

## **PROPOSED SYLLABUS (DIPLOMA LEVEL)**

### **Fluid Mechanics**

Properties of Fluids; Pressure and its Measurement; Hydrostatic Forces on Surfaces; Buoyancy and Floatation; Kinematics of Flow; Dynamics of Fluid Flow; Orifices and Mouthpieces; Notches and Weirs; Viscous Flow; Flow Through Pipes; Dimensional and Model Analysis; Impact of Jets and Jet Propulsion; Hydraulic Machines-Turbines; Centrifugal Pumps; Reciprocating Pumps

### **Concrete Technology**

Composition of concrete -Process of Manufacture of Concrete -Properties of fresh concrete-Tests on fresh concrete Properties of hardened concrete Tests on hardened concrete-Admixtures.

### **Engineering Mechanics 1**

Physical quantities and Units-Introduction to Mechanics; Forces, Resultant, Force system; Properties of plane surfaces- Centroid and Area moment of inertia; Dynamics- Linear and Circular motion; Work, Energy and Power, SHM; Lifting Machines

### **Engineering Mechanics-2**

Moment and Equivalent system; Friction; Centre of Gravity and Mass Moment of Inertia; Dynamics- D'Alemberts principle.

## **Engineering Drawing**

Introduction -Conic sections:-Lines ,lettering ,Dimensioning-Projections introduction - -Projections of points -Projections of straight lines - Projections of planes -Solids- projections of solids – Development of surfaces -Isometric projection -Oblique projection:- -Perspective projection:-

## **Bridge Engineering**

Introduction and important technical terms - classification of bridge- classification of piers and abutments.

## **Irrigation Engineering**

Introduction- types of irrigation. Methods of irrigation:-Water requirements of crops- Reservoir planning :-Types of reservoirs - zones of storage in a reservoir - Dams :- Classification of dams Spillways:-Types of spillway - Diversion headworks:-component parts of a diversion headwork - Distribution system :- Canals -cross drainage works - canal outlets - types of outlets - canal regulation works - classification of falls - canal escapes-Rivertraining works

## **Hydrology**

Hydrologic cycle- Precipitation- Run-off Hydrograph -Unit hydrograph

## **Transportation Engineering**

History of railway Engg- Railway track - Rail sections- Sleeper Ballast Track fittings and fastenings

Geometric design of the track Stations and yards Signalling and control systems  
Points and crossings :- Necessity of points and crossings - Components- Track junctions and interlockings

## **Surveying**

Introduction:-Main division of surveying - Linear Measurements :-Measuring distance by direct method- Error in length due to incorrect chain -Chaining on sloping ground - Errors in chaining - Mistakes in chaining - Tape corrections.Chain Surveying -Compass Surveying -Plane table surveying:-Methods of plane table surveying - Levelling :- Introduction- Terms used in levelling - Curvature and Refraction -Classification of leveling work.Contouring :- Contour and contouring- Characteristics of Contours -Method of contouringTacheometric Survey :- Introduction- Instruments used in tacheometry - Methods of tacheometry - Curves:-Classification of circular curves- Elements of a simple circular curve - Designation of curves -Vertical curves Theodolite:--Terms used in transit theodolite -Fundamental lines -Adjustments of a theodolite - Measurement of horizontal angles - Adjustments of a closed traverse -Gales traverse table.-Area and Volume Calculation :-General methods of determining area-Optics - defects in lenses-Minor instruments

Advanced survey - Modern survey equipments-Field Astronomy-Photogrammetry

## **Reinforced Cement Concrete**

General codal provisions ,working stress method (singly reinforced beam ,doubly reinforced beams ),fundamentals of limit state design, limit state of collapse flexure (singly reinforced beams , doubly reinforced beams , flanged beams), limit state of collapse shear & bond, limit state of collapse torsion, limit state of collapse

compression (columns subjected to axial load, uniaxial and biaxial bending ) limit state design :

Slabs, limit state design : footings

### **Steel Design**

Types of steel properties of structural steel -structural steel sections -Bolted connections -Riveted connections-Welded connections -Plate girder

### **Estimation , Costing & Valuation**

Introduction:-Data required to prepare an estimate:-Sanctions -Types of estimate :- Technical terms in estimation-Areas in estimation :-Methods of quantity surveying :-Rules for measurement and basic measuring units-Measurement of different works-Details of Data Book -Valuation

### **Estimation , Costing & Valuation – 2**

Introduction-Methods of calculating depreciation -Methods of valuation -Rent fixation-Road estimating -Bar bending schedule

### **Strength Of Materials**

Rigid and deformable bodies -stress and strain -tension test - Stress strain diagram - Hooke's law - mechanical properties-Elongation due to self weight of uniform and tapered bar - Temperature stress and strain - elastic constants-Types of loads, beams, supports - Support reactions - SFD and BMD -Bending equation - Flexural rigidity - Moment of resistance - Section modulus - Beams of uniform strength-Shear stress equation -Torsion of circular shafts- closed coiled helical spring - Power transmitted through shafts.-Compound stresses and strains- Mohr's circle-

Columns and struts- Euler's theory - Rankine's formula-Thin and thick cylinders-  
Thin spherical shells -Deflection of beams

### **Air and Noise Pollution**

Air pollution:- Classification and Sources of Air Pollutants - Characteristics of  
Important Air Pollutants .Air Pollution Control Methods and Equipment - Noise  
pollution:-Characteristics of sound waves, Noise standards.

### **Highway Engineering**

Development of Road Construction: History of roads-Highway Development in  
India - Classification of Roads -Highway Alignment

Geometric Design of Highways:- Right of way- gradients- super elevation -  
curves- sight distances

Highway Materials:-Soil Classification - Soil strength tests-Tests on aggregates-  
Tests on bitumen-Different forms of bitumen

Types of Pavement - Types of Joints in rigid pavement-Low cost road- methods of  
application of bitumen.

Traffic Engineering:-Traffic Volume Study- Traffic Capacities- Traffic density  
Parking Study- Traffic Signs Traffic Signals-Intersections - Highway Equipment.

### **Building Construction**

Types of buildings- Functional planning of buildings -Site investigation and  
ground techniques-Foundations-Deep foundations (pile foundations)-Caissons -  
Stone masonry-Brick masonry-Scaffolding, shoring and underpinning-Damp-  
proofing, water-proofing and termite-proofing-Arches -Lintels-Stairs -Doors,  
windows and ventilators Carpentry and joinery -Floors and flooring-Roofs-  
Pointing and plastering

## **Building Material**

Properties of engineering materials - Stones - Ceramic - Bricks - Lime - Cement - Mortar - Timber - Ferrous Metals - Steel - Non-Ferrous Metals And Alloys: Glass Paints, Varnishes And Distempers - Miscellaneous Materials

## **Construction Management**

Construction planning - Construction scheduling - Network diagram - Program evaluation and review technique (PERT) - Critical path method - Construction disputes and their settlement - Contracts and tenders

## **Environmental Engineering**

Water Demand, Quality Of Water, Sources of Water, Screening and Aeration, Sedimentation, Filtration, Disinfection, Water Softening, Miscellaneous Treatment Methods, Conveyance of Water, Distribution of Water, Water Supply For Buildings, Collection and Conveyance of Sewage, Wastewater Flow Rates, Design Of Sewers, Construction of Sewers, Sewer Appurtenances

Wastewater Characteristics, Natural Methods of Wastewater Disposal, Unit operations for wastewater treatment, Preliminary Treatment, Sedimentation

Biological Treatment, Miscellaneous Methods, Treatment and Disposal of Sludge, Septic and Imhoff Tanks, House Drainage principles, Solid Waste Disposal

## **Autocad**

Functional keys, Short commands, Print and Plot

**NOTE:** - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper