design – Sedimentation, Filtration, Disinfection

Design of Wastewater line

Waste water treatment design – Activated sludge process, Trickling filter

Air pollution and control, Solid waste management

Section-2 (Hydraulics and Water Resources Engineering)

Fundamentals of Engineering mechanics and solid mechanics.

Flow measurements; Fundamentals of open channel flow

Hydrologic cycle and processes; Rainfall-Runoff models

Hydrograph analysis; Hydrologic routing

Basics of Water resources planning; Reservoir planning and design

Section-3 (Transportation Engineering)

Fundamentals of Engineering mechanics and solid mechanics.

Geometric design of highways and railways

Flexible and rigid pavements – components and design

Traffic flow characteristics

Travel demand modeling -4 stage modeling

Section-4 (Structural & Construction Engineering)

Fundamentals of Engineering mechanics and solid mechanics.

Construction materials and Concrete Technology

Analysis of determinate and indeterminate structures

Static and kinematic indeterminacy

Design of concrete and steel structures

Finite element method