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Total No. of Pages : 02

Total No. of Questions : 09

**MCA (Sem.-5)**  
**COMPUTER GRAPHICS**  
**Subject Code : MCA-501**  
**M.Code : 90002**

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTIONS-A, B, C & D contains TWO questions each carrying TEN marks 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.

**SECTION-A**

1. Explain various input devices.
2. Explain working of a CRT with the help of diagram.

**SECTION-B**

3. Describe the matrix formulation of 2-D transformations; translation, rotation and scaling.
4. What are viewing transformations? Explain the steps involved in it.

**SECTION-C**

5. Derive the matrix form for perspective projection transformation using 3-dimensional homogenous representation. With a neat sketch, describe various parameters involved in the matrix representation.
6. Derive the matrix form for the geometric transformations in 3-D graphics for the following operations.
  - A) Translation
  - B) Scaling
  - C) Reflection

**SECTION-D**

7. What are the steps involved in two-pass Z-Buffer shadow algorithm? Explain.
8. Explain and compare Gouraud and Phong surface shading methods.

### SECTION-E

**9. Short answer type questions :**

- A) What is pixel?
- B) Explain Random Scan System?
- C) What are homogeneous coordinates?
- D) What is shear transformation?
- E) Write a short note on working of Raster Scan Display systems?
- F) Discuss vanishing points?
- G) Write about windows and view port?
- H) What is text clipping? Discuss.
- I) Discuss Ellipse generating algorithms?
- J) What is halftoning?

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**