Question Paper

Exam Date & Time: 28-Dec-2022 (09:30 AM - 12:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES
END SEMESTER THEORY EXAMINATION - DECEMBER 2022
III SEMESTER B.Sc. (Applied Sciences) in Engg.
FLUID MECHANICS [IME 234]

Marks: 50 **Duration: 180 mins.**

Answer all the questions.

Missing data, if any, may be suitably assumed

1)		Define and explain Newton's law of viscosity.	(2)
	A)		
	B)	Obtain expressions for surface tension for liquid droplet and soap bubble.	(3)
	C)	A 40 cm diameter horizontal cylinder rotates concentrically inside another cylinder of 40.3 cm. Both cylinders are 90 mm in length. The space between the cylinders is filled with a liquid with a viscosity of 6 poise. Find power lost if the inner cylinder rotates at 190 rpm.	(5)
2)		Derive and expression for total pressure and centre of pressure for inclined surface submerged in liquid.	(5)
	A)		
	B)	Define and represent on graph i) Absolute pressure ii) Gauge pressure iii)Vacuum pressure	(2)
	C)	An inverted tube differential manometer having an oil of specific gravity 0.9 is connected to two different pipes carrying water under pressure (as given in Fig. 1). Determine the pressure in the pipe B. The pressure in pipe A is 2 m of water.	(3)