FLUID MECHANICS

UNIT-I INTRODUCTION: Dimensions & units—physical properties of fluids specific gravity, viscosity, surface tension, vapor pressure & their influences on fluid motion pressure at a point, pascal's law, hydrostatic law—atmospheric, guages & vacuum pressure—measurement of pressure, pressure gauges, manometers;

UNIT-II HYDROSTATIC FORCES: Hydrostatic forces on submerged plane horizontal, vertical, inclined & curved surfaces—center of pressure derivations & problems.

UNIT-III FLUID KINEMATICS: Description of fluid flow, stream line, path line & streak lines & steam tube. Classification of flows; steady & unsteady, uniform, non-uniform, laminar, turbulent, rotational & irrotational flows—equation of continuity for one, two, three dimensional flows—stream & velocity potential functions, flownet analysis.

UNIT-IV FLUID DYNAMICS: Surfaces & body forces—eulers & bernoullis equations for flow along a steam line 3-D flow, navier stokes equations momentum equations & its application—forces on pipe bend.

UNIT-V BOUNDARY LAYER THEORY: Approximate solutions of navier stokes equations—boundary layer—concepts, pradtl contribution, characteristics boundary layer along a thin flat plate.

UNIT-VI LAMINAR & TURBULENT FLOWS: Reynolds experiment—characteristics of laminar & turbulent flows. Flow between parallel plates, flow through long tubes, flow through inc'ned tubes.
