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

MAR ATHANASIUS COLLEGE OF ENGINEERING

(Government Aided Autonomous Institution)
Kothamangalam, Kerala - 686 666
DEPARTMENT OF MECHANICAL ENGINEERING

B24ME1T02 STATICS AND DYNAMICS FOR ENGINEERS

Second Sessional Examination April 2026

Duration: 1 hour and 30 minutes | S2 ME A & B BATCH | Max mark: 40

Part A

1. What is the physical significance of the area moment of inertia? Using this concept, explain why beams are designed to be deeper rather than wider. (CO3) **(3)**

2. Derive the expression for the centroid of a rectangular area of breadth b and height h. (CO3) **(3)**

3. Differentiate Kinematics and Kinetics. (CO4) **(3)**

4. An electric train starting from rest attains a maximum speed of 100 kmph in 20 seconds. Determine the distance covered during this time period. (CO4) **(3)**

Part B

5. Determine the centroid of the structural steel section shown in Fig.1. (CO3) **(7)**

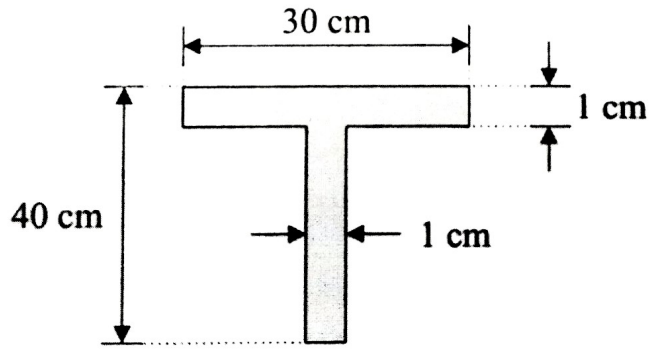
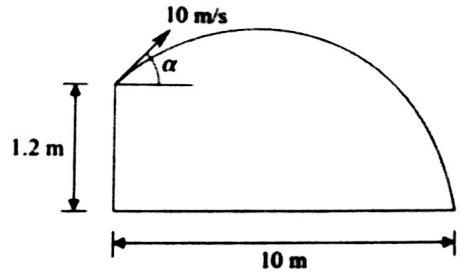


Figure 1: T-section

6. Determine the moment of inertia of the T-section shown in Fig.1 about its centroidal axis and base. (CO3) **(7)**

7. A helicopter used for relief activities drops food packets to the relief camp. If the food packets reach the ground after 3 seconds, determine the height from which they were dropped and the velocity with which they strike the ground. (CO4) **(7)**

8. In a shot-put game, a man throws an iron ball with an initial velocity of 10 m/s. What should be the angle of projection if he has to reach a record of 10 m? Take the height at which the ball is released as 1.2 m. (CO4) **(7)**



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1. To facilitate comprehensive and integrated development of students by providing quality education that encourages sustainable practices.
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