Total No. of Questions : 8]

SEAT No. :

**PB-3636**

[Total No. of Pages : 2

# [6261]-43

## S.E. (Computer Engineering) (AI & DS) (Computer Science & Design Engg.)

## Computer Graphics

## (2019 Pattern) (Semester - III) (210244)

*Time : 2½ Hours]* *[Max. Marks : 70*

***Instructions to the candidates:***

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Neat diagram must be drawn wherever necessary***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data if necessary.***

***Q1)*** a) Differentiate between Parallel projection and Perspective Projection **[4]**

b) What is transformation and write transformation matrix for : **[4]**

i) 2-D reflection with respect to line Y=X

ii) 3-D rotation about Y-axis.

c) A triangle is defined by $\begin{bmatrix} 2 & 4 & 4 \\ 2 & 2 & 4 \end{bmatrix}$ Find transformed coordinates after the following transformation **[8]**

i) 90° rotation about the origin.

ii) Reflection about line X = Y

OR

***Q2)*** a) What are the types of projection and write in brief about each type of projections **[4]**

b) Derive 3D transformation matrix for rotation about a principal axis. **[4]**

c) Perform 45° rotation of a triangle A(0, 0), B(1, 1) and C(5, 2). Find transformed coordinates after rotation, (i) About origin, (ii) About P(–. 1, 1). **[8]**

***P.T.O.***

| | | | |
|---|---|---|---|
| ***Q3)*** | a) | Write short note on Warnock's Algorithm | **[6]** |
| | b) | Explain Halftone shading | **[5]** |
| | c) | Compare Gauraud shading and Phong Shading | **[6]** |

OR

| | | | |
|---|---|---|---|
| ***Q4)*** | a) | Explain Backface Detection and removal. | **[6]** |
| | b) | Explain and compare point source and diffuse illumination. | **[5]** |
| | c) | Explain the following terms with examples:<br>i) Color gamut<br>ii) Specular Reflection<br>iii) Diffuse reflection | **[6]** |
| ***Q5)*** | a) | Explain, the Bezier curve. List its properties. | **[4]** |
| | b) | Explain Blending function for B-spline curve | **[7]** |
| | c) | What are fractals? Explain Triadic Koch in detail | **[7]** |

OR

| | | | |
|---|---|---|---|
| ***Q6)*** | a) | Write a short note on interpolation and approximation | **[4]** |
| | b) | Explain Hilbert's curve with an example. | **[7]** |
| | c) | With suitable example write short note on the fractal line | **[7]** |
| ***Q7)*** | a) | Explain deletion of segment with suitable example | **[7]** |
| | b) | Define Morphing and write the applications of Morphing | **[3]** |
| | c) | Explain renaming of a segment with suitable example | **[7]** |

OR

| | | | |
|---|---|---|---|
| ***Q8)*** | a) | Write a short note on motion specification methods based on<br>i) Geometric and kinematics information.<br>ii) Specification methods based on physical information | **[7]** |
| | b) | Write any three important features of NVIDIA gaming platform | **[3]** |
| | c) | Explain architecture of 1860 | **[7]** |