Course Code: 1920303 SET 2 MLRS- R19

# MARRI LAXMAN REDDY
## INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
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II B.Tech I Sem Regular End Examination, March 2021
**ENGINEERING MECHANICS**
**(EEE)**

**Time: 2 Hours.** **Max. Marks: 70**

Note: 1. Answer any FIVE questions.
2. Each question carries 14 marks and may have a, b as sub questions.

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|---|---|---|---|---|---|
| 1 | a) | Explain the types of supports with neat sketches? | 7M | CO1 | BL1 |
| | b) | Describe the equations of equilibrium? | 7M | CO1 | BL1 |
| 2 | | Three cylinders are piled up in a rectangular channel as shown in Fig.1. Determine the reactions at $R_6$ between the cylinder A and the vertical wall of the channel. | 14M | CO1 | BL3 |

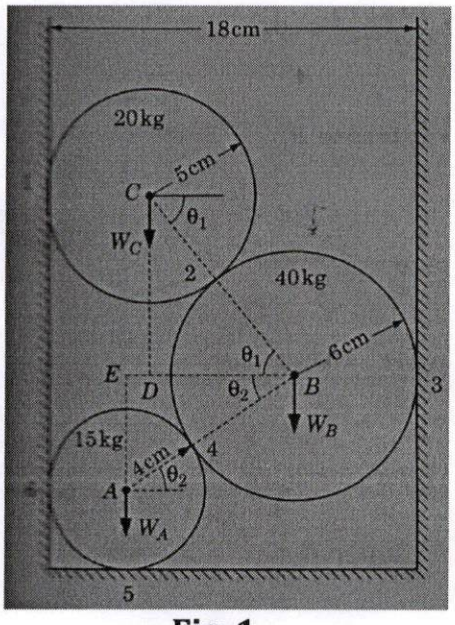


**Fig. 1**

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GSPrakash

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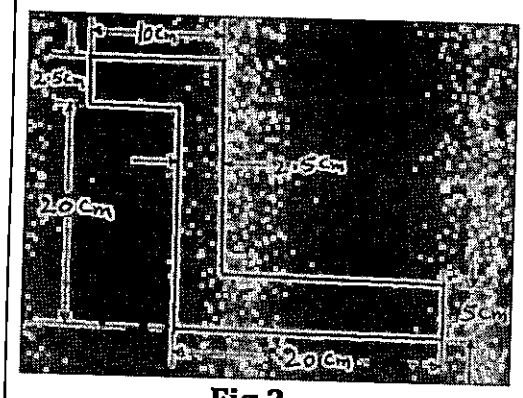
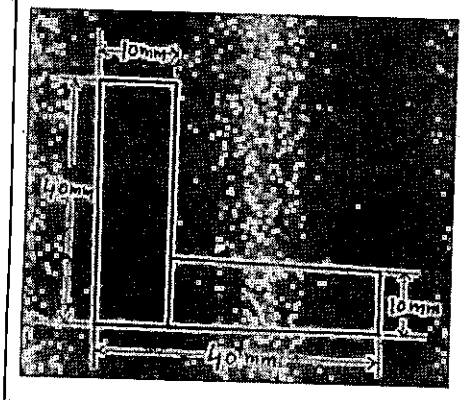
| 3 | a) | Find the centroid of a straight uniform wire of length L ? | 7M | CO3 | BL3 |
| | b) | Find the centroid of the cross sectional area of a Z-section as shown in Fig.2.   **Fig.2** | 7M | CO3 | BL3 |
| 4 | | Determine the product of inertia of the L-section as shown in Fig.3 with respect to the x and y axis.   **Fig.3** | 14M | CO3 | BL3 |
| 5 | a) | Describe the Laws of Friction. | 7M | CO2 | BL1 |
| | b) | Explain the parallel axis theorem. | 7M | CO3 | BL2 |
| 6 | | A car starts from rest on a curved road of 250 m radius and accelerates at a constant tangential acceleration of 0.6 $m/s^2$. Determine the distance and the time for which that car will travel before the magnitude of the total acceleration attained by it becomes 0.75 $m/s^2$. | 14M | CO4 | BL3 |

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|---|---|---|---|---|---|
| 7 | a) | Write the equations of motion in rectangular components. | 7M | CO4 | BL2 |
| | b) | Describe the D'Alembert's principle in plane motion. | 7M | CO5 | BL2 |
| 8 | | A lift has an upward acceleration of 1.225 m/s$^2$<br>a) What pressure will a man weighing 500 N exert on the floor of the lift?<br>b) What pressure would he exert if the lift had an acceleration of 1.225 m/s$^2$ downwards?<br>c) What upward acceleration would cause his weight to exert a pressure of 600 N on the floor? | 14M | CO5 | BL3 |

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