



**K. K. Wagh Institute of Engineering Education and Research,  
Nashik**

(An Autonomous Institute from A. Y. 2022-23)

**In-Sem Examination-I, Winter 2023**

Exam Seat No.

**Academic Year: 2023-2024**

**Semester: I**

**Name of Programme: S.Y. B.Tech**

**Pattern: 2022**

**Name of Course: Fluid Mechanics**

**Course Code: CIV222003**

**Max. Marks: 30\***

**Duration: 1:00 Hr.**

**\*30 marks will be converted into 20/ 25 marks in proportion.**

**Instructions:** Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

- (1) This question paper contains(s) 2 page(s).
- (2) Answer to each new question is to be started on a fresh page.
- (3) Assume suitable data wherever required, but justify it.
- (4) Draw the neat labelled diagrams, wherever necessary.

Q. No.	Details	Max. Marks	CO
Q.1.	a) Define Following Terms: (5) 1) Newton's law of viscosity 2) Compressibility 3) Surface Tension 4) Capillarity 5) Kinematic Viscosity <b>OR</b> b) Explain the process of capillary rise and fall in Detail (5)	[15]	CO 1
	c) One litre of oil weight 8N. Calculate the weight density, mass density, specific volume and specific weight of the liquid (5) <b>OR</b> d) Write a note on "Types of Fluids" (5)		CO 1
	e) Explain with neat sketch stability conditions for floating body (5) <b>OR</b> f) A rectangular pontoon is 5m long, 3m wide and 1.20m high. the depth of immersion of the pontoon is 0.80m in sea water. If the centre of gravity is 0.6m above the bottom of the pontoon, determine the metacentric height. The density for sea water is 1025 kg/m <sup>3</sup> (5)		CO 1
Q.2	a) Explain with neat sketch "Inverted U-tube Differential	[15]	CO



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	manometer” (5) <b>OR</b> b) Convert a pressure head of 65 cm of mercury into oil of specific gravity 0.8. Also calculate pressure. (5)		2
	c) Define 1) Absolute Pressure 2) Gauge pressure. Write a short note on Bourdon Gauge Tube (5) <b>OR</b> d) An inverted differential manometer containing an oil of specific gravity 0.9 is connected to find the difference of pressure at two points of pipe containing water. If the manometer reading is 42 cm. Find the pressure difference. (5)		CO 2
	e) Explain Dimensional Homogeneity with an example. Write any four applications of dimensional homogeneity (5) <b>OR</b> f) Explain the Reynolds Law and Froude's law of dimensional analysis. (5)		CO 2