Name : .....
Roll No: .....

MAR ATHANASIUS COLLEGE OF ENGINEERING, KOTHAMANGALAM – 686 666

DEPARTMENT OF MECHANICAL ENGINEERING (AUTONOMOUS)

SECOND SESSIONAL EXAMINATION, MARCH 2026
S4 MECHANICAL A & B BATCH

B24ME2T07 FLUID MACHINES

Time – 1.5 Hours **Max: 40 Marks**

PART-A
(Answer All Questions.)

1	What is priming in Pumps? Explain.	CO3	3 Marks
2	Explain Manometric Efficiency, Mechanical Efficiency and Overall Efficiency of a Centrifugal Pump.	CO3	3 Marks
3	With the help of a diagram, explain the working of a single acting reciprocating pump.	CO4	3 Marks
4	What is slip in the case of a reciprocating pump? Can slip be negative? If so, explain the conditions when slip could be negative.	CO4	3 Marks

PART-B
(Answer All Questions.)

5(a)	A centrifugal pump with 1.5 m diameter runs at 250 rpm and pumps 1900 litres/s, the average lift being 5 m. The angle which the vane make at exit with the tangent to the impeller is 28° and radial velocity of flow is 2.7 m/s. Determine the manometric efficiency and the least speed to start pumping against a head of 5 m, the inner diameter of the impeller being 0.5 m.	CO 3	7 Marks
5(b)	Derive an equation and explain the concept of maximum suction lift for a pump.	CO 3	7 Marks
6(a)	A single-acting reciprocating pump, running at 50 rpm., delivers 0.01 m^3/s of water. The diameter of the piston is 200 mm and stroke length 400 mm Determine: (i) The theoretical discharge of the pump, (ii) Co-efficient of discharge, and (iii) Percentage of slip.	CO 4	4 Marks
6(b)	Explain and derive the effect of acceleration of piston on velocity and pressure in the suction and delivery pipes of a reciprocating pump and show the effect of acceleration head on the indicator diagram.	CO 4	10 Marks

Vision

Mentoring to Ensure Excellence

Mission

- To Facilitate comprehensive and integrated devlopement of students by providing quality education that encourages sustainable practices
- To mould disciplined and socailly committed engineers capable of assuming professional leadership upholding national intergrety.