Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME SEMESTER II EXAMINATION – SUMMER 2017

Subject Code: 2720910 **Date: 25/05/2017**

Subject Name: ADVANCED MECHANISM DESIGN

Time:02:30 PM to 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain the two position synthesis of four bar chain mechanism by inversion method.	**07**
	(b)	Discuss the Grashoff condition to obtain motions from the four bar linkage.	**07**
Q.2	**(a)**	Explain the velocity analysis of the fourbar pin jointed linkage using analytical method.	**07**
	(b)	1) Explain Degree of freedom in planer mechanisms.	**03**
		2) How many degrees of freedom does the following mechanism (Figure 1) have?	**04**

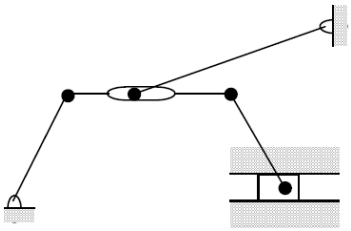

Figure 1

OR

	(b)	In a four bar mechanism shown in Figure 2, the dimensions of the links are as given below: AB = 50 mm, BC = 66 mm, CD = 56 mm and AD = 100 mm At a given instant when ∠DAB = 60° the angular velocity of link AB is 10.5 rad/sec in CCW direction.	**07**

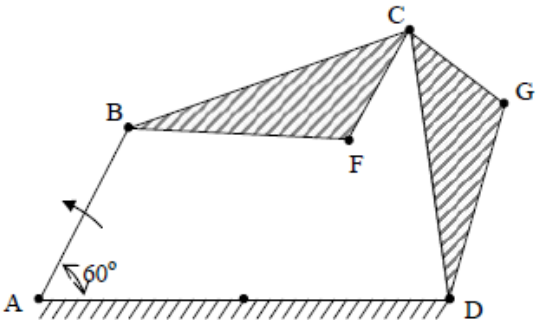

Figure 2

Determine,

i) Velocity of point C

ii) Velocity of point E on link BC when BE = 40 mm

iii) The angular velocity of link BC and CD

Q.3	**(a)**	Explain the kinematic analysis of spatial RSSR mechanism	**07**
	(b)	Discuss D-H parameters with suitable example.	**07**

OR

Q.3	**(a)**	Explain the concept of fixed and moving centrodes along with their	**07**
	(b)	Briefly describe the four basic arm configuration in robotics	**07**
Q.4	**(a)**	Explain acceleration analyses of a four bar mechanism using analytical approach with suitable example.	**07**
	(b)	Do the acceleration analyses of a four bar mechanism using analytical approach with suitable example.	**07**

Derive the Euler-Savary equation.

OR

Q.4	**(a)**	Explain acceleration analyses of a Slider crank mechanism using analytical approach with suitable example.	**07**
	(b)	Discuss Bobillier's construction.	**07**
Q.5	**(a)**	Explain the design of six-bar mechanisms	**07**
	(b)	Define the term cubic of stationary curvature. Explain one graphical method to draw it.	**07**

OR

Q.5	**(a)**	Explain chebyshev spacing method.	**07**
	(b)	Explain three position synthesis with specified fixed pivots	**07**

****