

GUJARAT TECHNOLOGICAL UNIVERSITY**M.E –IIst SEMESTER–EXAMINATION – JULY- 2012****Subject code: 1722805****Date: 14/07/2012****Subject Name: Computer Aided Design for Machine Component****Time: 10:30 am – 13:00 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 the following terms:- **07**
(i) World co-ordinate system, (ii) User co-ordinate system
(iii) Homogeneous co-ordinate system.
- (b) State the limitations of Non-parametric curve and advantage of Parametric curve. **07**
- Q.2** (a) Explain the following two dimensional geometric transformations in detail: (1) Translation (2) Scaling. **07**
- (b) The three vertices of triangle PQR are: P(0,0), Q(4,0), and R(2,3). It is to be translated by 4 unit in X-direction and 2 units in Y-direction then it is to be rotated in anti-clockwise direction about the new position of point R through 90 degree. Determine the new position of triangle. **07**
- OR**
- (b) Explain the types of geometric modeling & represent a surface model of cube with its basic entity and edge type. **07**
- Q.3** (a) Explain any four 3-D solid modeling features with neat sketch. **07**
- (b) The vertices of ΔPQR are: P (2, 4), Q (4, 6), and R (2, 6). It is desired to reflect through an arbitrary line, L whose equation is $Y=0.5X+2$. Determine the new position of triangle. **07**
- OR**
- Q.3** (a) Define geometry and topology. Compare C-rep and B-rep approaches. **07**
- (b) Explain the types of wire frame modeling. **07**
- Q.4** (a) Write an interactive program using C language to design push rod considering F.O.S and E for given length for appropriate end condition. **07**
- (b) Explain Bresenham's algorithm for generation of line with flow chart. **07**
- OR**
- Q.4** (a) Write a program in C: Design of leaf spring. **07**
- Q.4** (b) Write various approaches used for creating solid models of an object, explain any one. **07**
- Q.5** (a) Classify optimization techniques and explain any one. **07**
- (b) Explain the following terms with suitable example: **07**
(i) Design variable (ii) Constrains
- OR**
- Q.5** (a) Explain the role of Computer in Optimum design. **07**
- (b) Explain the procedure of graphical method to find out Optimum result. **07**
