KERALA AGRICULTURAL UNIVERSITY

B.Tech (Food. Engg) 2014 Admission
IIIrd Semester Final Examination-January -2016

Cat. No: Meen.2104   Marks: 50.00

Title: Kinematics of Machinery (2+1)   Time: 2 hours

I Fill up the blanks   (10 x 1=10)

1. A four bar mechanism has _____ instantaneous centers of rotation

2. The total no: of instantaneous centers of mechanism with n links are _____

3. Klien's construction is mainly used to determine _____

4. In belt drives , the centrifugal tension _____ the driving power of belt

5. A Hartnell governor is of _____ type

6. Sensitivity of an isochronous governor is _____

7. If a governor is too sensitive ,it is said to be _____

8. Helical gears are subjected to _____ type of stresses

9. The type of cam follower used in aircraft engines is _____ type

10. The maximum magnitude of unbalanced force along the perpendicular to the line of stroke is _____

II Write short notes on any Five questions   (5 x 2=10)

1. Distinguish between initial tension and centrifugal tension in a belt

2. Name the four important systems of gear teeth that are commonly used

3. Explain the term 'train value'? How it is related to velocity ratio

4. Differentiate between centrifugal and inertia governors

5. Differentiate between pivot and collar bearing

6. What do you mean by interference between two mating gears

7. What do you mean by angle of repose

III Write short essay on any FIVE questions   (5 x 4=20)

1. Derive the condition for constant velocity ration of toothed wheels

2. Explain general procedure to draw the velocity diagram using one example

3. Explain with sketches different types of cams and followers

4. Define transmission angle of a four bar mechanism

5. What is the significance of contact ratio in gear drive

6. Explain about helical gears and spiral gears

7. Write short note on polynomial cams

IV Write essay on any ONE

1. The following data is related to a symmetric circular arc cam operating on a flat follower

   Least radius of the cam =27.5 mm, total lift =12.5 mm, angle of lift = 55^0, nose rad 3mm, speed of the cam = 600 r.p.m, find the following

   a) Distance between cam centre and nose centre

   b) Radius of circular flank

   c) Angle of contact on the circular flank

2. In belt drive, the mass of the belt is 1 kg/m length and its speed is 6 m/s. The transmits 9.6 kw of power .Determine the initial tension in the belt and strength of belt. The coefficient of friction is 0.25 and the angle of lap is 220^0