Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**M.E –II$^{st}$ 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.**

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|---|---|---|---|
| **Q.1** | **(a)** | Define the following terms:-<br>(i) World co-ordinate system,(ii) User co-ordinate system<br>(iii) Homogeneous co-ordinate system. | **07** |
| | **(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 Δ PQR are: P (2, 4), Q (4, 6), and R (2, 6).It is desire 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 road 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:<br>(i) Design variable (ii) Constrains | **07** |
| | | **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** |

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