CIVIL ENGINEERING

(POST RELATED)
Subject Code: 881
Total Marks-200
Part-I
Marks-100

Structure-40

- Analysis of statically determinate and indeterminate structures by various methods.
- Space truss analysis. Deflection of beams, frames and trusses using different methods.
- Influence lines for statically determinate beams, truss, and frames.
- Analysis of bridge truss, and frames.

Water Resources Enginnering-30

Importance of irrigations: sources and quality of irrigation water, soil-water relationship; consumptive use and estimation of irrigation water requirements; methods of irrigation;field-irrigation structures; irrigation canal system; irrgation pumps and wells; problems of irrigated lands; land drainage; flood and its mitigation; methods of river training and bank protection.

Environmental Engineering-30

Water Supply:
Planning and design consideration of water treatment plant, various methods (Sedimentation, coagulation, filtration, dis-infection, chemical precipitation) of water treatment, distribution system, environment impact assessment (EIA). Design of water supply system.

Sewage:
Physical, chemical and biological treatment of sewage, planning and design of sewage treatment, industrial wastes and their treatment, solid waste management, microbiology of waste water, introducation to aerobic and anaerobic treatment of waste water, self-purification of stream BOD removal kinetics. Design of domestic and storm sewers.

Structure-40

R.C.C. Part:

Introduction of high rise building structure, structural forms of tall building, analysis of multistoried building frames subjected to wind and earthquake forces.

Working stress and ultimate strength analysis and design of reinforced concrete beams, columns, footing, two ways slab, flat slab, and flat plate structure.

Pre-stressed Part:

Pre stressed concrete materials and their properties; pre-stressing system; losses of pre-stress, shape, selection and tendon profile; analysis & design of section for flexure, shear, bond, and bearing.

Transportation Engineering-30

Highway:

Design, construction and maintenance of rigid and flexible pavements. Characteristics, sub-grade, sub-base, base and asphaltic surface courses, soil stabilization, brick and block pavements, cement concrete pavements. Highway maintenance, highway drainage, airways and air-ports, waterways and terminals.

Transportation engineering, modes of transport planning of transportation system.

Highway planning, geometric design, vehicle operating characteristics, traffic survey, traffic flow and control traffic management and administration, highway materials.

Railway:

Railway alignment, gradient and curves, permanent way track construction and maintenance, points and crossings, signaling and interlocking.

Foundation Engineering-30

Engineering properties of soils, shear strength, permeability, consolidation, settlement and compaction. Analysis and design of spread footings pile foundations, mat foundation, settlement analysis, large excavation underpinning etc.