(Please write your Exam Roll No.) *Exam Roll No. ……*

END TERM EXAMINATION

THIRD SEMESTER [MCA] DECEMBER-2013

Paper Code: MCA 203 *Subject: Computer Graphics*

Time : 3 Hours **Maximum Marks : 60**

Note : Attempt any five questions including Q. no. 1 which is compulsory.
Select one question from each Unit.

1.Answer the following questions **2x10**

a) Define the term translation and scaling in three dimensional with their matrices.
b) What are principal vanishing points?
c) Is there any difference between windowing and viewport? Answer with justification.
d) Explain the relevance of computer graphics in information Technology.
e) List five applications of computer graphics
f) Explain the way a LCD screen functions. How the colour is shown on the screen?
g) Explain the purpose of BSP-tree
h) Difference between boundary defined and interior defined regions in filling.
i) Why is homogenous coordinates used for transformation computations in CG?
j) What do you mean by constructive solid Geometry?

UNIT-I

2

(a) Digitize the line from (12,16) to (1,24) by using bresenham's line drawing algorithm **(5)**

(b) How bresenham's algorithm could be used to draw. Explain step by step formulation**(5)**

OR

3

(a) Differentiate between window and viewpot. How the viewport helps in mapping large size graph on a comparatively smaller screen.**(5)**

(b) Find a rotation matrix to rotate the point (1,2,3) by 45^0 around origin in x-y plane. find transformed value of point also. **(5)**

UNIT-II

4

(a) What is bezier curve? Discuss the main limitations of a bezier curve.**(5)**
(b) Define knot vector and explain the concept used to define a Bezier curve. Compute coefficients of Bezier curve in the interval[1,3] **(5)**

5 **OR**

(a) Prove that the open uniform B-spline curve for n=2,k=5 is the cubic Bezier curve.**(5)**

(b) Four control points P0(a,b), P1(3,6), P2(5,5) and P3(8,c) are on a uniform quadratic B-spline. Determine the values of a,b and c if the curve starts from the point(1,4) and terminates with the slope(-0.5).. **(5)**

UNIT-III

6

(a) How to represent a solid in computer graphics using sweep representation?**(4)**

(b) Describe spatial occupancy enumeration method for special partitioning representations of solids. What are the advantages of octress?**(6)**

OR

7

(a) List various anomalies associated with the perspective projection.**(4)**

(b) What do you mean by parallel projection and perspective projection.**(6)**

UNIT-IV

8

(a) Explain relevance of surface rendering in Computer Graphics?**(4)**

(b) What is hidden surface? What are the various approaches for hidden surface removal?**(6)**

OR

9

(a) Explain the z-buffer algorithm. What are the advantages of using z-buffer algorithm?**(4)**
(b) What are the empirical model for calculating specular reflection range given in the phong model.**(6)**