| | |
|---|---|
| **Name. _____** | **Printed Pages:01** |
| **Student Admn. No.: _____** | |

**School of Computer Science and Engineering**
**Back Paper Examination Even Semester (Non - Graduating Batches) – June 2024**
**[Programme: B.Tech ] [Semester: IV] [Batch: ]**

| | |
|---|---|
| **Course Title: Computer Graphics** | **Max Marks: 100** |
| **Course Code: E2UC402B / BTCS2401** | **Time: 3 Hrs.** |

***Instructions:***
1. *All questions are compulsory.*
2. *Assume missing data suitably, if any.*

| | | K Level | COs | Marks |
|---|---|---|---|---|
| | **SECTION-A (15 Marks)** **5 Marks each** | | | |
| **1.** | What is a frame buffer and how does a video controller interact with it in a raster scan display system? | K1 | CO1 | 5 |
| **2.** | Given a circle C with radius 10 and center coordinates (1, 4). Apply the translation with distance 5 towards X axis and 1 towards Y axis. Obtain the new coordinates of C without changing its radius. | K2 | CO2 | 5 |
| **3.** | Discuss the significance of points and lines in computer graphics and how they are typically represented and manipulated. | K1 | CO1 | 5 |
| | **SECTION-B (40 Marks)** **10 Marks each** | | | |
| **4.** | Explain how random scan displays work and discuss their advantages and disadvantages compared to raster scan displays. | K1 | CO1 | 10 |
| **5.** | Explain the Cohen-Sutherland and Liang-Barsky line clipping algorithms. How do these algorithms handle the clipping of lines against a rectangular clipping window? | K2 | CO2 | 10 |
| **6.** | Given a square object with coordinate points A(0, 3), B(3, 3), C(3, 0), D(0, 0). Apply the scaling parameter 2 towards X axis and 3 towards Y axis and obtain the new coordinates of the object. | K2 | CO3 | 10 |
| **7.** | Explain the concept of text clipping in computer graphics. What challenges are involved, and how are they addressed? | K3 | CO4 | 10 |
| | **SECTION-C (45 Marks)** **15 Marks each** | | | |
| **8.** | Compare the DDA (Digital Differential Analyzer) and Bresenham's line drawing algorithms | K2 | CO1 | 15 |
| **9.** | Explain basic geometric transformations (translation, rotation, scaling) in 2D graphics, and describe how they are represented using matrix representations and homogeneous coordinates. | K3 | CO2 | 15 |
| **10** | Discuss the basic illumination models used in computer graphics. Explain ambient light, diffuse reflection, specular reflection, intensity attenuation, color consideration, transparency, and shadows. | K2 | CO5 | 15 |