Registration No: | | | | | | | | | | |

Total Number of Pages: 02 **M.TECH**

P2MDCC14

2nd Semester Regular Examination 2016-17

Computer Aided Design

BRANCH: MACHINE DESIGN, MECH. SYSTEM DESIGN, SYSTEM DESIGN

Time: 3 Hours

Max Marks: 100

Q.CODE: Z960

Answer Question No.1 which is compulsory and any FOUR from the rest.

The figures in the right hand margin indicate marks.

Q1 Answer the following questions: ***Short answer type*** **(2 x 10)**

a) What are the reasons to implement CAD?
b) What are the functions of a design workstation?
c) Explain briefly about geometric modeling.
d) Explain the different ways to draw 3-D drawing.
e) What is the function of a frame buffer?
f) Describe the typical features of a drafting package.
g) Explain about the Interactive Graphic Terminal.
h) Explain how 2-D and 3-D transformations are done on graphics element?
i) Describe the working principle of CRT.
j) How can you draw a 500 pixel wide square on a 1280 x 1024 screen whose aspect ratio is 4:3?

Q2 a) Rotate the vector{x} through an angle 30^0 where {x}=$(\frac{2}{\sqrt{3}},0)$.The rotation matrix in this case for cos 30^0= $\frac{\sqrt{3}}{2}$ and sin 30^0 = $\frac{1}{2}$. **(10)**

b) Explain the typical configuration of hardware components in a standalone CAD workstation. **(10)**

Q3 a) A triangle is defined in a two-dimensional ICG system by its vertices (0,2),(0,3),and(1,2).Perform the following transformations on this triangle. **(10)**

i. Translate the triangle in space by 2 units in the x direction and 5 units in the y direction.
ii. Scale the original triangle by a factor of 1.5.
iii. Scale the original triangle by a factor of 1.5 in the x direction and 3.0 in the y direction.

Rotate the original triangle by 45^0 about the origin.

b) Describe 3D-wireframe and solid modeling techniques mentioning their merits and demerits. **(10)**

Q4 **a)** A cube is defined in three dimensional spaces with edges which are one unit in length. The corners of the cube are located at (0,0,0),(0,0,1),(0,1,0),(1,0,0),(1,0,1),(1,1,0),(1,1,1).Determine the locations of the corners if the cube is first translated by 3.0 units in the x direction and then scaled by a factor of 4.0. **(10)**

b) Explain the functions of a graphic software package. **(10)**

Q5 **a)** Describe briefly the surface modeling commands with a few application examples. **(10)**

b) Describe the working principle of raster refresh display with a neat sketch. What are its advantages? **(10)**

Q6 **a)** How do you define a solid model? Explain various modeling schemes with their applications and limitation. **(10)**

b) How do you classify the Parts classification and coding systems? Explain them. **(10)**

Q7 **a)** Discuss the objectives and structure of CAD database. **(10)**

b) Describe the methods of defining elements in computer graphics. **(10)**