



C14-C-303

\*  
**4222**

**BOARD DIPLOMA EXAMINATION, (C-14)  
OCTOBER/NOVEMBER-2018  
DCE-THIRD SEMESTER EXAMINATION**

HYDRAULICS

Time : 3 Hours ]

[ Total Marks: 80

---

**PART-A**

3X10=30

- Instructions :**
1. Answer **All** questions.
  2. Each question carries **Three** marks.
  3. Answer should be brief and straight to the point and shall not exceed five simple sentences.
1. What is meant by viscosity and write the relationship between dynamic viscosity and kinematic viscosity.
  2. Define the following terms
    - a. Atmosphere pressure
    - b. Gauge pressure
    - c. Absolute pressure.
  3. Write the use of the following devices
    - a. Venturi meter.
    - b. Pitot tube
  4. What is orifice of? State the classification of orifices according to (a) Size and (b) Shape.
  5. Define Notch and Weir.
  6. The discharge through the rectangular notch is 200 liters/sec. find the length of notch if the head of water over the notch is 600mm. take  $C_d=0.62$
  7. List out any three minor losses in pipe flow giving formula for each.
  8. What is meant by most economical channel section?
  9. Write the Functions of draft tube.
  10. Sketch typical hydroelectric power plant and name its parts.

## PART-B

10X5=50

**Instructions** :

1. Answer any **Five** questions.
2. Each question carries **ten** marks.
3. Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer

11. Determine the total pressure and position of the centre of pressure on a circular plate of diameter 1.5m which is immersed vertically in water such that bottom of plate is 3.0m below the free surface of water?
12. Water is flowing through a horizontal tapering pipe AB with a discharge of 0.5 cumecs. The diameter at A and B are 30 cm and 60cm respectively. If the pressure A is 7.0m of water, find the pressure at B neglecting the losses.
13. Derive an expression for the discharge through large rectangular orifice.
14. A cipolletti weir of crest length is 0.5m discharge, the head of water over the weir is 0.4m. Find the discharge over the weir by considering velocity of approach. If the channel is 80 cm wide and 60 cm deep. Take  $C_d = 0.6$ .
15. Find the diameter of uniform pipe to replace a compound pipe line having the following elements.
  - a. 1000m of 50 cm diameter
  - b. 500m of 40 cm diameter
  - c. 250m of 30 cm diameter
16. (a) A pipe carrying water suddenly enlarges from 100mm to 200mm. if the discharge is 60 lit/sec. calculate the head loss due to the change in the section of pipe.  
(b) A rectangular channel is 4.0m deep and 6.0 wide find the discharge in lit/day through the channel when it runs full. Take the slope of the channel bed as 1 in 1000 and Chezy's constant as 50.
17. An earthen channel with a base 3.0m wide and side slopes 1:1 carries water with a depth of 1.0m. The bed slop is 1 in 1600. Take  $N=0.04$  using manning's formula.
18. Explain with neat sketch the component parts of a centrifugal pump.

\*\*\*\*\*