National Institute of Technology Hamirpur (H.P.)
B. Tech (Mathematics & Computing)
End Semester Theory Examination-2023

Subject Name: Computer Graphics
Subject Code: MA-213
Max Marks: 50
Time: 09:30 AM - 12:30 PM

Semester: 3rd
Duration:180 Minutes
Date: 28/11/2023

INSTRUCTION TO CANDIDATES:
1. SECTION-A contains ten questions carrying two marks each.
2. SECTION-B contains three questions carrying five marks each.
3. SECTION-C contains five questions carrying three marks each.

Note: All questions are compulsory.

SECTION- A

1) What is the role of computer graphics in an organization?

2) What is circle clipping?

3) What is a pixel in computer graphics?

4) What are the applications of multimedia?

5) What is hypertext and hypermedia?

6) What is 3D scaling transformation?

7) Discuss input devices for interaction.

8) What is window?

9) Explain the random scan system.

10) Write a short note on color and shading models.

SECTION- B

1) What is 3D transformation? Explain 3D transformation techniques in detail.

2) What are hidden surface removal algorithms? Explain the Z-buffer algorithm in step-wise.

3) Draw a 2D triangle in the coordinate system with points as (20,0), (60,0), and (40,100). Apply a 45-degree rotation factor to find out new coordinates of the triangle and draw it on the coordinate system.

SECTION- C

1) What is BSP tree method? Discuss BSP tree method with an example.

2) Differentiate the Digital Difference Analyzer (DDA) algorithm with Bresenham's line drawing algorithm (minimum 5 differences).

3) Write an algorithm for ellipse generation.

4) What is the B-spline curve? Explain it with all properties and mathematical equations.

5) You have given window co-ordinates as A(20,20), B(90,20), C(90,70), and D(20,70). Point co-ordinates of the line are P1(70,30), and P2(80,10). Apply the Cohen-Sutherland algorithm for line clipping.