

Roll No.

12454

MCA 1st Semester (Regular/Re-appear/Improvement)

Examination – December, 2024

COMPUTER GRAPHICS & MULTIMEDIA

Paper : MCA-2104

Time : Three Hours] [Maximum Marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. *Compulsory* Question :

- (a) What are the different types of computer graphics ?
- (b) What is the difference between raster scan systems and random scan systems ?

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- (c) Why does we perform geometric transformations in 2D graphics ?
- (d) What is the purpose of homogeneous coordinates in 2D transformations ?
- (e) How does the Z-buffer method work for hidden surface removal ?
- (f) Explain the conditions for smoothly joining curve segments in computer graphics.
- (g) What are the components of multimedia ?
- (h) Explain the process of analog to digital conversion for audio.

UNIT - I

- 2. Discuss the flood-fill and boundary-fill algorithms. How do they differ, and where are they used in computer graphics ?
- 3. Explain anti-aliasing techniques in computer graphics. How do they improve the visual quality of images ?

UNIT - II

- 4. Discuss in detail the various 2D geometric transformations (translation, scaling, rotation, reflection and shearing) with matrix representations.

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- 5. Explain the viewing pipeline in 2D graphics. Discuss the process of window-to-viewport transformation in detail.

UNIT - III

- 6. Explain the Bezier and B-Spline curves in computer graphics. Discuss their applications and how continuity is maintained between curve segments.
- 7. Describe the illumination models used for rendering curved surfaces, such as the Phong and Gouraud shading models. Provide examples of where they are used.

UNIT - IV

- 8. Describe the steps involved in the process of animation. What are the common tools used for multimedia authoring ?
- 9. Explain the role of MIDI in multimedia systems. How is MIDI different from other audio formats ?

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