

Reg. No:

--	--	--	--	--	--	--	--	--	--

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations August-2022

ENGINEERING MECHANICS

(Common to CE, AGE & ME)

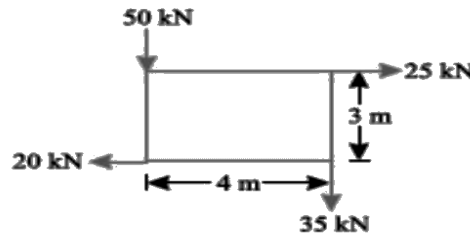
Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

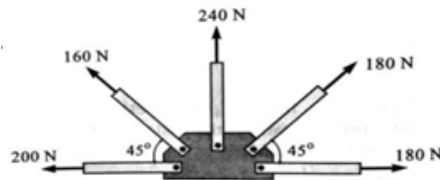
UNIT-I

- 1 a The resultant of the two forces, when they act at an angle of 60 is 14 N. If the same forces are acting at right angles, their resultant is $\sqrt{137}$ N. Determine the magnitude of the two forces L4 6M
- b A system of forces are acting at the corners of a rectangular block as shown in Fig. Determine the magnitude and direction of the resultant force. L4 6M



OR

- 2 A gusset plate of roof truss is subjected to forces as shown in Fig. Determine the magnitude of the resultant force and its orientation measured counter clockwise from the positive x-axis. L4 12M



UNIT-II

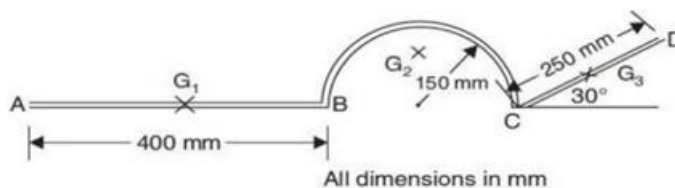
- 3 A body, resting on a rough horizontal plane, required a pull of 180 N inclined at 30° to the plane just to move it. It was found that a push of 220 N inclined at 30° to the plane just moved the body. Determine the weight of the body and the coefficient of friction. L4 12M

OR

- 4 Find the least force required to drag a body of weight 'W' placed on a rough inclined plane having inclination 'α' to the horizontal. The force is applied to the body in such a way that it makes an angle 'Θ' to the inclined plane and the body is on the point of motion up the plane. L4 12M

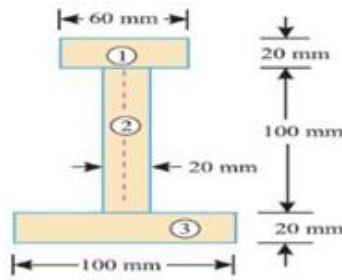
UNIT-III

- 5 Locate the centroid of the uniform wire bent as shown in Fig. L4 12M



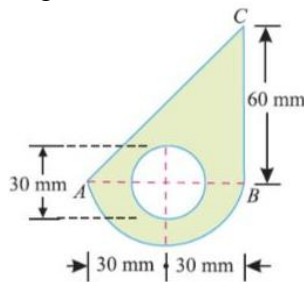
OR

- 6 An I-section is made up of three rectangles as shown in Fig. Find the moment of inertia of the section about the horizontal axis passing through the centre of gravity of the section. **L4 12M**



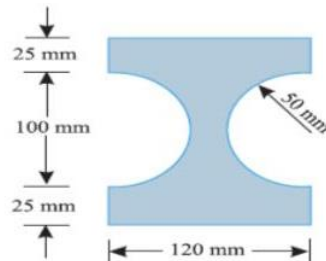
UNIT-IV

- 7 Find the moment of inertia of the lamina with a circular hole of 30 mm diameter about the axis AB as shown in Fig. **L4 12M**



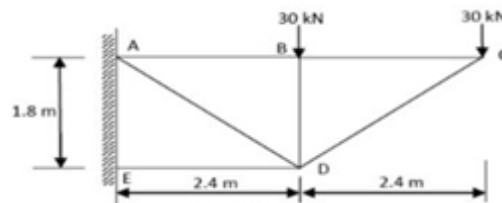
OR

- 8 Figure shows the cross-section of a cast iron beam. Determine the moments of inertia of the section about horizontal and vertical axes passing through the centroid of the section. **L4 12M**



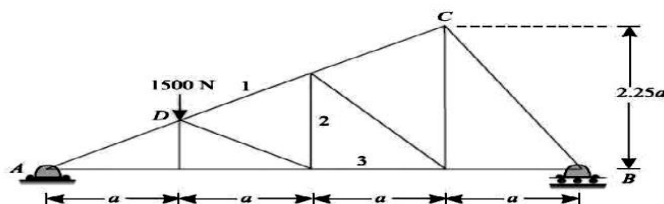
UNIT-V

- 9 Find the forces in the members of a truss as shown in fig. **L4 12M**



OR

- 10 A plane is loaded & supported as shown in fig. Determine the nature and magnitude of the forces in the members 1, 2 and 3 **L4 12M**



*** END ***