

November 2022

Time - Three hours
(Maximum Marks: 100)

- [N.B. 1. Answer all questions under Part-A each question carries 3 marks.
2. Answer all the questions either (A) or (B) in Part-B each question carries 14 marks.]

PART - A

1. Write short notes on specific gravity and specific volume.
2. What do you mean by cohesion and adhesion?
3. Distinguish between laminar flow and turbulent flow.
4. Differentiate uniform flow from non-uniform flow.
5. How is a 'V' notch advantageous than a rectangular notch?
6. How are the notches classified?
7. Write the classification of open channels.
8. What is meant by venturiflume? Explain with neat sketch.
9. Give the classification of pump.
10. Write short note on Positive displacement pump

PART - B

11. (a) A liquid weighs 100 kN and occupies 4 m^3 . Find its specific weight, mass density, relative density, and specific volume.
(Or)
(b) (i) The density of liquid is 920 kg/m^3 . Determine its specific weight and relative density.
(ii) The specific gravity of a liquid is 0.85. What will be its specific weight, density and specific volume?

[Turn over.....

12. (a) The diameter of a pipe changes uniformly from 450 mm at a point A, 6m above the datum line to 150 mm at a point B, 2.5m above the datum line. The pressure at A is 539.5×10^3 Pa and the velocity of flow is 1.4 m/s. Assuming no loss between A and B, compute, (a) velocity at B and (b) pressure at B.

(Or)

- (b) A Venturimeter is installed in a horizontal pipe line, 300mm in diameter. The diameter at throat is 150mm. The differential mercury water manometer shows a deflection of 0.2m. Determine, (a) Venturihead and (b) discharge in lps if the co-efficient of meter is 0.98.

13. (a) A trapezoidal notch is 1.2m wide at the top and 0.50m at the bed. The height is 0.4m. Determine the discharge through the notch when the head of water is 0.3m. Take C_d as 0.60.

(Or)

- (b) A rectangular notch of 4m wide is discharging under a constant head of 0.6m. Find the discharge if the coefficient of discharge is 0.62.

14. (a) A rectangular channel is 8m wide and 3m deep. The bed fall is 1 in 1000. Find the discharge in cumecs when it runs full. Take Chezy's constant as 55.

(Or)

- (b) The average velocity of water flowing in a rectangular channel 2.5m wide is 0.60m/s. If the depth of water is 2m, calculate the slope at which the channel is laid. Take, $C = 50$.

15. (a) Explain with neat sketch the construction and working of a Centrifugal pump.

(Or)

- (b) A single acting reciprocating pump has a plunger diameter of 500mm and a stroke of 0.40m. The speed of the pump is 60 rpm and the co-efficient of discharge is 0.97. Determine the actual discharge and percentage slip of the pump.
