6/10/26 FN

Name :
Roll No:

MAR ATHANASIUS COLLEGE OF ENGINEERING, KOTHAMANGALAM – 686 666

DEPARTMENT OF MECHANICAL ENGINEERING
SECOND SESSIONAL EXAMINATION, OCTOBER 2026
THIRD SEMESTER (ME)

B24ME2T02 MECHANICS OF FLUIDS

Time – 1.5 Hour **Max: 40 Marks**

PART-A
Answer All Questions

1.	State Bernoulli's equation and list the assumptions in its application.	[CO 3]	3 Marks
2.	Name the various parts of a Venturimeter and explain its working with a neat sketch.	[CO 3]	3 Marks
3.	State the Chezy's equation, explain its various terms and name the condition under which it is applied.	[CO 4]	3 Marks
4.	Name and explain the major and minor losses in pipe flow.	[CO 4]	3 Marks

PART-B
Answer All Questions

5. a	Derive Euler's equation of motion for fluid flow and obtain the Bernoulli's equation for real fluids.	[CO 3]	7 Marks
5.b	A pitot-static tube placed in the center of a 300 mm pipe line has one orifice pointing upstream and other perpendicular to it. The mean velocity in the pipe is 80% of the central velocity. Find the discharge through the pipe if the pressure difference between the two orifices is 60 mm of water. Take the coefficient of pitot tube as 0.98.	[CO 3]	7 Marks
6. a	For low viscosity and high velocity flow through a uniform circular pipe, develop the relationship between frictional head loss and the flow parameters using a suitable force balance equation.	[CO 4]	7 Marks
6. b	Oil is transported from a tanker to the shore at the rate of 0.6 m^3/s using a pipe of 32 cm diameter for a distance of 20 km. If the oil has viscosity of 0.1 N-s/m^2 and density of 900 kg/m^3. Assuming the flow to be either laminar or turbulent as applicable, determine the power required to maintain the flow.	[CO 4]	7 Marks

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- To facilitate comprehensive and integrated development of students by providing quality education that encourages sustainable practices
- To mold disciplined and socially committed engineers capable of assuming professional leadership upholding national integrity