

VI Semester B.C.A. Examination, May 2016

(Y2K8 Scheme) (F + R)

COMPUTER SCIENCE

BCA – 603 : Computer Graphics

(100 Marks 2013-14 and Onwards/90 Marks Prior to 2013-14)

Time : 3 Hours

Max. Marks : 100/90

**Instructions:** 1) Answer **all** Sections.

2) Section **D** is applicable to students of 2013-14 and Onwards.

SECTION – A

Answer **any ten** questions. **Each** question carries **two** marks.

(10×2=20)

1. Define persistence and resolution.
2. Define frame buffer.
3. What are the different fill styles to fill a polygon ?
4. What are the disadvantages of DDA line drawing algorithm ?
5. Define reflection in 2D transformation.
6. What are the methods used for smoothly joining two line segments ?
7. Give a  $3 \times 3$  transformation matrix to reduce an object to half its original size.
8. What is exterior clipping ?
9. What is an octree ?
10. What are the different basic functions of segment ?
11. What is rubber band method to create an object ?
12. What are the two types of graphical interaction devices ?

P.T.O.



## SECTION – B

Answer **any five** questions. **Each** question carries **five** marks.

(5×5=25)

13. Explain any five applications of computer graphics.
14. Define circle. Write DDA circle algorithm.
15. Explain general fixed point scaling.
16. Explain window-to-viewport co-ordinate transformation.
17. Explain parallel and perspective projection in 3D transformation.
18. What is the use of segments and explain segment attributes ?
19. Explain positioning techniques and constrains in interactive graphics.
20. Explain the different actions performed by a mouse in graphical input device.

## SECTION – C

Answer **any three** questions. **Each** question carries **fifteen** marks.

(3×15=45)

21. a) Explain the working of CRT with a neat diagram. 8  
 b) Differentiate between raster scan and random scan display. 7
22. a) Explain in detailed Bresenhams line drawing algorithm with a suitable example. 8  
 b) Explain different character attributes in detail. 7
23. a) Explain 2D basic transformation with suitable illustrations. 9  
 b) Consider a polygon with 4 coordinate points (60, 40) (20, 0), (60, 0), (40, 100) with scaling factor  $S_x = 2$  and  $S_y = 2$ . Plot the new coordinate point for the polygon. 6
24. a) Explain Cohen-Sutherland line clipping algorithm with an example. 10  
 b) Explain polygon surfaces. 5



25. Write a short notes on :

(5+5+5)

- a) Gravity field
- b) Dragging
- c) Selection.

SECTION - D

Answer **any one** question. **Each** question carries **ten** marks.

(1×10=10)

- 26. a) Explain the different attribute for line. 5
  - b) Explain two types of shear transformation. 5
  - 27. a) Explain 3D rotation in detail. 5
  - b) Write short notes on Bezier curves. 5
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