

Professional Course Examination, November/December 2019

(5th Semester)

BACHELOR OF COMPUTER APPLICATIONS

Course : BCA-502

(Computer Graphics and Multimedia)

Full Marks : 75

Time : 3 hours

(PART : A—OBJECTIVE)

(Marks : 25)

The figures in the margin indicate full marks for the questions

SECTION—A

(Marks : 15)

Tick (✓) the correct answer in the brackets provided :

1×10=10

1. If the two end-points of the codes of a line are (0001) and (0010), the line is
(a) totally visible () (b) partially visible ()
(c) totally invisible () (d) None of the above ()
2. In a CRT display system, brightness control is done by controlling the
(a) anode () (b) grid ()
(c) phosphor () (d) plate ()
3. In polygon clipping, if both vertices are inside the window boundary, the output vertex will be
(a) first vertex () (b) second vertex ()
(c) Both (a) and (b) () (d) None of the above ()
4. A 2D geometric transformation that alters the size of an object is
(a) translation () (b) scaling ()
(c) reflection () (d) shearing ()

5. The simplest geometric components of pictures are
 (a) points () (b) lines ()
 (c) curves () (d) Both (a) and (b) ()
6. A set of points that are all at a given distance r from a center position is a/an
 (a) circle () (b) sphere ()
 (c) ellipse () (d) ellipsoid ()
7. The curve defines four control points with

$$B(t) = b_0(t)P_0 + b_1(t)P_1 + b_2(t)P_2 + b_3(t)P_3, 0 \leq t \leq 1$$
 is a
 (a) B-spline curve () (b) cubic spline curve ()
 (c) Bezier curve () (d) None of the above ()
8. When a polynomial section is fitted so that the curve passes through each control point, the resulting curve is said to _____ the set of control points.
 (a) approximate () (b) interpolate ()
 (c) divide () (d) originate ()
9. MIDI stands for
 (a) Musical Interface Digital Instrument ()
 (b) Music Interface Digital Instrument ()
 (c) Music Instrument Digital Interface ()
 (d) Musical Instrument Digital Interface ()
10. Which of the following general purpose languages is used to program the animation function?
 (a) C () (b) Pascal ()
 (c) Fortran () (d) All of the above ()

Indicate whether the following statements are *True (T)* or *False (F)* by putting a Tick (✓) mark in the brackets provided : 1×5=5

1. The smallest addressable element of the screen is called a pixel.
(T / F)
2. A translation is applied to an object by repositioning it along a straight line path from one coordinial location to another.
(T / F)

3. A random scan system stores line-plotting instructions in the display list.
(T / F)
4. Ellipsoid is an extension of a spherical surface where the radii can have different values.
(T / F)
5. The storyboard is a detailed drawing of the scene at a certain time in the animation sequence.
(T / F)

SECTION—B

(Marks : 10)

Answer the following questions :

2×5=10

1. Differentiate between Random scan monitor and Raster scan monitor.
2. Write a short note on midpoint subdivision algorithm.
3. What is the equation for the Cartesian slope-intercept for a straight line?
4. What are the applications of Bezier curves?
5. What do you mean by morphing?

(PART : B—DESCRIPTIVE)

(Marks : 50)

The figures in the margin indicate full marks for the questions

1. (a) What do you mean by refresh CRT? Explain the working principle of CRT monitor with diagram. 6
- (b) What is computer graphics? Explain any two types of computer graphics. 4

OR

- (c) Explain the two basic techniques for producing color display with CRT monitors with diagram. 6
- (d) Distinguish between plasma panels and LCD panels. 4
2. (a) What do you mean by 2D transformation? Explain the different types of 2D transformation with suitable diagram. 6
- (b) Explain Sutherland-Hodgeman polygon clipping algorithm. 4

OR

- (c) Write and explain Cohen-Sutherland line clipping algorithm. 6
- (d) Write a note on text clipping algorithm. 4
3. (a) Explain circle generating algorithm. 6
- (b) Differentiate between Points and Lines. 4

OR

- (c) Write notes on the following : 5+5=10
- (i) Ellipse generating algorithm
- (ii) DDA algorithm
4. (a) What is quadric surface? Explain the different types of quadric surfaces with diagram. 6
- (b) What is B-spline curve? Write down the advantages of B-spline curve. 4

OR

- (c) What do you mean by Bezier curves? Explain the properties and applications of Bezier curves. 6
- (d) Differentiate between superellipse and superellipsoid. 4
5. (a) What is multimedia? Explain the different applications of multimedia. 6
- (b) Write notes on the following : 4
- (i) JPEG
- (ii) MPEG

OR

- (c) What do you mean by animation? Explain the principles of animation. 6
- (d) Differentiate between lossy compression and lossless compression techniques. 4
