DETAILED SYLLABUS FOR THE POST OF OVERSEER GRADE III IN KERALA WATER AUTHORITY, DRAFTSMAN GRADE II IN GROUND WATER DEPARTMENT

(Category Nos. 033/2024, 238/2024

(Total Marks – 100)

a. BASIC ENGINEERING DRAWING (10 Marks)

Drawing instruments, equipment and materials

Lettering, dimensioning and scale

Plane geometrical construction

Conic section and projection

b. UNITS AND MENSURATION (6 Marks)

Units of measurements

Measurement of Perimeter and Area of triangles Polygons and circles

Volume of Solids

c. AUTOCAD (8 Marks)

Introduction to AutoCAD

Basic commands

Drawing toolbar and modifying toolbar

Plotting and printing

d. SURVEYING (9 Marks)

Conventional surveying

Introduction and terms used in chain, compass, plane table and leveling survey

Principle of leveling, Type of leveling, Reduction of levels

Contouring ,Theodolite survey

Modern and advanced surveying instruments

e. BUILDING MATERIALS AND CONSTRUCTION (10 Marks)

Stone, Brick, Tiles, Cement, Lime and filler materials Plane cement Concrete, Reinforced cement concrete Timber Foundation, Masonry, Roofing, Flooring Building finishes and services Temporary structural treatment for building construction

f. BUILDING DRAWING AND ESTIMATING (10 Marks)

Building rules and byelaws

Estimation, Rules and methods of measurements of work

Rate analysis and valuation

g. HYDRAULICS AND IRRIGATION (9 Marks)

Terms used in Irrigation

Storage and diversion head works

Reservoir, dam, canals, Cross drainage work

Properties of fluid

Measurement of pressure

Type of Hydraulic energy

h)

MODULES	SUB-HEADINGS	TOPICS	MARKS
Module-1 Develop surface and and Interpenetration of solid in orthographic projection.	Develop surface	Definition of development..	3
		Need of development in industry.	
		different methods of developing the surfaces.	
		Development of surfaces bounded by plane of revolution intersecting each other.	
		Development of an oblique cone with elliptical base	
		Calculation of developed lengths of geometrical solids.	
	Interpenetration of solid in orthographic projection.	Definition of Intersection & interpenetration curves.	2
		Common method to find out the curve of interpenetration	
		Solution of problems on interpenetration of prism,cones, & pyramids with their axes intersecting at an angle.	
		Intersection of cylinder.	
Module-2 Different types of fasteners , welds and locking devices	Fasteners	Screw threads, terms , nomenclature.	3
		Types of screw thread, proportion and their uses,	
		Threads as per SP46:2003 conventions.	

		. Types of bolts, nuts and studs,and their proportion, uses.	
	Welds	Description of Welded Joints and their representation.	2
		Indication of Welding Symbol on drawing as per SP-46.	
	Locking Devices	Different types of locking devices.	3
		Different types of machine screws, cap screws, set screws as per specification	
		Different types of foundation bolts and their uses.	
Module-3 Pipe Joints and riveted joints	Pipe Joints	Description of different pipe joints fitted on pipe.	2
		Expansion joint, loop and other pipe fittings.	
	Riveted joints	Types of rivets, their size proportions and uses	3
		Types of riveted joints, terms and proportions of riveted joints. Conventional representation.	
		Relation between rivet size and thickness of plates and calculation for arrangement of rivets position.	
		Causes of failure of rivetedjoint efficiency of rivetedjoints	
Module-4 Belt Drive and Gear drive	Belt Drive	Materials of belts, slip and creep, Velocity of belt. Arc of contact.	4
		Simple exercise in calculation of belt speeds, nos. of belts needed in V-belt drive, velocity, pulley ratio etc.	
		Standard pulleys width of pulley face, velocity ratio chain drive.	
	Gear drive	Different types of gears.	3
		Cast gears and machined gears.	
		Knowledge of profile of gears etc.	
Module-5 Hydraulics and Pneumatics	Hydraulics	Brief description of a typical hydraulic system, components,	3
		Working principle and function of hydraulic jack.	
		Different types of hydraulic actuator.	
		Symbol and working of hydraulic DC valve, non- return valve and throttle valve.	
	Pneumatics	Knowledge of typical pneumatic system.	2
		FRL or air service unit and pneumatic actuator.	
Module-6 Limits, fit, tolerance.	Limits, fit, tolerance.	Limits, fit, tolerance. Toleranced dimensioning, geometrical tolerance.	4
		Indications of symbols for machining and surface finishes on drawing	
		Production of interchangeable parts, geometrical tolerance.	
		Familiarization with IS: 919, IS:2709.	
Module-7 Bearings	Types , advantages	Knowledge of bearing to reduce friction.	4

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.