

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2026**

**FLUID MECHANICS AND HYDRAULIC MACHINES**

[Maximum Marks: 75]

[Time: 3 Hours]

**PART-A**

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

**(9 x 1 = 9 Marks)**

		<small>Module Outcome</small>	<small>Cognitive level</small>
1.	The volume occupied by the unit mass of a fluid is called-----	M1.01	R
2.	The sum of atmospheric pressure and gauge pressure is equal to-----	M1.03	R
3.	The devices used for measuring the pressure by balancing the fluid column by the spring or dead weight are called-----	M1.05	U
4.	Continuity equation deals with the law of conservation of-----	M2.02	U
5.	The coefficient of discharge ( $C_d$ ) in terms of $C_c$ and $C_v$ is-----	M2.06	R
6.	The equation of force exerted by a jet of water on a stationary plate in the direction of jet is given by-----	M3.01	R
7.	Give the name of a hydraulic turbine to be operated under a head of 100 meters.	M3.04	R
8.	The head against which a centrifugal pump has to work is called-----	M4.03	U
9.	Name the pump used to lift water from a deep well or sump by using compressed air.	M4.08	U

**PART-B**

**II. Answer any ‘eight’ questions from the following. Each question carries ‘three’ marks.**

**(8 x 3 = 24 Marks)**

		<small>Module Outcome</small>	<small>Cognitive level</small>
1.	Define specific weight and specific gravity of a fluid.	M1.01	R
2.	State Pascal's law and write any one application of Pascal's law.	M1.03	U
3.	List any three types of fluid flow.	M2.01	R
4.	What are the practical applications of Bernoulli's theorem?	M2.04	U
5.	Differentiate between Laminar and Turbulent flows.	M2.07	R
6.	Differentiate between Pelton and Kaplan turbines.	M3.03	R
7.	Explain the concept of cavitation in turbines.	M3.06	U
8.	Define 1) Unit speed 2) Unit discharge and 3) Unit power of Turbines.	M3.07	U
9.	Explain the manometric efficiency and overall efficiency of the centrifugal pump	M4.03	U
10.	Describe the concept of slip in reciprocating pumps.	M4.07	U

**PART-C**

Answer 'all' questions from the following. Each question carries 'seven' marks.

**(6 x 7 = 42 Marks)**

		Module Outcome	Cognitive level
III.	Calculate the specific weight, density, and specific gravity of one litre of a liquid which weighs 7 N. (One litre = $10^{-3} \text{ m}^3$ ). <b>OR</b>	M1.02	A
IV.	Explain the relationship between absolute pressure, atmospheric pressure, gauge pressure and vacuum pressure with the help of a diagram.	M1.03	U
V.	State Bernoulli's theorem of liquids with its limitations. <b>OR</b>	M2.02	U
VI.	Water is flowing through a pipe having diameter 300 mm and 200 mm at the bottom and upper end respectively. The intensity of pressure at the bottom end is $24.525 \text{ N/cm}^2$ and the pressure at the upper end is $9.81 \text{ N/cm}^2$ . Determine the difference in datum head if the rate of flow through the pipe is 40 lit/s.	M2.03	A
VII.	An orifice meter with orifice diameter 10 cm is inserted in a pipe of 20 cm diameter. The pressure gauges fitted upstream and downstream of the orifice meter gives readings of $19.62 \text{ N/cm}^2$ and $9.81 \text{ N/cm}^2$ respectively. Coefficient of discharge for the orifice meter is given as 0.6. Find the discharge of water through the pipe. <b>OR</b>	M2.05	A
VIII.	List the losses of head in pipes and identify major losses and minor losses.	M2.07	R
IX.	A jet of water of diameter 50 mm strikes a flat plate normally with a velocity of 20m/s. The plate is moving with a velocity of 5 m/s in the direction of the jet. Find 1) The force exerted by the jet on the plate, 2) Work done and 3) The efficiency of the jet. <b>OR</b>	M3.02	A
X.	Illustrate the layout of a hydroelectric power plant with a neat sketch.	M3.03	U
XI.	With a neat sketch explain the construction and working principle of a Pelton turbine. <b>OR</b>	M3.05	U
XII.	Explain the various efficiencies of hydraulic turbines.	M3.07	R
XIII.	With a neat sketch explain the construction and working of a single-acting reciprocating pump. <b>OR</b>	M4.05	U
XIV.	With a neat sketch explain the working of a hydraulic ram.	M4.08	U

\*\*\*\*\*