Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. I Year II Semester Supplementary Examinations October-2020
ENGINEERING MECHANICS
(Electronics & Communication Engineering)

Time: 3 hours   Max. Marks: 60

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

|			
1	**a**	What is the difference between a roller support and a hinged support?	**2M**
	b	Define (i) Limiting Force of Friction and (ii) Kinetic Friction.	**2M**
	c	Define (i) Centre of mass and (ii) Centre of gravity.	**2M**
	d	Define (i) Polar moment of inertia and (ii) Radius of gyration.	**2M**
	e	State the assumptions made in the analysis of pin jointed trusses.	**2M**

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	**a**	State and prove parallelogram law of forces.	**5M**
	b	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?	**5M**

OR

3   A simply supported beam AB of span 6 m is loaded as shown in figure. Determine the   **10M**
reactions at A and B?
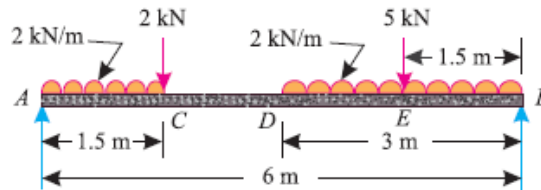
UNIT-II

4   A body, resting on a rough horizontal plane, required a pull of 180N inclined at 30° to the   **10M**
plane just to move it. It was found that a push of 220N inclined at 30° to the plane just moved
the body. Determine the weight of the body and the coefficient of friction.

OR

|			
5	**a**	Write short note on differential screw jack with neat sketch.	**5M**
	b	A screw jack raises a load of 40 KN. The screw is square threaded having three threads per 20 mm length and 40 mm in diameter. Calculate the force required at the end of a lever 400 mm long measured from the axis of the screw, if the coefficient of friction between screw and nut is 0.12.	**5M**

UNIT-III

6   Determine the center of gravity of the lamina as shown in figure.   **10M**
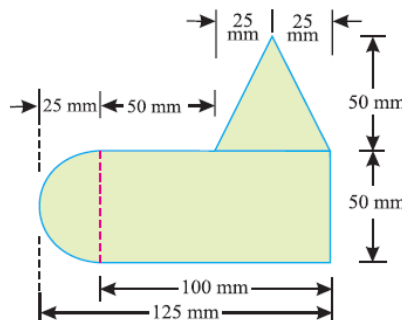
OR

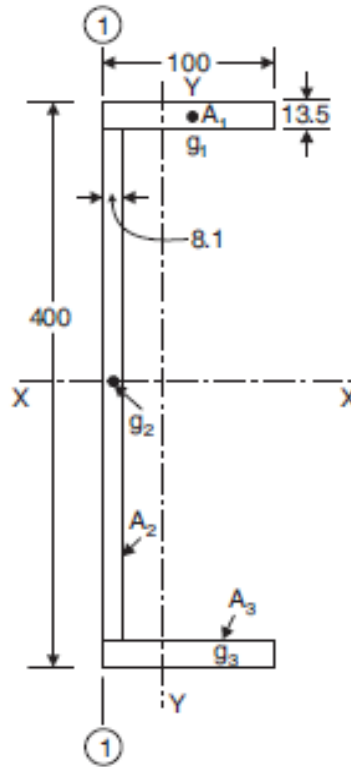**7**   Find the center of gravity of a channel section as shown in figure.   **10M**
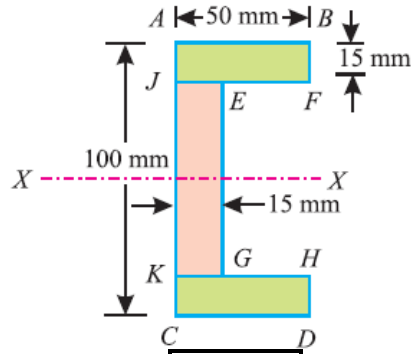
UNIT-IV

8   Compute the second moment of area of the channel section shown in figure about centroidal   **10M**
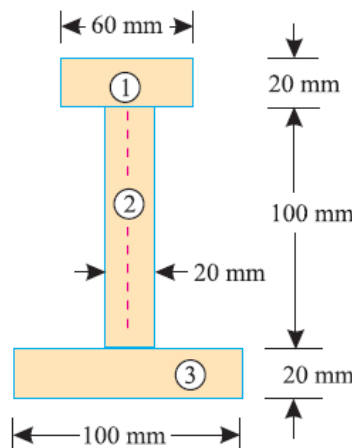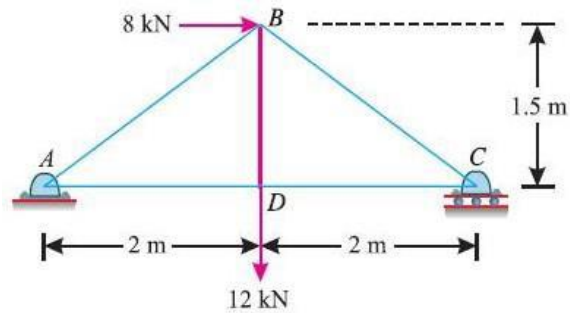   axes x-x and y-y.

OR

9   Find the moment of inertia of the section about the horizontal axis passing through the   **10M**
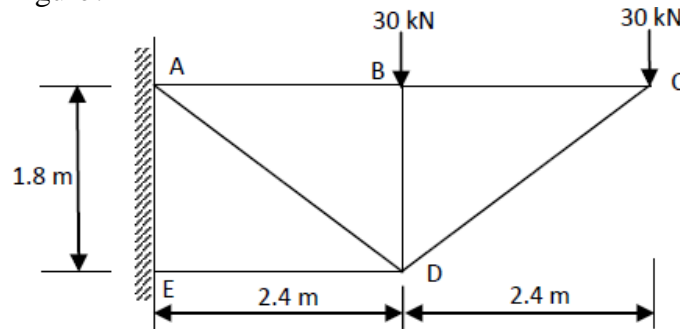   center of gravity of the section.

UNIT-V

10 Figure shows a framed structure of 4 m span and 1.5 m height subjected to two-point loads at B and D. Using method of joints, find the forces and their nature in all the members?   **10M**

OR

11 Using method of sections, find the forces and their nature in all the members of the truss as shown in figure?   **10M**

END