CBCS SCHEME

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18SM72

Seventh Semester B.Tech. Degree Examination, Dec.2023/Jan.2024
Geometric Modelling for CAD and Computer Graphics

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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Module-1

1 a. Write notes on:
(i) Rotating transformation (ii) Reflection transformation
(iii) Scaling transformation (iv) Shearing transformation **(12 Marks)**

b. Briefly explain geometric interpretation of the homogeneous coordinates. **(08 Marks)**

OR

2 a. Briefly explain :
(i) Reflection through an arbitrary plane
(ii) Rotation about an arbitrary axis **(10 Marks)**

b. Explain about:
(i) Rotation about an axis parallel to coordinate axis
(ii) Rotation about an arbitrary point **(10 Marks)**

Module-2

3 a. Explain briefly on parametric and non-parametric representation of :
(i) Lines (ii) Hyperbola (iii) Ellipse **(15 Marks)**

b. What are blending function and properties of Bezier curves? **(05 Marks)**

OR

4 a. Write note on:
(i) Ruled surface of revolution
(ii) Offset surface
(iii) B-spline surface **(08 Marks)**

b. Explain briefly on:
(i) B-spline curves (ii) Open uniform functions
(iii) Periodic B-spline curves (iv) Hermite cubic splines **(12 Marks)**

Module-3

5 a. Brief about the mathematical representation of solid entities:
(i) Sphere (ii) Cone (iii) Torus **(10 Marks)**

b. Explain on boundary representation and constructive solid geometry. **(10 Marks)**

OR

6 a. Briefly explain on DD algorithm. **(10 Marks)**

b. Explain clipping of: (i) Points (ii) Lines (iii) Polygon **(10 Marks)**

Module-4

7 a. Differentiate between hidden surface removal and hidden solid removal in terms of algorithm. **(10 Marks)**

b. Explain about visibility techniques of visual realism. **(10 Marks)**

OR

8 a. Explain about shading solids, and constant shading. **(05 Marks)**

b. Write notes on:
   (i) Z-buffer algorithm
   (ii) Ray tracing algorithm
   (iii) Warnock's algorithm **(15 Marks)**

Module-5

9 a. Explain on colouring of: (i) RGB (ii) CMY (iii) HSL (iv) HSV models **(08 Marks)**

b. Write a note on conventional animation key frame in between line testing and filming. **(06 Marks)**

c. Mention about animation types and frame buffer. **(06 Marks)**

OR

10 a. Explain on path of motion and p-curves. **(05 Marks)**

b. Write short notes on:
   (i) Computer animation
   (ii) Animation system hardware
   (iii) Software architecture **(15 Marks)**

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