Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 09

MCA (2012 Onward) (Sem.–4)

INTERACTIVE COMPUTER GRAPHICS

Subject Code : MCA-403

Paper ID : [A2557]

Time : 3 Hrs. **Max. Marks : 100**

INSTRUCTION TO CANDIDATES :

1. **SECTIONS-A, B, C & D contains TWO questions each carrying TWENTY marks each and students has to attempt any ONE question from each SECTION.**
2. **SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY marks in all.**

SECTION-A

1. a) Explain how frame buffer is used for producing grayscale and color levels. Discuss the advantage and disadvantages of color look up table over Frame - buffer. 10

   b) Differentiate between Shadow Masking and Beam penetrations techniques of color generation. 10

2. b) Write note on following :

   i) Raster Scan Display

   ii) Random Scan Display

   iii) Application of Computer Graphics

   iv) Color Models

   v) Graphs and types of Graphs

   5 × 4

SECTION-B

3. a) Describe Bresenhem's method for circle drawing algorithm. Explain why this algorithm is more efficient as compared to other circle drawing algorithms. 10

   b) Reflect the diamond-shaped polygon whose vertices are A(-1,0), B(0,2), C(1,0), and D(0,2) about : 10

   i) Horizontal line y = 2

   ii) Line y = x + 2

4. a) Define the terms windows, view port, clipping and viewing transformation for rectangular shapes. 5

   b) Discuss the line-clipping algorithm proposed by Cohen Sutherland. 10

   c) What are affine transformations? 5

SECTION-C

5. a) What are the main characteristics of a fractal? Write classification of a fractal. 8

   b) Derive the general equation of parallel projection onto a given view plane in the direction of a given projector V. 12

6. a) Find the 3D-transformation for mirror reflection with respect to a given plane. 12

   b) Write note on B-Spline curves. 8

SECTION-D

7. a) What is scan line algorithm? What are various types of coherence that exist in Scan-line algorithm? Write a scan line algorithm. 15

   b) Differentiate between Z-buffer and painter algorithms. 5

8. a) Differentiate between Diffuse Reflection and Specular Reflection. 10

   b) What is surface rendering? Explain various methods of Surface Rendering. 10

SECTION-E

9. Write briefly :

1. Morphing.
2. Display Processor.
3. Properties of Bezier Curve
4. Composite Transformation
5. What do you mean by shading of objects?
6. Character Generation Techniques
7. What is bitmap and what is pixmap?
8. What do you mean by scan conversion?
9. What are perspective anomalies?
10. Dithering techniques. 2×10