TDC (CBCS) Odd Semester Exam., 2019

COMPUTER SCIENCE

(3rd Semester)

Course No. : CSCHCC–302T

(Computer Graphics)

Full Marks : 50
Pass Marks : 20

Time : 3 hours

The figures in the margin indicate full marks for the questions

UNIT—I

1. Answer any *two* questions of the following : 2×2=4

(a) What is the resolution of an image? Compute the resolution of a 2 inch × 2 inch image that has 512 pixels × 512 pixels.

(b) Write any two applications of computer graphics.

(c) What is pixel? How is it represented in a computer?

2. Draw the architecture of raster-scan system and explain each part. 6

OR

3. Explain different types of interactive input/output device. 6

UNIT—II

4. Answer any *two* questions of the following : 2×2=4

   (a) Define scan conversion. What are the various scan conversion techniques?

   (b) Write down the drawbacks of DDA line drawing algorithm.

   (c) What do you mean by clipping and shielding? Also define point clipping.

5. Discuss Bresenham's circle drawing algorithm. 6

OR

6. Explain Cohen-Sutherland line segment clipping technique. 6

UNIT—III

7. Answer any *two* questions of the following : 2×2=4

   (a) Distinguish between 2-D viewing and 3-D viewing.

   (b) What are Quadtree and Octree structures?

   (c) What do you mean by homogeneous coordinate system? Give example.

8. *(a)* Derive the 3-D rotational matrices for *X*-axis, *Y*-axis and *Z*-axis. 3

   (b) Explain 2-D transformation in homogeneous coordinate system. 3

OR

9. *(a)* Find the matrix that represents rotation of an object by 30° about the origin. What are the new coordinates of a point $P(2, -4)$ after rotation? 3

   (b) Distinguish between perspective and parallel projection. 3

UNIT—IV

10. Answer any *two* questions of the following : 2×2=4

(a) What is interpolation and approximation of spline?

(b) What are the different parametric continuity conditions?

(c) Write two properties of Bezier curve.

11. Write short notes on the following : 3+3=6

(a) B-spline curve

(b) Bezier surfaces

OR

12. Explain *Z*-buffer hidden surface algorithm. 6

UNIT—V

13. Answer any *two* questions of the following : 2×2=4

(a) Define RGB and CMY color model.

(b) What is illumination model?

(c) Write a short note on 3-D animation.

14. What do you mean by animation? Discuss the techniques of animation in detail. 6

OR

15. Describe Gouraud shading techniques. 6

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