April 2025
B.A./B.Sc.
Sixth Semester
CORE – 14
COMPUTER SCIENCE
Course Code: CSC 6.21
(Computer Graphics)

Total Mark: 70   *Pass Mark: 28*
Time: 3 hours

Answer <u>five</u> questions, taking <u>one</u> from each unit.

UNIT–I

1. (a) Explain interactive and non-interactive graphics. Explain five
        applications of computer graphics.   2+5=7
    (b) Write a note on any seven computer graphics devices.   7

2. (a) List four advantages and four disadvantages of computer
        graphics.   7
    (b) Explain any seven graphics file extensions.   7

UNIT–II

3. (a) Write four differences between raster and random scan.   4
    (b) What do you mean by scan converting a circle? Write the steps
        to scan convert a circle using polynomial method.   1+4=5
    (c) Using DDA, scan convert a straight line with the endpoints (4,5)
        and (9,11).   5

4. (a) What is scan conversion? List three advantages of scan
        converting an object.   1+3=4
    (b) Plot all the points in a straight line with starting point at
        coordinate (1,2) and ending point at (7,14) using Bresenham's
        algorithm.   5
    (c) Using polar coordinate method, scan convert a circle with center
        (0,0) and radius 4.   5

UNIT–III

5. (a) What is a 2D translation? Apply scaling parameter 2 towards X axis, 3 towards Y axis and 3 towards Z axis and obtain the new coordinates of the object with coordinate points A(0, 3, 3), B(3, 3, 6), C(3, 0, 1), D(0, 0, 0).   2+5=7

   (b) What is 3D reflection? Given a line segment with starting point as (0, 0) and ending point as (4, 4). Apply 30 degree rotation clockwise direction on the line segment and find out the new coordinates of the line.   2+5=7

6. (a) What is 3D shearing? Given a triangle with coordinate points A(3, 4), B(6, 4), C(5, 6). Apply the reflection on the X axis and obtain the new coordinates of the object.   2+5=7

   (b) What is a 2D rotation? Apply the translation with the distance 1 towards X axis, 1 towards Y axis and 2 towards Z axis and obtain the new coordinates of the object with coordinate points A(0, 3, 1), B(3, 3, 2), C(3, 0, 0), D(0, 0, 0).   2+5=7

UNIT–IV

7. (a) Write a note on wireframe modelling and surface modelling.   6
   (b) Explain surface entities and its types in detail.   8

8. (a) What is curve? Explain the various types of curves in detail.   1+6=7
   (b) Explain CSG in detail.   7

UNIT–V

9. (a) What is a hidden surface? Explain the two types of hidden surface removal.   1+6=7
   (b) What is an animation? Explain the functions and applications of animation.   1+6=7

10. (a) What are the considerations for selecting or designing hidden surface algorithm? Explain in detail.   7
    (b) Explain CMYK and HSB color model in detail.   7

————————————————