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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.TECH II Year II Semester Regular & Supplementary Examinations May 2019

THEORY OF MACHINES

(Agriculture Engineering)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

- 1 a Describe the oscillating cylinder engine with neat sketch 6M
b Explain the angular velocity ratio theorem. 6M

OR

- 2 Explain with neat sketch the instantaneous centre method for determination of velocities of links of a mechanism. 12M

UNIT-II

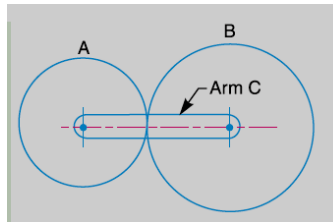
- 3 a What is the worm and worm wheel? Explain briefly with sketch. 6M
b What are the intersecting axes gears? Explain briefly with sketch. 6M

OR

- 4 Explain the cycloidal forms of teeth with neat sketch 12M

UNIT-III

- 5 In an epicyclic gear train, an arm carries two gears A and B having 36 and 45 teeth respectively. If the arm rotates at 150 r.p.m. in the anticlockwise direction about the centre of the gear A which is fixed, determine the speed of gear B. If the gear A instead of being fixed, makes 300 r.p.m. in the clockwise direction, what will be the speed of gear B ?



OR

- 6 a Define the terms Speed ratio and Train Value? 6M
b Explain briefly about reverted gear train with neat sketch. 6M

UNIT-IV

- 7 A single disc clutch internal and external diameter as 200 and 300 mm. maximum intensity pressure as 0.06 N/mm². the coefficient of frictional surface shaft and plate surfaces as 0.03 N/mm². determine power lost in to the shaft. Assuming uniform wear. shaft speed rotating with speed of 1200 rpm 12M

OR

- 8 a Derive an equation for length of the open belt. 6M
b What is meant by slip of the belt? Derive an equation. 6M

UNIT-V

- 9 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

OR

- 10 a Define and explain the following terms relating to governors :
1. Stability, 2. Sensitiveness, 3. Isochronism, and 4. Hunting. 6M
b Calculate the vertical height of a Watt governor when it rotates at 60 r.p.m. Also find the change in vertical height when its speed increases to 61 r.p.m. 6M

END