2.2 30252 FLUID MECHANICS

UNIT-1. INTRODUCTION:

Introduction concepts Fluids and solids, Liquid, gas and vapour, Fluid mechanics ,Kinematics, Dynamics, Fluid properties, Density, Specific volume, Specific gravity, Viscosity, Newton's law of Viscosity, Dynamic and Kinematic Viscosity, Compressibility, Surface tension - soap bubble, drop, Capillarity, Vapour pressure and its importance

UNIT-2 FLUID PRESSURE AND ITS MEASUREMENT:

Definition and its units, Pascal's law, Intensity of pressure at a point in fluid at rest, Pressure head, Pressure, Atmospheric pressure,   Gauge pressure, Vacuum pressure, Absolute pressure, Differentials pressure, Law of hydrostatic pressure, Brahma's press, Pressure measurement, Manometers, Piezometer - its limitation, U-tube - simple, differential, inverted, Micro-manometers, Inclined tube micro-manometers, Mechanical gauge, Bourdon gauge, Bellow gauge, Diaphragm gauge, Dead weight gauge

UNIT-3 HYDROSTATICS:

Total pressure, Centre of pressure, Total pressure and center of pressure in following cases, Plane surface immersed horizontally, Plane surface immersed vertically, Plane surface immersed at an angle, Curved surface (no proof),Working of lock gates, sluice gate, Pressure on masonry dams of rectangular and trapezoidal sections and their condition of stability.

UNIT-4 HYDRO KINEMATICS:

Description of fluid flow, Eular approach, Lagrangian approach ,Definition of path line, stream line, Types of flow, Steady - Non steady, Uniform - Non uniform, Laminar - Turbulent, One, Two, Three dimensional flow, Continuity equation (no proof) :,Assumption, Rate of discharge, For one dimensional flow

UNIT-5 HYDRODYNAMICS AND MEASUREMENT OF FLOW:

Energy of fluid - pressure, kinetic and potential, Bernoulli's theorem (no proof),Assumptions and its limitation, Conversion of pressure into pressure head, velocity into kinetic head, Applications of Bernoulli's theorem, Pitot - tube, Venturi meter, Orifices and Notches :,Definition and classification, Discharge through small orifices, Coefficient of contraction, Coefficient of velocity, Coefficient of discharge, Coefficient of resistance, Time of emptying a vessel of uniform cross section through an orifice at bottom., Notches - Classification, Crest, Nappe, Difference between notch and weir, Flow over -,Triangular notch, Rectangular notch,

Reference books:
1. Fluid Mechanics & Machines Dr.JagdishLal
2. Fluid Mechanics & Machines Dr.R.K.Bansal
3. Fluid Mechanics & Machines R.S.Khurmi.
4. Hydraulics & Pneumatics H.L. Stewart.