6224
BOARD DIPLOMA EXAMINATION
MARCH/APRIL - 2019
DIPLOMA IN CIVIL ENGINEERING
HYDRAULICS
THIRD SEMESTER EXAMINATION

Time: 3 Hours **Total Marks: 80**

PART - A (3m x 10 = 30m)

Note 1:Answer all questions and each question carries 3 marks

2:Answers should be brief and straight to the point and shall not exceed 5 simple sentences

1. Define: compressibility, vapour pressure and cavitation
2. Name the Instruments used for measuring the pressure in the following cases
   (i) Difference of pressure between two points in a pipe line
   (ii) Find the pressure at a point in a pipe line
   (iii) Measurement of high pressure in a pipe line
3. State any three limitations of Bernoulli's theorem
4. List out hydraulic co-efficients? and state the relationship between them?
5. A weir 10m long has a constant head of water is 0.3m. Take C_d =0.62. Find the discharge over the weir?
6. Find the Discharge through a V- Notch under a constant head of 0.5m. if the Angle of the Notch is 90^0. Take C_d= 0.63
7. Name any three minor losses in pipe flow and write the formulae for each
8. Write two Emperical formulae for calculating the value of Chezy's constant 'C'?
9. Define: 'Slip', 'percentage slip' and 'negative slip' of a reciprocating pump
10. Define the terms: 'penstock', 'fore bay' and 'surge tank' in hydro electric power projects

PART - B (10m x 5 = 50m)

Note 1:Answer any five questions and each question carries 10 marks

2:The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer

11. A triangular gate which has a base of 2m and an altitude of 3m lies in a vertical plane. The vertex of the gate is 1m below the surface of a tank which contains oil of specific gravity 0.8. Find the force exerted by the oil on the gate and its position of centre of pressure

12. Water flowing through a horizontal tapering pipe AB with a discharge of 0.6 cumecs. The diameter at A and B are 30cm and 60cm.If the pressure at A is 7.4m of water, find the pressure at B neglecting the losses

13. A tank has two identical orifices in one of its vertical sides. The upper orifice is 2m below the water surface and the lower one is 4m below the water surface. Find at what point the two jets will intersect if the coefficient of velocity is 0.90 for both the orifices

14. Determine the maximum discharge over a broad crested weir 20m long with a head of 70 cm over the crest. C_d=0.95. The width of approach channel is 40 m and its depth below the crest of weir is 60 cm for the following cases.
    i) By neglecting velocity of approach
    ii) By considering velocity of approach

15. A horizontal pipe line 50 m long is connected to water tank at one end and discharges freely into the atmosphere at the other end. For the first 30 m of its length from a tank the pipe is 0.2m diameter and its diameter is suddenly enlarged to 0.4m. The height of water level in the tank is 10 m above the centre of the pipe. Tabulate all the losses of head and determine the rate of flow. Take f=0.01

16. Two pipes each 500m long are available for connecting to a reservoir from which a flow of 0.2m3/sec is required. The diameters of two pipes are 0.4m. Determine the ratio of head lost when the pipes are connected in series to the head lost when they are connected in parallel. Neglect minor losses

17. The bed slope of a river was found to be 0.000146. If the hydraulic mean depth was 2.1m and the velocity as determined by vertical floats is 0.84m/s, find the values of Chezy's and Bazin's Constants

18. Explain the working of a double acting reciprocating pump with the help of a sketch

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