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BCA / M-19
COMPUTER GRAPHICS
Paper–BCA-363

Time allowed : 3 hours] *[Maximum marks : 80*

Note : *Attempt five questions in all.* ***Question No. 1 is compulsory.*** *Attempt* ***four*** *more questions selecting* ***one*** *question from each unit. All questions carry equal marks.*

1. Answer the following in brief :
   (a) Describe any one application of graphics which you commonly use.
   (b) Name any two general purpose graphics softwares.
   (c) Write the equation of an ellipse that is used in the polynomial method for drawing ellipses.
   (d) If a line is drawn between points (2,2) and (9,4) using Bresenhams method, what will be the x-increment ?
   (e) What functionality is performed by a pointing device ?
   (f) What happens to an object when it is mirror reflected ?
   (g) What is the purpose of projection as a three-dimensional display method ?
   (h) Write the matrix for 3-D rotation transformation with respect to the z-axis.

Unit–I

2. How are pictures created using computer graphics ? What is the role of a frame buffer and look-up table in the creation of pictures?

3. Answer the following questions in brief :
   (a) What is a Raster scan system ?
   (b) How are colors obtained on a CRT ?
   (c) Which input device do you commonly use with a Graphical User Interface software ? Explain its anatomy and working.

Unit–II

4. Describe the simple DDA line drawing algorithm using an example.

5. (a) How is a circle drawn using polar coordinates ?
   (b) Describe one method of polygon area filling.

Unit–III

6. Give the matrix representations for translation, rotation and scaling transformations. What is a composite transformation ? Illustrate using a suitable example.

7. What purpose is served by the following techniques in graphics?
   (a) Rubber-band technique
   (b) Shearing

Unit–IV

8. Describe how lines are clipped using mid-point subdivision method.

9. (a) Describe the 2-D viewing transformation and derive the matrix for the same.
   (b) Derive the 3-D Composite transformation for translation and scaling.