Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester (R16) Regular Examinations November 2017
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 classification of the kinematics pairs in detail with neat sketch.   12M

OR

2   Explain the inversions of single slider crank chain with neat sketch and list
    out the practical applications of inversions?   12M

UNIT-II

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

OR

4   With neat sketch, explain the working of Universal joint. And write
    applications also.   12M

UNIT-III

5   Locate all the instantaneous centres of the slider crank mechanism as shown
    in Fig. The lengths of crank OB and connecting rod AB are 100 mm and
    400 mm respectively. If the crank rotates clockwise with an angular
    velocity of 10 rad/s, find: 1). Velocity of the slider A, and 2). Angular
    velocity of the connecting rod AB.
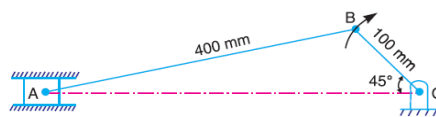
                                                                                      12M

OR

6   In a four bar chain ABCD, AD is fixed and is 150 mm long. The crank AB is
    40mm long and rotates at 120 r.p.m. clockwise, while the link CD = 80 mm
    oscillates about D. BC and AD are of equal length. Find the angular velocity of
    link CD when angle BAD = 60°.   12M

UNIT-IV

7   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 20mm
    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

OR

8	a.	Draw the displacement, velocity and acceleration diagrams for a follower when it moves with simple harmonic motion.	6M
	b.	Draw the displacement, velocity and acceleration diagrams for a follower when itmoves with uniform acceleration and retardation.	6M

UNIT-V

9   An Epicyclic gear consists of three gears A, B and C as shown in Fig. The   12M
gear A has 72 internal teeth and gear C has 32 external teeth. The gear B
meshes with both A and C and is carried on an arm EF which rotates about
the centre of A at 18 r.p.m., If the gear A is fixed, determine the speed of
gears B and C.
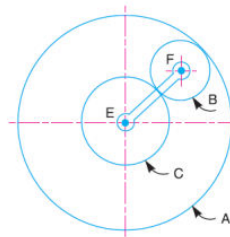
OR

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

*** END ***