

KERALA WATER AUTHORITY OVERSEER GRADE - 1



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EXAM DETAILS



METHOD OF RECRUITMENT

Direct

AGE LIMIT

19-36

QUALIFICATION:

Upper Subordinate Diploma of the College of Engineering Guindy Diploma in civil / Mechanical Engineering of Travancore (now Kerala) the Kerala University or Diploma recognized by Government as equivalent thereto.

NAME OF POST

KWA OVERSEER GRADE - 1

DEPARTMENT

KERALA WATER AUTHORITY

NUMBER OF VACANCY

10

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EXPECTED SYLLABUS

KERALA WATER AUTHORITY - OVERSEER GRADE - 1

Milling machine – shaping machine – slotting machine – planning machine – various attachments – quick return mechanisms. Lathe cont.

Screw threads – nomenclature of screw threads – nuts, bolts and washers – BIS conventions – cotter and pin joints – riveted joints – welded joints, pulleys, bearings,

Cams – types of cams – function of cams – industrial application – types of followers – kinds of motion – displacement diagrams – terms used.

Gear materials – types of gear drives – velocity ratio – nomenclature of gears – types of gears and application – classification of chain drive – power transmission – positive drive.

Various types of load and supports, Bending moment

W/S Calculation and Science :Centre of Gravity, Hooks Law, Ultimate stress and Breaking stress, Moment and Moment of Inertia for different sections, Shearing force, Cantilever & Simply supported beams. Bending stress.

Units – British, MKS, SI Units – and their conversions – Length, area, Volume, Mass and Time – Definition of Mass, Weight, Density, Specific Gravity

Determination of Sides and area of triangles, polygons, Circles, segment and sections – surface area and volume of cubes, cylinder, prism, pyramid, cone, sphere – Sympson's Rule – Application – Area of ellipse – Simple Problems.

Graphic Language – drawing instruments – types of lines – method of lettering – Dimensioning – principles of representation and construction of different types of scales – Recommended scales for drawing with reference to BIS Codes – Construction of Plain Geometrical figures

Construction of conic sections – ellipse, parabola and hyperbola – Miscellaneous curves – involute, cycloid, helix and spiral – theory of projections – types of projections – classification of planes – first angle & third angle projections – projection of points - Lines and Planes – projection of Lamina, Solids – True shapes – section of solids – Intersection of surfaces – developments of surfaces orthographic projection – Oblique projection – Isometric projection – perspective projection



Computer and Computer Application

Planimeter –enlarging and reducing of plans, use of proportions, compass and pantographs and their parts
Curves – Simple curves, Compound curves, transition curves, vertical curves

Transportation Engineering – Technical terms, classification etc, Irrigation and cross drainage works

HYDRAULICS

Fluid pressure and method to measure Pressure. Pascal's law, terms pressure and pressure head, absolute pressure, gauge pressure, atmosphere pressure, vacuum pressure, pressure measuring instruments and its principles, piezometer tube, pressure gauge, manometer, 'U' tube manometer, differential manometer, inverted type manometer and its simple problems, total pressure in different conditions.

FLUID FLOW

Terms Cd, Cv, Cc, different types of flow measuring instruments, Orifice, Notches and venture meter, types of fluid flow, steady flow, unsteady flow, uniform flow, non uniform flow, laminar flow, turbulent flow, discharge calculation, continuity equation, head losses, major losses, minor losses, loss of head due to friction, Darcy's and Chezy's formula, simple problems. Hydraulic Machines- Different types of pumps, centrifugal pump, Reciprocating pump, Stage pump, difference between each pumps, different types of turbines, working of turbines, Governing system, difference between impulse and reaction turbines, work done of turbines.

THERMAL ENGINEERING

Important laws- Zeroth law of thermodynamics, First law of thermodynamics, Second law of thermodynamics, thermodynamics process, Isothermal process, isentropic process and its work done equations and PV diagrams.

Air standard cycles- Carnot cycles, Otto cycle, Diesel cycle and its PV diagrams.

IC engines - Two stroke petrol engine, Two stroke diesel engine, single cylinder engines and multi cylinder engines, four stroke petrol engine, four stroke diesel engine, performance of internal combustion engine, Brake power, Indicated power, frictional power, brake thermal efficiencies, indicated thermal efficiency, equations and **Compressors**- working of compressors, use of compressors, different types of compressors, single stage compressor, multi stage compressor, single action and double action compressors, work done and efficiency equations and its graphs.



STRENGTH OF MATERIAL

Terms simple stress and strain, longitudinal strain, lateral strain, Poisson's ratio, Hook's law, Modulus of rigidity, shear stress, shear strain, Friction, sliding friction, rolling friction, cone of friction, centre of gravity, moment of inertia, simple equations. **Shear force and bending moment-** Types of beams and its loading conditions, shear force and bending moment diagrams and equations in different types of beams and different types of loads, point load, uniform distributed load, cantilever beam, simply supported beam.

Rivets, nut and bolts- Types of rivets, use of rivets, types of riveted joints, single riveted joint, double riveted joints, lap joints, butt joints, strength of riveted joints, different types of bolt, use of bolts, different types of foundation bolts, use of foundation bolts.

BOILERS & POWER PLANTS

Use of boiler, types of boiler, boiler mountings, boiler accessories, steam engine, working of steam engine, parts of steam engine.

Power plants- Different types of power plants, thermal power plant, Hydraulic powerplant, diesel power plant, nuclear power plant and working.

MACHINE TOOLS AND MANUFACTURING

Lathe and lathe works- Types of lathes, use of lathes, parts of lathes centre lathe, semi automatic lathe, automatic lathe, capstan and turret lathe, copying lathe, different types of lathe works, plain turning, step turning, taper turning, drilling, boring, Broaches, types of broaches, use of broaches, jig and fixtures, use of jig and fixtures, reaming and grinding. Welding, types of welding, different types of welding joints.



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