Question Paper Code: 96315

M.C.A. DEGREE EXAMINATION, FEBRUARY/MARCH 2014.

Third Semester

DMC 1934 – COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

(Regulations 2009)

Time: Three hours

Maximum: 100 marks

Answer ALL questions.

PART A — (10 x 2 = 20 marks)

1. Write the principle of DDA algorithm.
2. List the uses of line clipping and text clipping.
3. State how to obtain transformation matrix for 2D rotation about an arbitrary point.
4. List four types of curve generations.
5. Distinguish between parallel projection and perspective projection.
7. How to manage resources during multimedia transmission?
8. What is a colour gamut? From what limitation do all colour gamuts suffer in practice?
9. How are multimedia and virtual reality related? State the components that connect between the two.
10. What are the main differences between the target media for JPEG and GIF compression?

PART B — (5 x 16 = 80 marks)

11. (a) (i) Describe the difference between raster scan and random scan display with respect to storing information in memory and in displaying the stored information. (8)
(ii) Find new co-ordinates of line joining the points A(0,0), B(1,1) and C(5,2) to twice of its size while keeping C(5,2) fixed. (8)
Or

(b) What are the categories of any line segment for its visibility? and how they are identified in Cohen — Sutherland line clipping algorithm? Compare the merits with other algorithms. (16)
12. (a) Derive transformation matrix for 2-D transformations, translation, scaling and rotations. Give the use for such transformations. 

\[ \text{Or} \]

(b) (i) Differentiate between Spline curves and Beizer curves with illustrations. 
(ii) How to generate the curve using approximation method? Elaborate with appropriate examples.

13. (a) (i) Explain any two visible surface detection methods. 
(ii) Discuss on visualization and polygon rendering.

\[ \text{Or} \]

(b) (i) Discuss in detail any three color models. 
(ii) In the YIQ color model one of the three components stores luminance. What is the use of YIQ standard, and why having a luminance channel is useful?

14. (a) Explain the functionalities of text and graphics editor in a multimedia application and what are the other media composition? State the technical issues when these data types are integrated in a Multimedia System?

\[ \text{Or} \]

(b) How does MPEG audio compression achieve critical band approximation? List three coding methods in MPEG audio coding that exploit different perceptual characteristics of the human ear when hearing sound.

15. (a) (i) Discuss the operations needed to support a wide range of multimedia applications. 
(ii) Describe various synchronization issues. Explain Lip synchronization requirements and Pointer synchronization requirements.

\[ \text{Or} \]

(b) Elaborate on interactive video and video on demand.
M.C.A. DEGREE EXAMINATION, AUGUST 2013.
Third Semester

DMC 1934 — COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS
(Regulation 2009)

Time: Three hours Maximum: 100 marks

Answer ALL questions.

PART A — (10 x 2 = 20 marks)
1. State the representations for drawing lines and circles.
2. Differentiate line clipping with text clipping.
3. Give an example for two dimensional translation. Give the matrix representation.
4. Distinguish splines from Bezier curves.
5. Define depth cueing.
6. Sketch the CIE Chromaticity Diagram.
7. List the functionalities of Morphing.
8. What is meant by flicker effect? How do you overcome it?
9. Define synchronization in multimedia systems.
10. What is video on demand? List its types.

PART B — (5 x 16 = 80 marks)

11. (a) (i) Explain Cohen Sutherland line clipping algorithm with example. (8)

(ii) What are raster scan and random scan display in graphical systems? Compare the essential features of both. (8)

Or

(b) State Bresenham's algorithm and illustrate the algorithm for the line with end points (20, 10) and (30, 18). State merits and demerits of the algorithm. (16)
12. (a) Explain in detail the procedures of various methods used in the interactive picture construction. State the input methods. Give with examples.  

Or

(b) Write the two dimensional transformations of Scaling and Rotations with its matrix representations. Illustrate with necessary examples.

13. (a) Explain in detail the RGB, YIQ, CMYK colour models and the parameters involved in each of the above models. Compare the essential features and use of these models.

Or

(b) (i) Describe in detail the normalization transformation for an orthogonal projection and the oblique parallel projections in drafting and design.

(ii) Briefly explain how kinematics and dynamic are used to construct animation sequences.

14. (a) (i) Explain the various components of multimedia in Audio, Video and Images and how are multimedia data can be stored in database in respect of the above audio, video and images.

(ii) State various classification schemes of computer animation.

Or

(b) (i) Explain in detail how MPEG is used to compress both audio and video. Give their respective data streams.

(ii) How MIDI device is used to transmit the information between the components? Explain.

15. (a) Discuss various phases involved in Video and Tele – conferencing with suitable block diagrams.

Or

(b) (i) Explain how synchronization is achieved in various layers of synchronization reference model.

(ii) What is the major role played by video servers in multimedia retrieval systems? Illustrate the concept with examples.
M.C.A. DEGREE EXAMINATION, FEBRUARY/MARCH 2013.

Third Semester

DMC 1934 – COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

(Regulation 2009)

Time: Three hours Maximum: 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

2. What is ‘point’ clipping?
3. What is non-uniform scaling?
4. Present the 2D viewing pipeline.
5. What is ‘perspective projection’?
6. What is the purpose of identifying visible surfaces?
7. Name any two Image compression standards.
8. Name some popular digital video broadcast standards.
9. What is ‘collaborative computing’?
10. Identify the building blocks of ‘Video on Demand’ architecture.

PART B — (5 × 16 = 80 marks)

11. (a) Describe Bresenham’s line drawing procedure for lines with slopes > 1.
Use the procedure to scan convert a line with end points at [(2, 5), (5, 10)].

(16)

Or

(b) Explain any popular line clipping procedure and give an example.

(16)
12. (a) (i) Derive the homogeneous transformation matrix for 2D rotation about any arbitrary pivot point.  
   (ii) Scale a square with diagonally opposite vertices at [(2, 2), (4, 4)], with respect to the midpoint of the diagonal, with the scaling factors being 2, 0.5 respectively along x and y directions.

Or

(b) (i) Derive equations for window-viewport transformation.
   (ii) What are splines? Write notes on Bezier splines.

13. (a) (i) Derive the projection matrix for oblique parallel projection.
   (ii) Write short notes on RGB and YIQ color models.

Or

(b) (i) Write about popular animation techniques.
   (ii) Present any simple visible surface detection method.

14. (a) (i) What do you know about multimedia authoring? Discuss.
   (ii) Write about attributes, file formats, compression standards, editing software for Digital Audio.

Or

(b) (i) Describe the key features of any popular image editing software.
   (ii) Write about MPEG standard for video.

15. (a) (i) Write about Application Subsystem of Multimedia communication systems.
   (ii) What are the key challenges for multimedia databases?

Or

(b) (i) What do you know about ‘Virtual Reality’?
   (ii) What is skew in Lip synchronization? How is it corrected? Discuss.
M.C.A. DEGREE EXAMINATION, AUGUST 2012.
Third Semester

DMC 1934 — COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS
(Regulation 2009)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 x 2 = 20 marks)

1. What is raster scanning?
2. What are 'window' and 'viewport' in graphics terms?
3. Give the homogeneous transformation matrices for basic 2D transformations.
4. How are input devices logically classified?
5. Identify the contrast between parallel and perspective projections.
6. Define 'animation'.
7. Name a few popular video compression standards or formats.
8. Give an example of multimedia software application development one each for 'image' and 'audio'.
9. What are the popular transport layer protocols that support multimedia communication?
10. What is 'virtual reality'?

PART B — (5 x 16 = 80 marks)

11. (a) Explain midpoint circle drawing algorithm. Using the procedure, find the points on one of the octants of a circle centered at (4, 4) and having a radius of 6 units. (16)

Or

(b) Describe Bresenham's line drawing procedure, and use it to find points on a line between (2, 2) and (10, 4). (16)
12. (a) (i) Prove that uniform scaling and rotation form a commutative pair of operations. (8)

(ii) Derive equations for window-view port transformation. (8)

Or

(b) (i) Scale a square at [(1,1),(4,4)] by scaling factors 2 and 4, with respect to the vertex at (1,1). (8)

(ii) Write about Bezier splines. (8)

13. (a) Describe HSV and HLS color models in detail. (16)

Or

(b) Write brief notes on the following animation techniques.

(i) Key frame systems (8)

(ii) Morphing. (8)

14. (a) (i) Suggest guidelines for choosing text for PowerPoint presentations and illustrate with example. (8)

(ii) Write about the common attributes of an image. (8)

Or

(b) Describe the concepts, frameworks, issues and techniques in multimedia authoring. (16)

15. (a) Discuss the design and use of multimedia databases. (16)

Or

(b) How is multimedia synchronization achieved? Discuss with example the various techniques used. (16)
M.C.A. DEGREE EXAMINATION, FEBRUARY 2012.

Third Semester

DMC 1934 — COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

(Regulation 2009)

Time: Three hours

Maximum: 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is meant by resolution?
2. Define a clip window.
3. What are control icons?
4. Define view port.
5. What are the two types of projections?
6. What is a color model?
7. Write any two animation softwares.
8. What is the difference between image and video?
9. What is synchronization in multimedia systems?
10. What is the use of the virtual reality?

PART B — (5 × 16 = 80 marks)

11. (a) Explain in detail about color CRT monitors and flat panel displays with suitable diagrams.

Or

(b) Write the midpoint circle drawing algorithm and explain how it works with an example.
12. (a) Explain the different 2D transformations with examples and diagrams.

Or

(b) Discuss in detail about Bezier curves and surfaces.

13. (a) Explain about Parallel and Perspective projections with examples and diagrams.

Or

(b) Describe the RGB, YIQ, CMY and HSV color models.

14. (a) Explain how audio and video are used for multimedia.

Or

(b) Explain in detail about authoring in multimedia.

15. (a) Discuss about the application and transport subsystems in multimedia communication systems.

Or

(b) Write short notes on the following:
   (i) Characteristics of multimedia DBMS.
   (ii) Video conferencing.
PART A — (10 \times 2 = 20 marks)

1. Define aspect ratio.
2. List the types of clipping.
3. Enumerate reflection.
4. Distinguish between window port and view port.
5. What is mean by Perspective projection?
6. What is key frame?
7. List out the building blocks of multimedia.
8. What is MIDI?
10. What is a Virtual Reality Systems?

PART B — (5 \times 16 = 80 marks)

11. (a) Explain Bresenham’s line drawing algorithm with example. (16)

Or

(b) Discuss about cohen Sutherland line clipping algorithm. (16)
12. (a) Explain basic transformation methods. (16) 

Or 

(b) Explain Bezier Curves in detail. (16) 

13. (a) Write short notes on following: 

(i) XYZ color model (8) 
(ii) RGB color model. (8) 

Or 

(b) (i) Explain about Back face Detection method. (8) 
(ii) Describe about Depth buffer method for detection (8) 

14. (a) List and explain the basic tools that are required for the multimedia Software. (16) 

Or 

(b) Discuss in detail about animation. (16) 

15. (a) Illustrate video conferencing system. (16) 

Or 

(b) (i) Explain the synchronization issues in multimedia communication systems. (8) 
(ii) What is video on demand? Explain. (8)
M.C.A. DEGREE EXAMINATION, FEBRUARY 2011.

Third Semester

DMC 1934 — COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

(Regulation 2009)

Time: Three hours

Maximum: 100 marks

Answer ALL questions.

PART A — (10 x 2 = 20 marks)

1. What are the drawbacks of DDA line drawing algorithm?

2. What is text clipping?

3. Give the homogeneous matrix representations for the 3 basic transformations.

4. How is polygon data represented in Graphics applications?

5. What is the principle behind “Key Frame” based systems?

6. What is morphing?

7. Define “Hypertext”.

8. What are the basic building blocks of multimedia?

9. What are the transport layer protocols that support multimedia communications?

10. What do you understand by synchronization at “content level”?
PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe the architecture of a Raster Graphics system. (8)
(ii) Explain Bresenham’s line drawing algorithm. (8)

Or

(b) Explain Cohen-Sutherland line clipping algorithm. Illustrate with an example.

12. (a) (i) How a picture in a window is mapped onto viewport? Explain. (8)
(ii) Explain the various two dimensional transformations. (8)

Or

(b) (i) How are input devices logically classified? Explain. (8)
(ii) What are Bezier curves? Explain. (8)

13. (a) (i) Derive the perspective projection transformation matrix. (10)
(ii) Why is visual surface detection important in graphics? How are the detection techniques classified? (6)

Or

(b) Describe the following color models.
(i) RGB. (4)
(ii) YIQ. (4)
(iii) CMY. (4)
(iv) HSV. (4)

14. (a) (i) What do you mean by MPEG standard? Explain. (8)
(ii) Suggest some design guidelines for choosing text fonts for multimedia presentations. (8)

Or

(b) (i) How are multimedia applications developed using authoring software? Discuss. (8)
(ii) Give the most common features of audio editing software. (8)
15. (a) (i) Describe the issues in synchronization. (8)
(ii) How is image data stored in multimedia databases? (8)

Or

(b) Write in detail about two of the most popular applications of multimedia.