

Total No. of Questions : 8]

SEAT No. :

P1529

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[6002]-158

**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 necessary.

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

b) ✓ What is transformation and write 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 45° 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) 90° rotation about the origin.
- ii) Reflection about line X=Y

Q3) a) ✓ What 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

P.T.O.

- 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]

