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

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations Feb-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**	Define Concurrent and Non Concurrent force System.	**2M**
	b	Define Kinematic Friction.	**2M**
	c	Define Moment of Inertia.	**2M**
	d	Define Kinematics.	**2M**
	e	Define Time of Flight.	**2M**

PART-B

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

UNIT-I

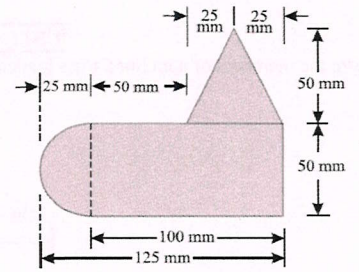
2		State and prove Varignon's theorem.	**10M**
		OR	
3	**a**	Explain free body diagram with example.	**5M**
	b	State and prove Lami's theorem.	**5M**

UNIT-II

4	**a**	State laws of friction.	**5M**
	b	Explain *Cone of Friction* with a neat sketch.	**5M**
		OR	
5		A 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**

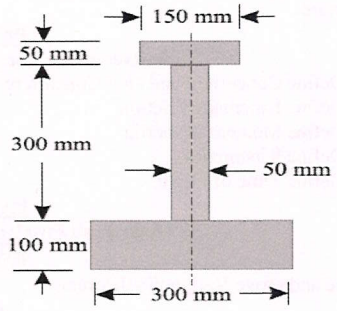
UNIT-III

6		A uniform lamina shown in Fig. 11 consists of a rectangle, a circle and a triangle. Determine the center of gravity of the lamina. All dimensions are in mm	**10M**



OR

7 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**

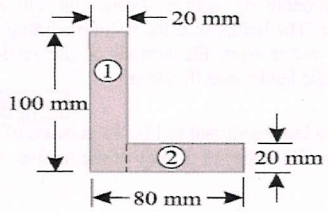


UNIT-IV

8 Prove the parallel axis theorem in the determination of moment of inertia of areas with the help of a neat sketch. **10M**

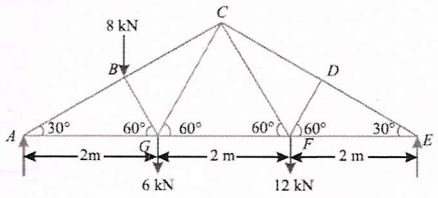
OR

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



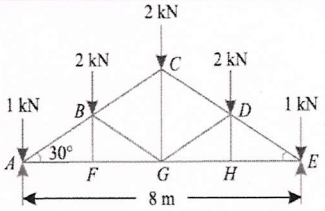
UNIT-V

10 Analyze the members of a inclined truss loaded as shown in fig. **10M**



OR

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



END