Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–VI • EXAMINATION – SUMMER • 2015

Subject Code: X61901 **Date: 08/05/2015**

Subject Name: Computer Aided Design

Time: 10:30 am - 01:00 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)**	Define CAD. Differentiate between conventional design and computer aided design. State advantages of computer aided design.	**07**
	(b)	What is the two dimensional transformations? Discuss translation and scaling with suitable examples.	**07**
Q.2	**(a)**	Consider ΔABC having coordinates A(5,5), B(8,5) and C(5,10). Determine the new vertex position if triangle is rotated by 60° anticlockwise about vertex A.	**07**
	(b)	What is wire frame modeling? Explain wireframe modeling with its advantages and disadvantages.	**07**
		OR	
	(b)	What are the difficulties with wire frame modeling? How surface modeling overcomes it.	**07**
Q.3	**(a)**	What is parametric representation? Describe recursive method to represent an ellipse in parametric form.	**07**
	(b)	Explain following sketch features: (a) Extrude (b) revolve (c) sweep (d) Loft (e) Cut (f) spring (e) spiral	**07**
		OR	
Q.3	**(a)**	Explain CSG tree structure with suitable example. State advantages of CSG representation.	**07**
	(b)	Discuss manipulation in solid modeling.	**07**
Q.4	**(a)**	What do you mean by data translator? Describe the types of data translators.	**07**
	(b)	Derive element stiffness matrix by potential energy approach.	**07**
		OR	
Q.4	**(a)**	Discuss different types of analysis for FEM, also mention advantages and limitations of FEM.	**07**
	(b)	A stepped shaft is shown in fig 1. Determine the stresses and the deflection in each of section using elimination approach. Assume uniform material having E=90Gpa and axial force 50 kN. A_1 = 500 mm^2 A_2 = 400 mm^2 A_3 = 300 mm^2 L_1, L_2, L_3 = 600mm	**07**

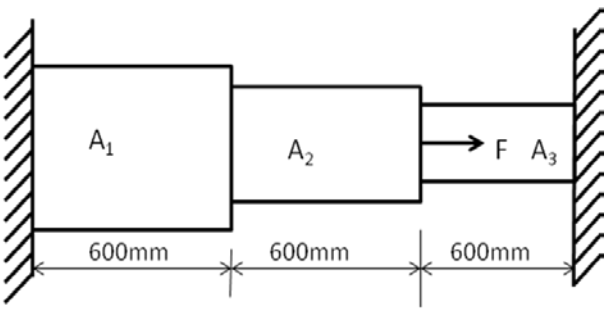

Fig.1

Q.5	**(a)**	What is optimization? State the application of optimization in engineering.	**07**
	(b)	Explain the graphical representation of design constraint.	**07**

OR

Q.5	**(a)**	Explain Johnson's method of optimization.	**07**
	(b)	State various optimization techniques. Explain any one in brief.	**07**

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