(6 Pages)

Reg. No. : ....

Code No. : 30521 E   Sub. Code : SMCA 63

B.C.A. (CBCS) DEGREE EXAMINATION, APRIL 2022

Sixth Semester

Computer Applications — Core

COMPUTER GRAPHICS

(For those who joined in July 2017 onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Heat supplied to the cathode by directing a current through a coil of wire is called

   (a) Electron gun   (b) Electron beam

   (c) Filament   (d) Anode and cathode

2. Random-Scan system mainly designed for

   (a) Realistic shaded screen

   (b) Fog effect

   (c) Line-drawing applications

   (d) Aliasing

3. Why a circle drawn on the screen appears to be elliptical?

   (a) It is due to the aspect ratio of monitor

   (b) Screen has rectangular shape

   (c) Our eyes are not at the same level on screen

   (d) CRT is completely spherical

4. Expansion of line DDA algorithm is

   (a) Digital difference analyser

   (b) Direct differential analyser

   (c) Digital differential analyzer

   (d) Data differential analyser

5. The transformation in which an object is moved in a minimum distance path form one position to another is called —————

   (a) Scaling   (b) Translation

   (c) Rotation   (d) Reflection

6. The transformation in which the dimension of an object are changed relative to a specified fixed point is called

   (a) Translation   (b) Rotation

   (c) Reflection   (d) Scaling

7. A process which divides each segment of the picture into its visible and invisible portion, allowing the invisible portion to be discarded is called

    (a) Clipping   (b) Windowing

    (c) Segmenting   (d) Filling

8. Mapping the world co-ordinates into physical device co-ordinates is called ————

    (a) Translation

    (b) Homogeneous transformation

    (c) Co-ordinate conversion

    (d) Viewing transformation

9. The surfaces that is blocked or hidden from view in a 3D scene are known as

    (a) Hidden surface   (b) Frame buffer

    (c) Quad tree   (d) Stack

10. The method which is based on the principle of comparing objects and parts of objects to each other to find which are visible and which are hidden are called

    (a) image-space method

    (b) surface space method

    (c) segment based

    (d) object-space method

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Comment on graphics software packages.

    Or

    (b) Write note on graphical output devices.

12. (a) Explain the polynomial method for scan conversion.

    Or

    (b) Illustrate the steps involved in Odd-Even method.

13. (a) Discuss the 2D translation transformation.

    Or

    (b) Describe the transformation of points and objects.

14. (a) What is meant by Windows and Viewports?

    Or

    (b) Describe the process of clipping against concave windows.

15. (a) What are the challenges in removal of hidden parts from images of solid objects?

Or

(b) Describe the types of hidden surface detection methods.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe the applications of computer graphics.

Or

(b) Illustrate the common input devices.

17. (a) Explain the DDA line drawing algorithm.

Or

(b) Discuss the algorithm for scan line fill and scan line seed fill algorithm.

18. (a) How to perform 2-D reflection transformation? Explain.

Or

(b) Explain the 3-D translation transformation and 3-D shearing.

19. (a) Discuss the Cohen-Sutherland clipping algorithm.

Or

(b) Write an algorithm for Liang – Barsky clipping technique.

20. (a) Illustrate the Z-buffer algorithm.

Or

(b) Explain the back face removal algorithm in detail.

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