

Total No. of printed pages = 3

CT-403/FM/4th Sem/2016/N

FLUID MECHANICS

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

All questions are compulsory.

1. How fluid pressure is measured ? Give a brief explanation about manometer and its types.

4+10=14

2. (i) Write the definition of coefficient of velocity, coefficient of contraction and coefficient of discharge.

- (ii) The head of water over an orifice of diameter 100 mm is 10m. The water coming out from orifice is collected in a circular tank of diameter 1.5m. The rise of water level in this tank is 1.0m in 25 seconds. Also, the coordinate of a point on the jet, measured

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from vena-contracta are 4.3m horizontal and 0.5m vertical. Find the coefficient of velocity, coefficient of contraction and coefficient of discharge. $9+5=14$

3. A horizontal venturimeter with inlet diameter 20 cm and throat diameter 10 cm is used to measure the flow of water. The pressure at inlet is 17.658 N/cm^2 and the vacuum pressure at the throat is 30 cm of mercury. Find the discharge of water through venturimeter. Take $C_d = 0.98$. 14
4. (i) What do you mean by hydraulically efficient channel ? How to obtain hydraulically efficient channel ?
- (ii) A crude oil of kinematic viscosity 0.4 stokes is flowing through a pipe of diameter 300 mm at the rate of 300 litres/s. Find the head loss due to friction for a length of 50 mm of pipe. $6+8=14$
5. Write short notes on : $7 \times 2 = 14$
- (i) Coefficient of velocity, coefficient of discharge and coefficient of contraction.
- (ii) Path line and streak line.

- (iii) Specific volume and specific gravity.
- (iv) Viscosity.
- (v) Steady and unsteady flow.
- (vi) Reynold's number.
- (vii) Uniform and non-uniform flow.