

Code No. : 20106 E Sub. Code : SMCS 62/
SMSE 62

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Sixth Semester

Computer Science/Software Engineering – Core
COMPUTER GRAPHICS AND VISUALIZATION

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. CAD stands for
 - (a) Computer Art Design
 - (b) Computer-Aided Design
 - (c) Car Art Design
 - (d) None of the above

6. The process of extracting a portion of a database or a picture inside or outside a specified region are called
 - (a) transformation
 - (b) projection
 - (c) clipping
 - (d) mapping

7. The process of displaying 3D into a 2D display unit is called as _____
 - (a) Resolution
 - (b) Projection
 - (c) Rasterization
 - (d) Transformation

8. Which of the following transformations are most common that are applied on three - dimensional objects?
 - (a) Translation
 - (b) Scaling
 - (c) Rotation
 - (d) Translation, scaling, rotation

9. _____ and _____ are two types of transformations.
 - (a) Quadratic, cubic
 - (b) Variable, affine
 - (c) Linear, quadratic
 - (d) Linear, affine

2. From the given list of options, which one is the accurate and efficient line-generating algorithm
 - (a) Midpoint algorithm
 - (b) DDA algorithm
 - (c) Bresenham's Line algorithm
 - (d) None of the above

3. Aspect ratio means
 - (a) Number of pixels
 - (b) Ratio of vertical points to horizontal points
 - (c) Ratio of horizontal points to vertical points
 - (d) Both (b) and (c)

4. Which one is the rigid body transformation that moves object without deformation?
 - (a) Translation
 - (b) Scaling
 - (c) Rotation
 - (d) Shearing

5. Coordinates of viewport are known as _____
 - (a) World coordinates
 - (b) Polar coordinates
 - (c) Screen coordinates
 - (d) Cartesian coordinates

10. Which co-ordinates allow common vector operations such as translation, rotation, scaling and perspective projection to be represented as a matrix by which the vector is multiplied.
 - (a) vector co-ordinates
 - (b) 3d co-ordinates
 - (c) affine co-ordinates
 - (d) homogenous co-ordinates

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write a short note on the following video display (i) refresh CRT (ii) color CRT.

Or

(b) Compare and contrast between raster scan display and random scan display.

12. (a) Explain the two dimensional translation and scaling with example.

Or

(b) Give a short note on rotation.

13. (a) Explain the window to viewport coordinate transformation.

Or

(b) Explain the various clipping operations.

14. (a) Write short notes on 3D rotation.

Or

(b) Explain about three dimensional display methods.

15. (a) Write a note on the following visible surface detection methods (i) Back face detection (ii) A-buffer method.

Or

(b) Discuss about scan line method.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either-(a) or (b)

Each answer should not exceed 600 words.

16. (a) Discuss in detail about various input devices.

Or

(b) Explain the Bresenham's line drawing algorithm with example.

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17. (a) Explain the basic two-dimensional geometric transformation.

Or

(b) Obtain a transformation matrix for rotating an object about a specified pivot point.

18. (a) Illustrate Cohen-Sutherland line clipping algorithm.

Or

(b) Explain Sutherland-Hodgeman polygon clipping algorithm.

19. (a) Briefly explain about the basic transformations performed on three dimensional objects.

Or

(b) Write a detailed note on interactive input methods.

20. (a) Elaborate in detail about 3D projection.

Or

(b) Discuss about three dimensional viewing.

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