JSPM UNIVERSITY

JSPM UNIVERSITY PUNE

SYLLABUS

RPET 2023

Research Program Entrance Test

Subject Concerned Syllabus

Civil Engineering

A) Structural Engineering:

Structural Mechanics Analysis of Flexure, Torsion, Shear, Compression and Tension, Analysis of Structures, Force and Stiffness methods. Concrete , Steel Structures-- Concrete making materials and Technology, Plastic analysis and design, Prestressed Concrete, Design of simple continuous beams, Structural Dynamics Analysis of Free and Forced vibrations, Damping and Seismic design, Modal analysis, Finite Element method Water Resources Engineering-- Theory of Elasticity Analysis of Stress and Strain.

B) Water Resource Engineering:

Fluid Mechanics Continuity, Momentum and Energy equations Potential flow Laminar and Turbulent flow, Flow in Pipes Gradually varied flow-- Boundary layer Hydraulics Unsteady free surface flow-- Energy depth relations Hydrologic Cycle-- Specific Energy Precipitation, Evaporation, Watershed, Flood routing, Surface run Duty, Delta, Crop water requirements-- off models Well hydraulics Design of lined and un-- Hydrograph analysis lined canals.

C) Environmental Engineering Irrigation

Water and Waste water, Water standards, Surface water treatment, Distribution of water, Sewage and Sewerage treatment discharge standards-- Primary, secondary and tertiary treatment of waste water, Air pollution, air quality standards, Noise pollution-- Effluent control and measurement Municipal solid waste characteristics, collection and transportation-- Engineered systems for solid waste management.

D) Geotechnical Engineering:

Engineering properties of soils, Compaction and Consolidation, Foundation engineering, Types of Foundation-Shallow foundations, bearing capacity theories-

- types of Deep foundations; Earth pressure theories and earth retaining structures;Soil dynamics : free and forced vibrations; Rock mechanics-rock mass classification, laboratory and in-situ testing foundations on rock-- tunneling. Soil exploration, sampling, drilling, in-situ tests-bore logs

E) Transportation Engineering :

Urban transportation problems, travel demand estimation, Trip Generation & distribution models, mode split analysis, traffic assignment, corridor identification, stated preference methods, components of traffic system, traffic studies, microscopic & macroscopic traffic stream models, highway capacity, geometric design of traffic flow systems, design of at grade intersections, parking facilities, bicycle & pedestrian facilities stresses in flexible & rigid pavements, design of flexible & rigid pavements, highway construction equipment, pavement construction, Evaluation of pavements, Pavement Maintenance .

F) Remote Sensing and GIS:

Remote sensing Principles and fundamentals of Image Systems Fundamentals and Advances Surveying, Processing; Geographical Information Advances and GNSS,Photogrammetry and applications

G) Construction Technology and Management:

Principles Project Planning & Management Network Scheduling PERT, CPM Construction Techniques PSC, Modular construction practice, Construction Economics & Finance-- RC & Depreciation, Project appraisal, Quantitative

Methods in Construction Management, Construction Methods & Equipment--Linear and Dynamic programming, Equipment for Earth moving, Material transport, Pile driving, dewatering Contract Management & Arbitration.