



**B.E DEGREE EXAMINATIONS: APRIL / MAY 2023**

(Regulation 2018)

Sixth Semester

**COMPUTER SCIENCE AND ENGINEERING**

U18CSE0009: Graphics and Multimedia

**COURSE OUTCOMES**

- CO1:** Illustrate graphics input and output primitives.[K<sub>3</sub>]  
**CO2:** Construct 2D and 3D geometric transformations on objects.[K<sub>5</sub>]  
**CO3:** Summarize the graphics modeling process.[K<sub>3</sub>]  
**CO4:** Apply the techniques of multimedia, compression, communication and authoring.[K<sub>3</sub>]  
**CO5:** Design a simple application with animation.[K<sub>5</sub>]

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 2 = 20 Marks)**  
**(Answer not more than 40 words)**

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|---|-----|-------------------|
| 1. Define aspect ratio with respect to CRT.   | CO1 | [K <sub>1</sub> ] |
| 2. What do you mean by output primitives? State two examples of it.   | CO1 | [K <sub>1</sub> ] |
| 3. Evaluate the result of translating a polygon with co-ordinates A(2,5),B(7,10) and C(10,2) by 3 units in X direction and 4 units in Y direction | CO2 | [K <sub>3</sub> ] |
| 4. Summarize the pipeline process for transforming world-coordinate scene to device coordinates.  | CO2 | [K <sub>1</sub> ] |
| 5. Distinguish between interpolation and approximation splines.   | CO3 | [K <sub>1</sub> ] |
| 6. What is the use of CMY colour model?   | CO3 | [K <sub>1</sub> ] |
| 7. What is a multimedia system? List any two characteristics of it.   | CO4 | [K <sub>1</sub> ] |
| 8. Differentiate between 2D and 3D animation.   | CO5 | [K <sub>1</sub> ] |
| 9. What is Virtual Reality? List any two applications of it.  | CO5 | [K <sub>1</sub> ] |
| 10. Enumerate the types of Multimedia authoring systems.  | CO4 | [K <sub>1</sub> ] |

**Answer any FIVE Questions:-**  
**PART B (5 x 16 = 80 Marks)**  
**(Answer not more than 400 words)**

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|-----|----|--|----|-----|-------------------|
| 11. | a) | Outline the steps in Bresenham's Line drawing algorithm.   | 8  | CO1 | [K <sub>2</sub> ] |
|     | b) | Apply Bresenham's algorithm to draw a line from (9,18) to (14,22).   | 8  | CO1 | [K <sub>3</sub> ] |
| 12. | a) | Let R be the rectangular window whose lower left hand corner is at L(-3,1) and upper right hand corner is at R(2,6). If the line segment is defined with two end points with A(-4,2) and B(-1,7), Apply when Sutherland line clipping algorithm & find<br>i) The region codes of the two end points<br>ii) Its Clipping Category<br>iii) Stages in the clipping operations | 8  | CO2 | [K <sub>3</sub> ] |
|     | b) | Find the transformation matrix that transforms the given square ABCD to half its size with centre still remaining at the same position. The co-ordinates of the square are A(1,1), B(3,1), C(3,3), D(1,3) and centre is at (2,2). In addition, find the resultant co-ordinates of square after applying the transformation   | 8  | CO2 | [K <sub>3</sub> ] |
| 13. | a) | Explain all the four cases of the Sutherland Hodgeman polygon clipping algorithm.  | 10 | CO2 | [K <sub>2</sub> ] |
|     | b) | Consider the square A(1,0), B(0,0), C(0,1) and D(1,1). Rotate the square by 45 degrees in anti-clockwise direction followed by reflection about X-axis.  | 6  | CO2 | [K <sub>3</sub> ] |
| 14. | a) | Relate about the various parallel projection methods in 3D graphics with necessary illustration.   | 10 | CO3 | [K <sub>1</sub> ] |
|     | b) | Explain about HSV and RGB color models.  | 6  | CO3 | [K <sub>1</sub> ] |
| 15. | a) | Define animation. Enumerate and explain the steps in animation sequence with suitable illustration.  | 10 | CO4 | [K <sub>1</sub> ] |
|     | b) | List any three features of multimedia systems. Explain about the various types of multimedia systems.  | 6  | CO4 | [K <sub>1</sub> ] |
| 16. |    | What is the need for distribution in multimedia systems? Elaborate on the components of distributed multimedia systems with a diagram.   | 16 | CO5 | [K <sub>1</sub> ] |

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