

Tilak Maharashtra University

Diploma in Engineering

SUB: Theory Of Machine

Assignment No: I

(Write any five)

Q.1 Differentiate between structure and Machine?

Q.2 Explain different types of kinematic link?

Q.3 State different properties of a couple ?

Q.4 Derive relation for centripetal acceleration?

Q.5 State and explain Newton's law of motion ?

Q.6 Describe with neat sketch the different types of four bar chain mechanism ?

Q.7 A Cam rotating at a uniform speed is required to give a knife edged follower

motion as defined below

(i) follower to move outwards through a distance of 3 cm during 90 degree of cam rotation with uniform velocity

(ii) follower to dwell for the next 60 degree of cam rotation

(iii) follower to return to its original position during 90 degree of cam rotation with uniform velocity

(iv) follower to dwell for the remaining period

The minimum radius of the cam is 5 cm Draw the cam profile for the following

Cases

(a) when the follower translates along the axis of the cam

(b) when the follower is offset by 2cm from the axis of the cam shaft.

Assignment No: II

(Write any five)

Q.1 Differentiate between machine and mechanism ?

Q.2 Explain completely constrained motion and incompletely constrained motion ?

Q.3 What do you understand by a instantaneous centre of rotation ?

Q.4 What is meant by degree of freedom of a mechanism?

Q.5 Sketch & explain any two type of double slider crank mechanism

Q.6 Draw the neat sketch of crank and slotted lever mechanism ?

Q.7 Draw the cam profile for a translating knife edged follower moving with uniform acceleration and retardation as given below

a) The follower moves outwards during 120 degree of cam rotation

b) The follower dwells for 60 degree of cam rotation.

c) The follower return to initial position during 90 degree of cam rotation

d) The follower dwells for the remaining period of 90 degree of cam rotation

The minimum radius of the cam is 3cm and the stroke of the follower is 3 cm..

Assignment No: III

(Write any five)

Q.1 State the different types of motion with which follower can move ?

Q.2 Locate all the instantaneous center of the single slider crank mechanism. Is

the length of crank & connecting rod are 100 mm and 400mm respectively.

The crank is making 45 degree with horizontal & rotates in clockwise direction with angular velocity of 10 rad/s. Find i) Velocity of slider ii) Angular velocity of connecting rod.

Q.3 Differentiate between open belt drive & closed belt drive

Q.4 State and prove ' Kennedy's Theorem' of three instantaneous center?

Q.5 Describe merit and demerits of the belt drive

Q.6 Describe Oldham's coupling with the help of neat sketch ?

Q.7 Draw a cam profile for knife edged follower to give the following data

(a) outward stroke of 90° of cam rotation with S.H.M

(b) Dwell period = 30°

(c) Return stroke = 120° of cam rotation with S.H.M

(d) Remaining is dwell period

(e) minimum radius of cam 4 cm

(f) Lift of follower is 4 cm.

(g) The line of stroke of the follower is 2 cm on left hand side . cam rotates in clockwise direction.