TED (21) 4012
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL - 2024

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	The fluid which has zero viscosity and incompressible is considered as ……	M1.01	R
2	For flow to be turbulent, Reynolds number should be greater than ……	M1.01	R
3	Most of the pressure measuring devices measures …….. pressure.	M1.02	R
4	Write down Manning's equation for measuring discharge.	M2.03	R
5	Downstream water level in a hydroelectric power plant is generally termed as ……..	M2.04	R
6	Write down two major cropping seasons in India.	M3.01	R
7	Minor irrigation schemes are designed to irrigate area less than …… hectares.	M3.03	R
8	Component in a weir which allows migration of fish from upstream to downstream is called …….	M4.03	R
9	A cross drainage work in which canal and drainage meet at same level is called ……..	M4.04	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	State Pascal's law of fluid pressure with relevant equation.	M1.02	R
2	State Bernoulli's theorem with equation.	M1.04	R
3	Compare orifice and mouthpiece.	M2.01	U
4	Explain water hammer effect in pipe.	M2.02	U
5	List the different factors affecting duty.	M3.02	R
6	Find the delta for a crop if the duty for a base period of 110 days is 1400 hectares/cumecs.	M3.01	R
7	Describe the balancing depth of a canal section.	M3.04	R
8	List the functions of spillway.	M4.01	R

9	List the necessity of providing drainage gallery in a dam.	M4.02	R
10	Explain canal escape.	M4.03	U

PART C
Answer all questions. Each question carries seven marks

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	A simple U-tube manometer containing mercury is connected to a pipe in which a fluid of sp. gr. 0.8 and having vacuum pressure is flowing. The other end of the manometer is open to atmosphere. Calculate the vacuum pressure in pipe, if the difference of mercury level in the two limbs is 40 cm and the height of fluid in the left from the centre of pipe is 15 cm below.	M1.02	A
	OR		
IV	Calculate the total pressure on a circular plate of diameter 1.5 m which is placed vertically in water in such a way that the centre of the plate is 3 m below the free surface of water. Find the position of centre of pressure also.	M1.03	A
V	Explain different types of flow.	M1.04	U
	OR		
VI	An oil of sp. gr. 0.8 is flowing through a venturimeter having inlet diameter 20 cm and throat diameter 10 cm. The oil-mercury differential manometer shows a reading of 25 cm. Calculate the discharge of oil through the horizontal venturimeter. Take Cd = 0.98.	M2.01	A
VII	Describe Centrifugal pump and reciprocating pump.	M2.04	U
	OR		
VIII	Calculate the velocity of flow and rate of flow of water through a rectangular channel of 6 m wide and 3 m deep, when it is running full. The channel is having bed slope as 1 in 2000. Take Chezy's constant C = 55.	M2.03	A
IX	Write down classification of canals.	M3.04	U

	OR		
X	Explain the terms: (a) Crop Period (b) Base Period (c) Delta (d) Duty	M3.01	U
XI	What are the suitability factors to be considered in selection of material for canal lining?	M3.04	R
	OR		
XII	Explain different components of a diversion headwork.	M4.03	U
XIII	Compare Earth dam and Gravity dam.	M4.01	U
	OR		
XIV	Explain the function of head regulator and cross regulator in a canal.	M4.03	U

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