

**4TH SEM. /AERO./AME/DME/MECH(MAIN.)/MECH(PROD.)/
MECH(SAND.)/ MECH./ MECH(IND.INT.)/ 2024(S)
Th-3 Fluid Mechanics**

Full Marks: 80

Time- 03 Hrs

**Answer any FIVE Questions including Q No.1 & 2
Figures in the right-hand margin indicates marks**

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| 1. | Answer All questions | 2 x 10 |
| | a. State Pascal's Law. | |
| | b. Define Specific weight and specific gravity. | |
| | c. What is the significance of velocity triangle in a fluid flow? | |
| | d. Define fluid with examples. | |
| | e. What is Capillarity? | |
| | f. What are the losses in pipes? | |
| | g. Classify manometers. | |
| | h. Define hydrostatic pressure. | |
| | i. What is the function of an orifice? Mention its applications. | |
| | j. Classify Fluid Flow. | |
| 2. | Answer Any Six Questions | 6 x 5 |
| | a. Compare Dynamic viscosity with Kinematic viscosity. | |
| | Water is flowing in an open channel at a depth of 2 m and a velocity of 3 m/s. It flows down a chute into another channel where the depth is 1 m and the velocity is 10 m/s. Neglecting friction, determine the difference in elevation of the channel floors. | |
| | b. | |
| | c. Discuss about Darcy's and Chezy's formula. | |
| | d. Derive the Discharge over a rectangular notch. | |
| | e. State and prove Continuity equation. | |
| | f. Classify notches & weirs. Why these are needed in a fluid flow? | |
| | g. Discuss about Hydraulic gradient line and total gradient line. | |
| 3 | Derive the expression of work done & efficiency for Impact of jet on moving curved vanes. | 10 |
| 4 | Discuss about Archimedes 'principle. Explain concept of buoyancy. | 10 |
| 5 | Explain different types of pressures with neat sketch. | 10 |
| 6 | State and prove Bernoulli's equation. | 10 |
| 7 | Write short notes on | 10 |
| | a) Surface Tension | |
| | b) Concept of floatation | |