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S.E. (Computer Engineering) (Artificial Intelligence & Data Science) (Computer Science & Design Engg.)

COMPUTER GRAPHICS

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

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume Suitable data if necesary.***

Q1) a) Differentiate between Orthographic Projection and Isometric Projection. **[5]**

b) What is transformation and wirte transformation matrix for: **[5]**

i) 3D translation using homogenous coordinate system

ii) 3-D rotation about X-axis.

c) Consider the square A (1, 0), B(0, 0), C(0, 1), D (1, 1). Rotate the square ABCD by 45º anticlockwise about point A (1,0) **[8]**

OR

Q2) a) What are the types of projection and write in brief about each type of projections. **[5]**

b) Derive 3D transformation matrix for rotation about a principal axis. **[5]**

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) 90º rotation about the origin.

ii) Reflection about line X=Y

Q3) a) Whta is Backface? Explain Backface Detection and removal. **[6]**

b) Explain and compare point source and diffuse illumination. **[5]**

c) Compare RGB and HSV color model **[6]**

OR

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Q4) a) Write short note on Painters Algorithm **[6]**

b) Explain Halftone shading **[5]**

c) Explain the following terms with examples. **[6]**

i) Colour gamut

ii) Specular Reflection

iii) Diffuse reflection

Q5) a) Write a short note on interpolation and approximation. **[4]**

b) Explain Blending function for B-spline curve. **[7]**

c) What are fractals? Explain Triadic Koch in detail. **[7]**

OR

Q6) a) Explain the Bezier curve. Enlist its properties. **[4]**

b) Draw and explain Hilbert's curve with an example **[7]**

c) With suitable example write short note on the fractal lines. **[7]**

Q7) a) Explain deletion of segment with suitable example. **[7]**

b) What is Morphing and write the applications of Morphing. **[3]**

c) Draw block diagram of NVIDIA workstation and explain it in brief. **[7]**

OR

Q8) a) Write a short note on motion specification method based on. **[7]**

i) Geometric and kinematics information.

ii) Animation languages

b) Write any three important features of NVIDIA gaming platform **[3]**

c) Explain renaming of a segment with suitable example. **[7]**

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