Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.TECH II Year II Semester Supplementary Examinations Dec 2019
THEORY OF MACHINES
(Agricultural 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 with the help of neat sketch.   12M

OR

2   a   Define the term degrees of freedom of a mechanism and give an example   6M

    b   Define the instantaneous centre, explain the types and locate the instantaneous centres by   6M
        visual inspection.

UNIT-II

3   a   Explain the concept of the undercutting with neat sketch.   6M
    b   Explain the classification of gears with neat sketches   6M

OR

4   Explain the involute forms of teeth with neat sketch   12M

UNIT-III

5   An epicyclic gear consists of three gears A, B and C as shown in Fig. 13.10.The gear A has 72   12M
    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,
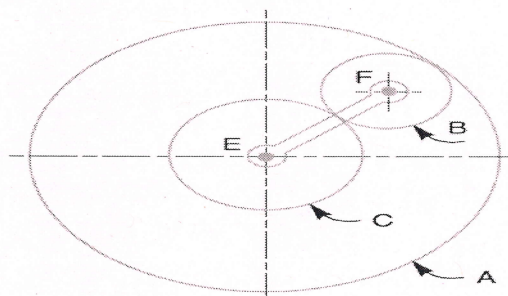
    determine the speed of gears B and C.

OR

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

UNIT-IV

7   A pivot flat bearing internal and external diameter as 300 and 450mm. maximum intensity   12M
    pressure as 0.075 N/mm². the first disc had three plates and second disc had two disc the
    coefficient of frictional surface shaft and plate surfaces as 0.02 .power absorbed by disc is 5kw.
    Assuming uniform wear. shaft rotating with speed of 580 rpm,then findout torque developed on
    the plate

OR

8   a   How will you distinguish between static friction and dynamic friction?   **6M**

      b   Define coefficient of friction and derive the angle of repose.   **6M**

UNIT-V

9   A, B, C and D are four masses carried by a rotating shaft at radii 100mm,125mm,200mm and 150mm respectively. The planes in which the masses revolve are spaced 600mm apart and the masses of B,C and D are 10kg,5kg and 4kg respectively.Find the required mass A and relative angular setting of the four masses so that the shaft be in complete balance.   **12M**

OR

10   A porter governor has equal arms each 250mm long and pivoted on the axis of rotation. Each ball has a mass of 5kg and mass of the central load on the sleeve is 25kg.The radius of rotation of the ball is 150mm when governor is at maximum speed. Find the maximum and minimum speed and range of speed of the governor.   **12M**

END