

TED (06)–4044

(REVISION–2006)

Reg. No. ....

Signature .....

FOURTH SEMESTER DIPLOMA EXAMINATION IN CIVIL ENGINEERING  
MARCH, 2012

HYDRAULICS

[Time : 3 hours

(Maximum marks : 75)

PART—A

(Maximum marks : 15)

Marks

I Answer the following questions in one or two sentences :

1. Define specific weight of a liquid.
2. What is Absolute pressure ?
3. Define vena-contracta.
4. Differentiate between an orifice and mouth piece.
5. Write the equation for finding the discharge over a triangular notch.
6. What is a broad crested wier ?
7. Define Hydraulic gradient line.
8. Define water hammer.
9. What is the hydraulic mean depth of a channel section ?
10. What do you mean by priming of a pump ?

(10×1½=15)

PART—B

(Maximum marks : 60)

(Answer *one* full question from each unit)

UNIT—I

II (a) Define :

- |  |                |   |
|--|----------------|---|
| (i) Specific gravity                         | (ii) Viscosity | 3 |
| (b) State pascal's law.                      |                | 3 |
| (c) Explain inverted differential manometer. |                | 6 |

OR

- |   |   |
|---|---|
| III (a) Explain uniform and non uniform flow. | 4 |
| (b) State Bernoulli's Theorem.                | 4 |
| (c) Explain pitot tube.                       | 4 |

		Marks
UNIT—II		
IV	(a) Explain the hydraulic coefficients.	6
	(b) An orifice in the side of a large tank is rectangular in shape 1.2 m broad and 0.6 m deep. If water level on one side of the orifice is 2.4 m above the top edge and on the other side is 0.3 m below the top edge, find the discharge in litres per second. Take $c_d = 0.62$ .	6
OR		
V	(a) How are the mouth piece classified? List the name and discharge formulae for each of them.	6
	(b) A square tank of $1.5 \times 1.5$ m cross sectional area contains water to a depth of 5 m. An orifice of 50 mm diameter is provided at the bottom of the tank. Find the fall of water level, when the orifice is opened in 5 minutes. Take $C_d = 0.62$ .	6
UNIT—III		
VI	(a) What is a notch and how are they classified?	4
	(b) How is a V-notch advantageous than a rectangular notch?	4
	(c) A rectangular notch, 2 m wide is discharging under a constant head of 400 mm. If the coefficient of discharge is 0.62, find the discharge.	4
OR		
VII	(a) Explain Francis formula and Bazin's formula for end contractions.	4
	(b) Explain contracted weir and suppressed weir.	4
	(c) Explain velocity of Approach.	4
UNIT—IV		
VIII	(a) Derive Darcy's formulae for loss of head in pipes.	6
	(b) Water flows through a pipe 60 mm diameter, 30 m long with a velocity of 3 m/sec. Taking the Chezy's constant as 60, find the loss of head due to friction using Chezy's formulae.	6
OR		
IX	(a) Explain Total Energy line.	4
	(b) Explain water hammer. What is its effect?	4
	(c) Find the discharge through a pipe line 300 mm diameter and 250 m long when the loss of head due to friction is 1.5 m. Assume $f = 0.005$ .	4
UNIT—V		
X	(a) Mark the component of a centrifugal pump and explain its working.	6
	(b) What is meant by most economical section of a channel? What are the conditions to be satisfied for an economical trapezoidal channel section?	6
OR		
XI	(a) Draw the layout of Hydro-Electrical power plant.	6
	(b) Explain pelton wheel with a neat sketch.	6