

Code: R7220304

R07

B.Tech II Year II Semester (R07) Supplementary Examinations December/January 2015/2016

FLUID MECHANICS & HYDRAULIC MACHINERY

(Mechanical Engineering)

(For 2008 Regular admitted batch only)

Time: 3 hours

Max. Marks: 80

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Explain about Piezometer.
(b) Determine the viscosity of a liquid having kinematic viscosity 6 stokes and specific gravity 1.95.
- 2 (a) State and derive Bernoulli's equation.
(b) Define stream line, path line streak line and stream tube.
- 3 (a) An orifice meter with orifice diameter 10 cm is inserted in a pipe of 20 cm diameter. The pressure gauges fitted upstream and downstream of the orifice meter given readings of 19.62 N/cm^2 and 9.81 N/cm^2 respectively. Take $C_d = 0.6$. Find the discharge of water through pipe.
(b) Explain Reynolds experiment.
- 4 (a) Derive the equation for force exerted by the jet on a stationary vertical plate when it strikes the plate in a normal direction.
(b) A jet of water of diameter 75 mm moving with a velocity of 25 m/s strikes a fixed plate in such a way that the angle between the jet and the plate is 60° . Find the force exerted by the jet on the plate in the direction normal to the plate and in the direction of the jet.
- 5 What are the various types of hydro electric power plants? Explain in detail.
- 6 Explain working of a Pelton wheel with sketch.
- 7 (a) Explain constant head curves of a turbine.
(b) A turbine develops 7357.5 kW S.P when running at 200 rpm. The head on the turbine is 40 m. If the head on the turbine is changed to 25 m determine the speed and power developed by the turbine.
- 8 A double-acting reciprocating pump running at 40 r.p.m is discharging 1.0 m^3 of water per minute. The pump has a stroke of 400 mm. The diameter of the piston is 200 mm. The delivery and suction head are 20 m and 5 m respectively. Find the slip of the pump.
