

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE – APRIL - 2023
HYDRAULICS AND IRRIGATION ENGINEERING**

(Maximum Marks : 75)

[Time : 3 hours]

PART-A

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

(9x1=9 marks)

		Module Outcome	Cognitive level
1	The ratio of specific weight of a liquid to the specific weight of pure water is known as.....	M1.01	R
2	The S.I unit of total pressure is.....	M1.03	R
3	.....is the line which gives the sum of pressure head, datum head and kinetic head of a flowing fluid in a pipe with respect to some reference line.	M2.02	R
4	.....is the length of the channel boundary in contact with the flowing water at any section.	M2.03	R
5	Percentage of the culturable commanded area proposed to be irrigated annually is known as.....	M3.02	R
6	.....is the total time elapses between the sowing of the crop and its harvesting.	M3.02	R
7	.....is the depth of cutting in a canal section for which the earthwork involved in cutting and filling will be equal.	M3.04	R
8	The hydraulic structure which is constructed to raise the water level in the river and to divert required quantity of water into canal is known as.....	M4.03	R
9	.....is a cross drainage work carrying the natural drain over the canal.	M4.04	R

PART B

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

(8x3=24)

		Module Outcome	Cognitive level
1	State Pascal's law of fluid pressure.	M1.02	R
2	List out the energy losses in pipe.	M2.02	R
3	Explain the effect of water hammer in pipe lines.	M2.02	U
4	Discuss the working principle of Pelton wheel with sketch.	M2.04	U
5	Compare Centrifugal pump and Reciprocating pump.	M2.04	U
6	Explain Perennial irrigation system.	M3.01	U
7	Explain furrow method of irrigation.	M3.01	U
8	Explain types of irrigation schemes.	M3.03	U
9	List the advantages of canal lining.	M3.04	R
10	Draw a typical section of a gravity dam.	M4.02	R

PART C

Answer **all** questions from the following. Each question carries 7 marks.

(6x7=42marks)

		Module Outcome	Cognitive level
III	Define the fluid properties Surface tension and Capillarity. OR	M1.01	R
IV	Explain different types of manometers.	M1.02	U
V	An isosceles triangular plate of base 3 m and altitude 3 m is immersed vertically in an oil of specific gravity 0.8. The base of the plate coincides with the free surface of oil. Determine Total pressure on the plate and Centre of pressure. OR	M1.03	A
VI	State Bernoulli's theorem and write four assumptions.	M1.04	R
VII	A horizontal venturi meter with inlet diameter 200 mm and throat diameter 100 mm is used to measure the flow of water. The pressure at inlet is 0.18 N/mm ² and the vacuum pressure at the throat is 280 mm of mercury. Find the rate of flow. The value of C_d may be taken as 0.98. OR	M2.01	A
VIII	Find 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	Explain the terms Duty and Delta. Also find the delta for a crop if the duty for a base period of 120 days is 1500 hectares/cumec. OR	M3.02	A
X	Explain classification of canal based on alignment.	M3.04	U
XI	Explain classification of headworks. OR	M4.01	U
XII	Differentiate between rigid dam and non-rigid dam.	M4.02	U
XIII	Explain different component parts of a diversion head work. OR	M4.03	U
XIV	Explain Aqueduct with a neat sketch.	M4.04	U
