

TME-604  
**FLUID MACHINERY**

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**UNIT-I**

**Introduction:**

Classification of Fluid Mechanics, Application of momentum and momentum equation to flow through hydraulic machinery, Euler's fundamental equation.

**Impact of jet:**

Introduction to hydrodynamic thrust of jet on a fixed and moving surface (flat & curve), effect of inclination of jet with the surface.

**Hydraulic Turbines:**

Classification of turbines, Impulse turbines, constructional details, velocity triangles, power and efficiency calculations, governing of Pelton wheel.

**UNIT-II**

**Reaction Turbines:**

Francis and Kaplan turbines, constructional details, velocity triangles, power and efficiency calculations, degree of reaction, draft tube, cavitation in turbines, principles of similarity, unit and specific speed, performance characteristics, selection of water turbines.

**UNIT-III**

**Centrifugal Pumps:**

Classifications of centrifugal pumps, vector diagram, work done by impellor, efficiencies of centrifugal pumps, specific speed, model testing, cavitation and separation, performance characteristics.

**UNIT-IV**

**Positive Displacement Pumps:**

Reciprocating pump theory, slip and coefficient of discharges, indicator diagram, effect and acceleration, work saved by fitting air vessels, comparison of centrifugal and reciprocating pumps, positive rotary pumps, Gear and Vane pumps, performance characteristics.

**UNIT-V**

**Other Machines:**

Hydraulic accumulator, Intensifier, Hydraulic press, Lift and Cranes, theory of hydraulic coupling and torque converters, performance characteristics.

**Water Lifting Devices:** Hydraulic ram, Jet pumps, Airlift pumps.

**BOOKS:**

Hydraulic Machines by Jagdish Lal, Metropolitan book co. pvt ltd.

Hydraulic Machines: Theory & Design, V.P.Vasandhani, Khanna Pub.

Applied Hydraulics by Addison

Hydraulic Machines by R K Rajput, S.Chand & co Ltd.

Hydraulic Machines by D S Kumar