Q.P. Code: **20ME0304** **R20**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B. Tech II Year I Semester Supplementary Examinations November-2022

KINEMATICS OF MACHINERY

(Mechanical Engineering)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	Explain the inversions of double slider crank chain with neat sketch and list out the practical applications of inversions.	L1	12M

OR

2	What are the practical applications of inversions of the 4 – bar linkage? Explain all with neat sketch.	L1	12M

UNIT-II

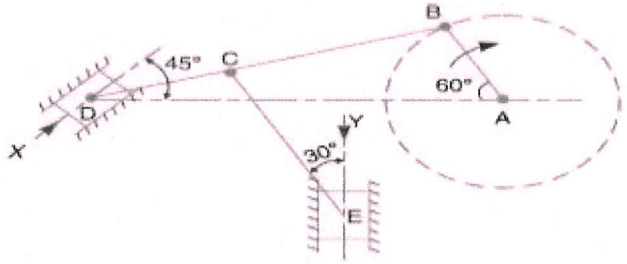
3	With neat sketch, explain the Davis steering gear of an automobile.	L3	12M

OR

4	What is the condition for correct steering? Write fundamental equation of it.	L1	12M

UNIT-III

5	The dimensions of the mechanism, as shown in Fig. 7.30, are as follows: AB = 0.45 m;BD = 1.5 m: BC = CE = 0.9 m. The crank AB turns uniformly at 180 r.p.m. in the Clock wise direction and the blocks at D and E are working in frictionless guides. Draw the velocity diagram for the mechanism and find the velocities of the sliders D and E in their guides. Also determine the turning moment at A if a force of 500 N acts on D in the direction of arrow X and a force of 750 N acts on E in the direction of arrow Y.	L4	12M



OR

6	Explain how the velocities of a slider and the connecting rod are obtained in a slider crank mechanism.	L1	12M

UNIT-IV

7	A cam is to be designed for a knife edge follower with the following data: i) Cam lift = 40 mm during 90° of cam rotation with simple harmonic motion. ii) Dwell for the next 30°. iii) During the next 60° of cam rotation, the follower returns to its original position with simple harmonic motion. iv) Dwell during the remaining 180°. Draw the profile of the cam when (a) The line of stroke of the follower passes through the axis of the cam shaft, and (b) The line of stroke is offset 20 mm from the axis of the cam shaft. The radius of the base circle of the cam is 40 mm. Determine the maximum velocity and acceleration of the follower during its ascent and descent, if the cam rotates at 240 r.p.m.	L4	12M

OR

8	What are the different types of motion with which a follower can move?	L1	12M

UNIT-V

9	**a**	What do you understand by the term 'interference' as applied to gears?	L1	6M
	b	Write advantages and disadvantages of gears.	L2	6M

OR

10	The number of teeth on each of the two equal spur gears in mesh are 40. The teeth have 20° involute profile and the module is 6 mm. If the arc of contact is 1.75 times the circular pitch, find the addendum.	L4	12M

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