Q.P. Code: 18CE0101 **R18**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations March-2021

ENGINEERING MECHANICS

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 60

PART-A

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

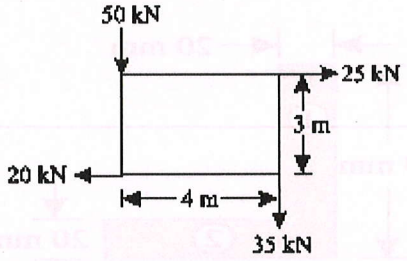
1	a	Write down the Applications of Forces.	2M
	b	Define Kinetic Friction.	2M
	c	Explain about the applications of truss.	2M
	d	Define Moment of Inertia.	2M
	e	What are the types of vibrations?	2M

PART-B

(Answer all Five Units **5 x 10 = 50** Marks)

UNIT-I

2	a	State and prove parallelogram law of forces.	5M
	b	A system of forces is acting at the corners of a rectangular block as shown in Fig.1. Determine the magnitude and direction of the resultant force	5M



OR

3		State and prove Varignon's theorem.	10M

UNIT-II

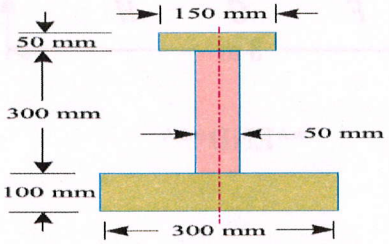
4		Find the least force required to drag a body of weight 'W' placed on a rough inclined plane having inclination 'α' to the horizontal. The force is applied to the body in such a way that it makes an angle 'Θ' to the inclined plane and the body is on the point of motion up the plane.	10M

OR

5		Ladder 5 meters long rests on a horizontal ground and leans against a smooth vertical wall at an angle 70° with the horizontal. The weight of the ladder is 900 N and acts at its middle. The ladder is at the point of sliding, when a man weighing 750N stands on a rung 1.5 meter from the bottom of the ladder. Calculate the coefficient of friction between the ladder and the floor.	10M

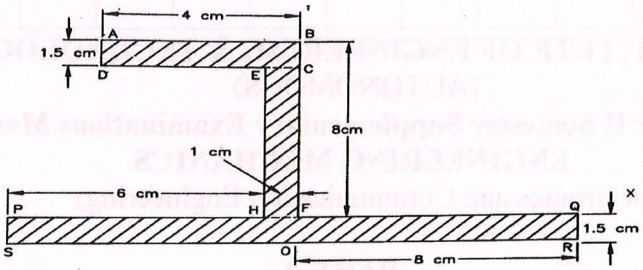
UNIT-III

6		An I-section as shown in Fig.19 has the following dimensions in mm units: Bottom flange = 300 × 100 , Top flange = 150 × 50 ,Web = 300 × 50 . Determine mathematically the position of center of gravity of the section.	10M



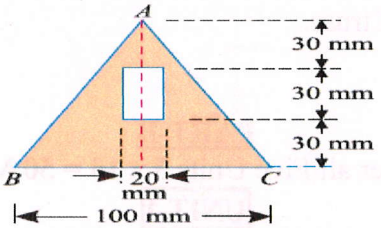
OR

7 Find the center of gravity of the shaded area shown in below Fig. with reference to X-Y co-ordinate system. **10M**



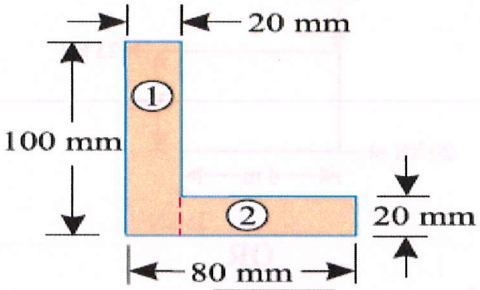
UNIT-IV

8 A rectangular hole is made in a triangular section as shown in Fig. Determine the moment of inertia of the section about X-X axis passing through its center of gravity and the base BC. **10M**



OR

9 Find the moment of inertia about the centroidal X-X and Y-Y axes of the angle section shown in Fig. **10M**

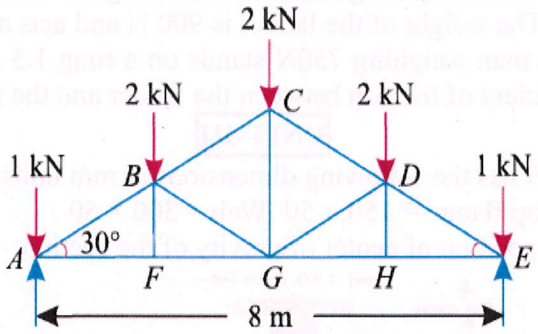


UNIT-V

10 Explain the procedure to find forces in members of truss by using method of sections. **10M**

OR

11 A king post truss of 8 m span is loaded as shown in Fig.34. Find the forces in each member of the truss and tabulate the results. **10M**



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