Subject Code: NBC702

PAPER ID-310368

Roll No: | | | | | | | | | | | | | |

MCA (INT.)

(SEM-VII) THEORY EXAMINATION 2020-21

COMPUTER GRAPHICS

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a.	Give applications of computer graphics.
b.	Show the rotations matrices about x, y and z axis in 3D.
c.	Define Ambient light.
d.	Discuss the term Transparency in context with Illumination models.
e.	Differentiate between Diffuse and Specular reflections.
f.	Describe how control points in 3D Spline controls the shape of the curve?
g.	Examine Blending function of Bezier Curve.
h.	Describe antialiasing in detail with suitable example.
i.	What is phosphorous persistence?
j.	What are Blobby objects?

SECTION B

2. Attempt any *three* of the following: 10x3=30

a.	Give the basic design of magnetic deflection CRT. Also explain the operation of an electron gun with an acceleration anode.
b.	What is Specular reflection? Also explain Phong model.
c.	What is shear transformation? Shear a unit cube along x direction (Shx = ½) with respect to reference line (Yref = -1).
d.	Define the term uniform scaling and differential scaling with an example.
e.	What is octant symmetry? Give mid-point circle algorithm.

SECTION C

3. Attempt any *one* part of the following: 10x1=10

a.	What are homogeneous coordinates? Give homogenous matrix representation for basic transformations with suitable examples.
b.	What is DDA line drawing algorithm? Scan convert a line having end points (16,18) and (20,21).

4. Attempt any *one* part of the following: 10x1=10

a.	Discuss Depth buffer algorithm? Give its drawbacks.
b.	What are raster scan displays? How they are different from random scan displays?

5. Attempt any *one* part of the following: 10x1=10

a.	What is viewing? Give window-to-viewport transformations.
b.	What are 4-bit region codes? Give Cohen-Sutherland Line clipping algorithm with suitable example.

6. Attempt any *one* part of the following: 10x1=10

a.	What are Cubic Bezier curves? Give the applications and properties of Bezier curves.
b.	What is scaling? Enlarge the size of unit square to twice by keeping one point as fixed.

7. Attempt any *one* part of the following: 10x1=10

a.	Write Sutherland Hodgeman polygon clipping algorithm.
b.	Define orthographic parallel projection. Give homogeneous matrix representation. Why it cannot be used to display realistic images?