

VI/BCA/602 (i)

2015

(6th Semester)

BACHELOR OF COMPUTER APPLICATIONS

Paper No. : BCA-602 (i)

(**Computer Graphics**)

Full Marks : 75

Time : 3 hours

(PART : B—DESCRIPTIVE)

(Marks : 50)

*The figures in the margin indicate full marks
for the questions*

1. (a) What is computer graphics? Explain two GUI applications. 5
- (b) Explain raster scan and random scan with diagram. 5

Or

- (c) Explain the working principle of CRT monitor with diagram. 5
- (d) Explain midpoint subdivision algorithm. 5

2. (a) What is CAD? What role does it play in computer graphics? 2+4=6

(b) Explain the key difference between lossy compression and lossless compression. 2+2=4

Or

(c) Describe the properties of B-spline surface and Bezier surface. Mention their merits and demerits. 4+2=6

(d) What is image processing? Mention the steps of image processing. 2+2=4

3. (a) Explain the concept of zooming and panning. 3+3=6

(b) Add the following matrices : 4

$$\begin{bmatrix} 1 & 0 & 4 & -8 \\ 2 & -1 & 4 & 3 \end{bmatrix} \text{ and } \begin{bmatrix} -1 & 2 & 4 & -8 \\ 4 & -1 & 2 & 2 \end{bmatrix}$$

Or

(c) Write a note on homogeneous coordinate. 6

(d) Explain the basics of graphic pipeline. 4

4. (a) Write down Bresenham's circle drawing algorithm. 6

(b) Explain different clipping operations with examples. 4

Or

(c) Write and explain Cohen-Sutherland line clipping algorithm. 6

(d) Write short notes on the following : $2 \times 2 = 4$

(i) MIDI message

(ii) Polar coordinates

5. (a) Differentiate between the following : $2 \times 3 = 6$

(i) JPEG and MPEG

(ii) Hypertext and Hypermedia

(iii) Tweaking and Morphing

(b) What do you understand by scaling and translation? $2 + 2 = 4$

Or

(c) What is multimedia? What are four elements of multimedia? $2 + 4 = 6$

(d) Write short notes on the following : $2 \times 2 = 4$

(i) Audio speaker

(ii) Rubber band method

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BACHELOR OF COMPUTER APPLICATIONS

Paper No. : BCA-602 (i)

(Computer Graphics)

(PART : A—OBJECTIVE)

(Marks : 25)

The figures in the margin indicate full marks for the questions

1. Put a Tick [✓] mark in the brackets provided against the correct answer : 1×10=10

(a) Programs used to create or modify bitmap images are called

(i) illustration programs []

(ii) paint programs []

(iii) graphical modifiers []

(iv) bit publishing packages []

(b) Images made up of thousands of pixels are called

- (i) bitmap []
- (ii) vector []
- (iii) story board []
- (iv) graphics []

(c) Vector images are

- (i) composed of pixels []
- (ii) composed of thousands of dots []
- (iii) slightly more difficult to manipulate than other images []
- (iv) composed of objects such as lines, rectangles and ovals []

(d) Which of the following requires edges to be rasterised only for distinct y values?

- (i) 4-fill polygons []
- (ii) 8-fill polygons []
- (iii) Scan line polygons []
- (iv) Boundary-fill polygons []

(e) If the eccentricity is less than one, the conic is

(i) circle []

(ii) parabola []

(iii) ellipse []

(iv) hyperbola []

(f) The transformation that is used to alter the size of an object is

(i) scaling []

(ii) rotation []

(iii) translation []

(iv) reflection []

(g) Scaling of polygon is done by computing

(i) the product of (x, y) of each vertex []

(ii) (x, y) of end points []

(iii) centre coordinates []

(iv) (x, y, z) of end points []

(h) GUI means

(i) Graphical User Interaction []

(ii) Graphical User Interface []

(iii) Graphical Uniform Interaction []

(iv) Graph User Interface []

(i) Beam penetration method is used in

(i) random scan system []

(ii) raster scan system []

(iii) Both (i) and (ii) []

(iv) None of the above []

(j) The quality of an image depends on

(i) number of resolutions used by an image []

(ii) number of lines used by an image []

(iii) number of pixels used by an image []

(iv) None of the above []

2. State whether *True* or *False* :

1×5=5

- (a) Using Cohen-Sutherland line clipping, it is impossible for a vertex to be labelled 1111.

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- (b) The electron beam in a color picture tube is refreshed 25 times in a second to make video realistic.

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- (c) A palette can be defined as a finite set of colors for managing the analog images.

()

- (d) A two-dimensional rotation is applied to an object by repositioning it along a circular path in the x - y plane.

()

- (e) The first viewing parameter we must consider is the shift vector.

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3. Answer the following questions : 2×5=10

(a) Explain briefly H.261.

(b) What is animation?

3. (c) What is scientific visualization?

(c) Explain briefly H.251.

(d) What is simulation? (e) Write a short note on

(10)

(e) Write a short note on rendering pipeline. W (b)

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