Third Semester MCA Degree Examination, Aug./Sept.2020 Computer Graphics

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- a. What is openGL? Explain openGL point functions and GL line functions with examples.
 (08 Marks)
 - b. Define:
 - i) Screen coordinates
 - ii) Absolute coordinates.
 - c. Explain simple DDA algorithm.

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- a. Explain midpoint circle drawing algorithm which calculates of way symmetry with necessary expressions. Calculates the co-ordinate positions for plotting circle with radius r = 15 and centre (0, 0).
 - b. Explain boundary fill algorithm and flood fill algorithm in brief.

(10 Marks)

- 3 a. Explain all two dimensional transformations with homogenous matrix notations. (10 Marks)
 - b. What is composite transformation and write composite matrices for translation and scaling.

 (05 Marks)
 - c. Explain general pivot point rotation with matrix notations.

(05 Marks)

- 4 a. Explain three dimensional reflection and shearing transformations. (06 Marks)
 - b. Describe basic openGL geometric transformation functions.

(04 Marks)

- c. Write a program to create (without using built-in function) to cube by implementing reflection algorithm along xy-plane, yz-plane and xz-plane. (10 Marks)
- 5 a. Define window and viewport. Derive the transformation matrix for world coordinates to viewport coordinates along with pipeline. (10 Marks)
 - b. What are different types of clipping operations? Explain Cohen Sutherland line clipping algorithm. (10 Marks)
- a. Describe different 3D viewing concepts.

(10 Marks)

b. Explain various 3D viewing coordinate parameters and reference frame.

(10 Marks)

- 7 a. Explain orthogonal and oblique parallel projection with matrix notations. (12 Marks)
 - b. Define perspective projection. Derive perspective projection transformation matrices.

(08 Marks)

- 8 a. Derive Bezier curve equations and list its useful properties of Bezier curves. (10 Marks)
 - b. What is computer animation? Explain different traditional techniques used for computer animation. (10 Marks)

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