(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2766 **Roll No.** | | | | | | | | | | |

B.Tech.

(SEM. VII) ODD SEMESTER THEORY EXAMINATION 2013-14

COMPUTER AIDED DESIGN

Time : 3 Hours *Total Marks : 100*

Note :– (1) All **five** questions are compulsory, attempt as instructed therein.

(2) Assume any missing data suitably.

1. Attempt any **four** parts of the following : **(5×4=20)**

   (a) Make a table of important design phases. What are the required CAD tools to support various design phases ?

   (b) What are various CAE activities ?

   (c) What do you understand by Object Oriented Programming ?

   (d) Write a program, in either C or C++, to find the radius of a circle whose area is equal to a square.

   (e) Discuss various coordinate systems used in a CAD system.

   (f) Compare the capabilities, advantages and disadvantages of any three types of display devices.

2. Attempt any **four** parts of the following : **(5×4=20)**

   (a) Digitise the line with end points (20, 12) and (4.5, 17) using DDA algorithm.

   (b) What do you understand by composite transformation ? Explain in detail.

(c) With the help of a diagram explain working of a color monitor display device.

(d) What graphic functions are provided in a general purpose graphics package for creating and manipulating images ?

(e) Explain Homogeneous coordinates in detail.

(f) Rotate an object defined by A(0, 0), B(4, 0), C(4, 4), D(0, 4) by 70° counter clockwise direction about origin and find transformed coordinates.

3. Attempt any **two** parts of the following : **(10×2=20)**

(a) Describe Hrmite Spline curve and its blending function.

(b) What are Bezier Curves ? Discuss about the properties of such curves.

(c) Elaborate the following :

(i) Blobby objects

(ii) Superquadric surfaces.

4. Attempt any **two** parts of the following : **(10×2=20)**

(a) Write 5 editing commands and 5 drawing commands in Auto-CAD.

(b) Elaborate the procedure for designing a Journal bearing. Also write an algorithm for design of the above.

OR

Write an algorithm for designing a helical spring.

(c) Describe constructive solid geometry with suitable examples. How three dimensional objects having translational, rotational, or other symmetry are modeled ? Explain with suitable examples.

5. Attempt any **two** parts of the following : **(10×2=20)**

(a) Explain the method of solving a design problem using FEM. Also write the advantages of FEM.

(b) Find the root of the function :

$$f(x) = 3x^2 - \cos x - e^{-x}$$

using Newton-Raphson method.

(c) Evaluate the following integral :

$$I = \int_1^6 (3 + 2x)^{1/2}\, dx$$

using Simpson rule.