Code No.: ME208ES | R20 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
I–B.TECH–II–Semester End Examinations (Supply) - September- 2023
ENGINEERING MECHANICS
(MECH)

[Time: 3 Hours] **[Max. Marks: 70]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(20 Marks)**

1. a)	Define the term moment of a force.	[2M]
b)	What are the different conditions of equilibrium?	[2M]
c)	List-out the types of friction.	[2M]
d)	State Pappus theorem.	[2M]
e)	Find the moment of inertia of rectangular area about its base. The base has 6cm and height of 10 cm.	[2M]
f)	Identify the coordinates of centroid for the rectangle.	[2M]
g)	Mention the types of a rigid body motion in kinematics condition.	[2M]
h)	Write the difference between kinematics and kinetics.	[2M]
i)	Define the principle of conservation of energy.	[2M]
j)	Define D'Alembert's principle.	[2M]

PART-B **(50 Marks)**

2. Explain the system of forces with neat sketches. [10M]

OR

3. State and prove the Lami's theorem. [10M]

4. Explain the following terms. [10M]
   i. Coefficient of friction.
   ii. Angle of friction.

OR

5. Explain the procedure to find the centroid of composite sections. [10M]

6. State and derive the parallel axis theorem with neat sketches. [10M]

OR

7. State and prove the perpendicular axis theorem with neat sketches. [10M]

8. Derive a relation for the distance travelled in n^{th} second of a particle. [10M]

OR

9. Explain the different types of motion of particle. [10M]

10. A lift weighing 7 kN moves up with an acceleration of 2.5 m/s^2. Determine the tension in the cable of the lift. [10M]

OR

11. Write about the kinetic energy and potential energy. [10M]

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