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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations December-2021**KINEMATIC OF MACHINERY**

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

- 1 a What is pantograph? Show that it generates a path similar to the path traced by a point on the mechanism. 6M
- b Explain about the Kutzbach criterion and why it is used. Show the proof. 6M

OR

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

UNIT-II

- 3 a Sketch and Describe the working of Peaucellier mechanism 6M
- b Sketch and Describe the watt mechanism 6M

OR

- 4 With a neat sketch, explain the working of Universal joint. 12M

UNIT-III

- 5 In a four bar chain ABCD, AD is fixed and is 150 mm long. The crank AB is 40mm long and rotates at 140 rpm. Clockwise, while the link CD is 80 mm oscillates about D. BC and AD are of equal length. Find the angular velocity of link CD when angle BAD is 50°. 12M

OR

- 6 a Explain how the velocities of a slider and the connecting rod are obtained in a slider crank mechanism. 6M
- b List out various methods used for finding acceleration of a Mechanism? Discuss about any one of them in detail. 6M

UNIT-IV

- 7 a Explain with suitable sketches about the different types of followers. 6M
- b Draw the displacement, velocity and acceleration diagrams for a follower when it moves with simple harmonic motion. 6M

OR

- 8 A cam drives a flat reciprocating follower in the following manner: During first 120° rotation of the cam, follower moves outwards through a distance of 20 mm with simple harmonic motion. The follower dwells during next 30° of cam rotation. During next 120° of cam rotation, the follower moves inwards with simple harmonic motion. The follower dwells for the next 90° of cam rotation. The minimum radius of the cam is 25 mm. Draw the profile of the cam. 12M

UNIT-V

- 9 Explain the epicycloid and hypocycloidal forms of teeth with neat sketches. 12M

OR

- 10 Explain briefly the differences between simple, compound, and epicyclic gear trains. What are the special advantages of epicyclic gear trains? 12M

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