

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. Sem. – IInd - Examination – June/July- 2011****Subject code: 1722805****Subject Name: Computer Aided Design for Machine Component****Date: 01/07/2011****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) Explain the display device used for generating picture on screen which is some time called as digital TV. **07**
(b) What are the benefits, functions and limitations of CAD? **07**

- Q.2** (a) Explain the following two dimensional geometric transformations in detail: (1) Rotation, (2) Reflection. **07**
(b) Triangle PQR has vertices as P (2, 4), Q (4, 6) and R (2, 6). It is desired to reflect through arbitrary line L whose equation is $y=0.5x+2$. Calculate the new vertices of triangle **07**

OR

- (b) Show that the midpoint of a line transforms to the midpoint of the transformed line. **07**

- Q.3** (a) Explain common features operations of CAD system. **07**
(b) Write a parametric equation for a circle having end points of diameter as P1 (2, 3, 6) and P2 (8, 7, 6). Calculate the co-ordinates of points on circle. **07**

OR

- Q.3** (a) Define geometry and topology. Compare C-rep and B-rep approaches. **07**
(b) Determine the mathematical expression to measure angle between two selected lines in a CAD system. Using results so obtained, determine the point P3 and line L, if Line L- P1 (8, 2), P2 (18, 12) and point P3 (12, 13). **07**

- Q.4** (a) For a connecting rod of an IC Engine write an interactive program using C language. **07**
(b) Explain DDA algorithm for generation of line with flow chart. **07**

OR

- Q.4** (a) Write a program in C: Design of closed helical spring. **07**
(b) Write various approaches used for creating solid models of an object, explain any one. **07**

- Q.5** (a) State various optimization techniques and explain any one. **07**
(b) Explain 'adequate' and 'optimum' design with example. **07**

OR

- Q.5** (a) How optimization problem are classified? **07**
(b) Explain steps for formulation of optimization problem. **07**
