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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL - 2025

HYDRAULICS AND IRRIGATION ENGINEERING

[Maximum marks: 75] [Time: 3 Hours]

PART A

I. Answer all the following questions in one word or one sentence. Each question carries 1 mark.

(9 x 1 = 9 Marks)

		Module outcome	Cognitive level
1	Define hydrostatics.	M1.01	R
2	Name any two pressure measuring devices.	M1.02	R
3	Define discharge.	M1.04	R
4	Write Chezy's equation.	M2.03	R
5	Define duty.	M3.02	R
6	List out the cropping seasons.	M3.02	R
7	The cross drainage work constructed when the bed level of the canal and that of the drainage meet at same elevation is …….	M4.04	R
8	An artificial channel conveying water, typically across a bridge or a valley or other gap is ……..	M4.04	R
9	Write continuity equation.	M1.04	R

PART B

II. Answer any eight questions from the following. Each question carries 3 marks.

(8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	Calculate specific weight and density of 1 litre of liquid which weighs 7N.	M1.01	U
2	Find out the total pressure force on a square plate of side 1.5m immersed in liquid horizontally with specific weight 5 X 10^3 N/M^3 at a depth of 3m from the surface of liquid.	M1.03	A
3	Write the use and principle behind Venturimeter.	M2.01	U
4	List out the various losses in pipes.	M2.04	R

5	An irrigation channel runs for 125days in a season when wheat is grown. Total depth or delta is found to be 38 cm. Find the duty of irrigation channel water.	M3.01	U
6	List out any six types of canal lining.	M3.04	R
7	Describe storage dams and diversion dams.	M4.02	U
8	Write short note on barrage.	M4.03	U
9	List out the component parts of a weir.	M4.03	R
10	Define capillarity and surface tension.	M1.01	R

PART C

Answer all questions. Each question carries seven marks.

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	Determine the total pressure and centre of pressure on an isosceles triangular plate of base 4 m and altitude 4m when it is immersed vertically in an oil of specific gravity 0.9 when the base of the plate coincides with the free surface of oil.	M1.03	A
	OR		
IV	Write down the assumption of Bernoulli's theorem.	M1.04	U
V	A horizontal Venturimeter with inlet and throat diameter 30cm and 15cm respectively is used to measure the flow of water. The reading in the differential manometer connected to inlet and throat sections is 20cm of mercury. Determine the rate of flow. Take C_d=0.98 .	M2.01	A
	OR		
VI	Explain the layout of hydroelectric power station with a neat sketch.	M2.04	U
VII	Explain various types of flow.	M1.04	U
	OR		
VIII	A rectangular channel of width 4m is having a bed slope of 1 in 1500. Find the maximum discharge through the channel. Take value of C = 50.	M2.03	A
IX	Explain the classification of irrigation.	M3.01	U

	OR		
X	Classify canals based on the alignment.	M3.04	U
XI	Describe canal escape with neat sketch.	M4.04	U
	OR		
XII	Classify dam based on materials used and purpose served.	M4.02	U
XIII	Explain the terms crop period, base period and command area.	M3.02	U
	OR		
XIV	Describe spillways along with the function.	M4.02	U

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