Roll No. .....

Subject Code—608

M.C.S. EXAMINATION

(Third Semester)

MS-13

COMPUTER GRAPHICS

Time : 3 *Hours* *Maximum Marks :* 100

Note : Attempt any *Five* questions. All questions carry equal marks.

1. (a) What do you understand by a Graphic Package ? Enumerate the characteristics of an ideal graphic package. Which of the graphic package is most popular and why ? Explain.

   (b) What are the advantages and disadvantages of hard copy displays, DVST displays, vector refresh displays, and raster displays ?

2. (a) What is a geometric model ? Outline in brief the various geometric models.

(b) What is meant by 3-D transformation ? What are their various types ? Also provide the transformation-matrix for each of these.

3. (a) What are multimedia authoring tools ? Outline the major features a good authoring tool ought to have.

(b) Which of the line algorithms is preferred most and why ? What are the desirable properties of a good line drawing algorithm ?

4. (a) What steps are required to plot a line whose slope is between 0 and 45° using Bresenham's method ? Indicate which raster locations would be chosen by Bresenham's algorithm when scan-converting a line from screen coordinate (4, 3) to screen coordinate (11, 8).

(b) Differentiate perspective and parallel projection. Illustrate.

5. (a) What is meant by hidden-surfaces ? If you have been given three points A(3, 4, 0), B(5, 8, 14) and C(6, 7, 10) and a viewpoint P(0, 0, –7), determine which points obscure the others when viewed from P.

(b) Differentiate between the following :

(i) Viewport and Window

(ii) Clipping and Shielding.

6. (a) What do graphical input devices mean ? Enumerate the functions of graphical input devices.

(b) Give a 3×3 dimensional homogenous-coordinate transformation matrix for each of the following translations :

(i) Shift the image to the right 4 units

(ii) Shift the image up 3 units

(iii) Move the image down ½ unit and right 1 unit

(iv) Move the image down 2/3 unit and left 4 units.

7. Explain the following :

   (a) Wire-frame model

   (b) Rubber-band techniques.

8. (a) Why is the electron beam allowed to overscan ? Also discuss about the technique that involves splitting a raster-scan pattern into two separate patterns.

   (b) What are the differences between raster-scan CRTs and random-access or vector CRTs ?