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

Total No. of Questions : 09

MCA (2013 and 2014 Batch) (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.**
3. **Use of non-programmable scientific calculator is allowed.**

SECTION-A

1. Discuss about video-display devices in detail.

2. List out input devices and write the steps involved in input device handling algorithm.

SECTION-B

3. a) Define window and view port. What are the steps involved in window viewport transformation?

   b) Discuss the scan line polygon fill algorithm in detail. What is a sorted edge table?

4. a) Describe in detail Sutherland Hodgeman polygon clipping algorithm. What is the Problem that this algorithm encounters when applied on concave polygons?

   b) Write the Bresenham line generation algorithm and scan convert a line from (1,2) and (8,4).

SECTION-C

5. State and explain the anomalies of perspective projection. Derive the general perspective transformation onto a plane with reference points $R_0(x_0, y_0, z_0)$, normal vector N: $n_1 J+n_2 J+n_3 K$ and using C (a, b, c) as the center of projection.

6. Explain in detail the 3-D Viewing Transformation and Clipping.

SECTION-D

7. Explain constant intensity and Phong's method for shading.

8. Why visual surface detection is important in graphics? Describe back face method for visible surface detection.

SECTION-E

9. Give short answers of the following :

a) Raster Scan Systems

b) Clipping

c) Aspect Ratio

d) Anti-aliasing

e) Uniform scaling

f) Morphing

g) Vanishing Point

h) Reflection transformation

i) Echoing

j) Gouraud Shading