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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.TECH II Year II Semester Supplementary Examinations December 2018
FULID MECHANICS & HYDRALIC MACHINERY
(EEE)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- 1 a A simple U-tube manometer containing mercury is connected to a pipe in which a fluid of specific gravity 0.8 and having vacuum pressure is flowing. The other end of the manometer is open to atmosphere. Find the vacuum pressure in pipe, if the difference of mercury level in the two limbs is 40 cm and the height of fluid in the left from the centre of pipe is 15cm below. 7M
- b Discuss about inverted and differential manometers. 5M

OR

- 2 a A rectangular plane surface is 2m wide and 3m deep. It lies in vertical plane in water. Determine the total pressure and position of centre of pressure on the plane surface when its upper edge is horizontal and coincides with water surface. 7M
- b Explain about viscosity and its significance. 5M

UNIT-II

- 3 a Derive Bernoulli's equation and state assumptions 7M
- b Explain Continuity equation in one and three dimensional forms 5M

OR

- 4 Explain about
a) Energy gradient line.
b) Hydraulic gradient line. 7M

UNIT-III

- 5 a What is Pitot Tube? How will you determine the velocity at any point with the help of pitot tube. 7M
- b A horizontal venturimeter with inlet and throat diameters 40cms and 20cms respectively is used to measure the flow of water. The reading of differential Manometer connected to the inlet and throat is 18 cm of mercury. Determine the rate of flow. Take $C_d=0.97$. 5M

OR

- 6 a A horizontal venturimeter with inlet diameter 20cm and throat diameter 10cm is used to measure the Flow of oil of Sp. gr. 0.8. The discharge of oil through venturimeter is 60liters/s. Find the reading of the oil-mercury differential manometer. Take $C_d=0.98$. 7M
- b Explain about atmospheric, gauge and vacuum pressure. 5M

UNIT-IV

- 7 Explain the different types of similarities that must exist between the model and Prototype. 12M

OR

- 8 Explain in detail about Buckingham's pi theorem of dimensional analysis. Give one example. 12M

UNIT-V

- 9** An impulse turbine of 2.75 m diameter is rated at 11000kW at 300 r.p.m under a head of 490 m. It uses 2.7 m³/sec discharge if the turbine is operated under a head of 400 m.
(a) What will be the speed, power and discharge.
(b) Determine the size of the wheel to develop 7000kW power under a head of 300 m. Also determine the speed and discharge.

12M

OR

- 10 a** Explain the method of selection of centrifugal pumps through the characteristic curves.
b Explain the various performance characteristic curves of a turbine, in detail.

7M

5M

END