32045 – STRENGTH OF MATERIALS AND FLUID MECHANICS PRACTICAL

DETAILED SYLLABUS

OBJECTIVES

- Acquire skills on different types of testing methods of metals.
- Conduct material testing on elasticity, hardness, shear strength.
- Determine modulus of rigidity of open spring and closed coil springs.
- Determine the co-efficient of discharge of venturimeter, orifice meter, mouth piece and orifice.
- Determine the co-efficient of friction in pipes.
- Conduct performance test on centrifugal and reciprocating pumps.
- Conduct performance test on impulse and reaction turbines.
- Strength of Materials Laboratory

Exercises

1. 1.Test on Ductile Materials: Finding Young's Modulus of Elasticity, yield points, percentage elongation and percentage reduction in area, stress strain diagram plotting, tests on mild steel.
2. Hardness Test: Determination of Rockwell's Hardness Number for various materials like mild steel, high carbon steel, brass, copper and aluminium.
3. Torsion test: Torsion test on mild steel – relation between torque and angle of twist determination of shear modulus and shear stress.
4. Impact test: Finding the resistance of materials to impact loads by Izod test and Charpy test.
5. Tests on springs of circular section: Determination of modulus of rigidity, strain energy, shear stress and stiffness by load deflection method (Open / Closed coil spring)
6. Shear test: Single or double shear test on M.S. bar to finding the resistance of material to shear load.

Fluid Mechanics Laboratory

Exercises

1. Verify the Bernoulli's Theorem.
2. Determination of co-efficient of discharge of a mouth piece / orifice by variable head method.

3. Determination of co-efficient of discharge of a venturimeter / orificemeter.
4. Determination of the friction factor in a pipe.
5. Performance test on reciprocating pump / centrifugal pump and to draw the characteristics curves.
6. Performance test on impulse turbine / reaction turbine and to find out the Efficiency.