Reg. No. : [ ]

Question Paper Code : JK4209

M.C.A. DEGREE EXAMINATION, FEBRUARY/MARCH 2017.

(From Academic Year – 2015 – New Question Paper Pattern)

Second Semester

DMC 7204 — COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is text clipping?

2. Which algorithm is better to draw a circle? Why?

3. Write short notes on splines in 2D transformation.

4. Define morphing and tweening.

5. List out types of projections.

6. Define Keyframes.

7. Compare distributed systems with multimedia.

8. What is authoring?

9. List any two applications of multimedia systems.

10. Write the use of video conferencing.

PART B — (5 × 13 = 65 marks)

11. (a) Write down and explain DDA in detail. (13)

Or

(b) Explain in detail the Cohen-Sutherland line clipping algorithm with an example. (13)

12. (a) (i) Explain two dimensional scaling with a 2D object. (7)

(ii) Obtain transformation matrix for rotating an 2D object about a specified pivot point. (6)

Or

(b) Explain Bezier curves in detail. (13)

13. (a) Discuss about visible surface detection methods in detail. (13)

Or

(b) (i) Explain design of animation sequences and animation functions. (7)

(ii) Briefly explain RGB color model in detail. (6)

14. (a) Describe in detail the softwares used in multimedia systems. (13)

Or

(b) Write short notes on:

(i) Audio in Multimedia. (7)

(ii) Graphics in Multimedia. (6)

15. (a) Explain in detail about Multimedia communication systems. (13)

Or

(b) List out the synchronization issues faced in multimedia systems. Explain it in detail. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Write a program to simulate the linear, two-dimensional motion of a pattern filled circle inside a green colored rectangle area, the circle's initial velocity is to be given, and the circle is to rebound from the walls with the angle of reflection equal to the angle of incidence. (15)

Or

(b) (i) What are issues faced while using virtual reality concepts in multimedia applications? Explain it. (7)

(ii) How an interactive video system is helpful for an automobile company for increasing sales? Discuss it. (8)

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Question Paper Code : KJ1360

M.C.A. DEGREE EXAMINATION, FEBRUARY/MARCH 2017.

Second Semester

DMC 7204 — COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

(Regulations 2013)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List down the merits of Digital Differential algorithm.

2. What do you mean by refresh CRT?

3. Define a spline curve with any two properties.

4. Write down the shear transformation matrix.

5. List any four real-time animation techniques.

6. Give the single point perspective projection transformation matrix when projections are placed on the z-axis.

7. Define the term "Video frame interleaving".

8. List out the integral components of multimedia system.

9. What are the advantages of virtual reality in multimedia applications?

10. State the pros and cons of video on demand.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe the Bresenham's line drawing algorithm with a suitable example.

(ii) Explain in detail Liang-Barsky line clipping algorithm.

Or

(b) (i) What are the major differences between a symmetric DDA and a simple DDA? Explain.

(ii) Discuss in detail about the Cohen-Sutherland line clipping algorithm with an illustration.

12. (a) (i) Write a short note on window view port mapping transformation with an example.

(ii) Elaborate in detail about the scaling and rotations based on two dimensional transformations.

Or

(b) (i) Explain the various properties of Bezier curves.

(ii) Discuss in detail about the interactive input methods with illustrations.

13. (a) (i) Compare and contrast between the RGB and HSV colour models in detail.

(ii) Enumerate in detail about visualization and polygon rendering techniques with their merits.

Or

(b) (i) Elaborate in detail about the parallel and perspective projection methods of 3-D transformations.

(ii) Discuss in detail about the key frame systems and morphing.

14. (a) (i) Specify the impact of isochronicity in designing full motion video capture boards and explain it with neat illustrations.

(ii) Discuss in detail about multisource multi-user authoring systems with suitable example.

Or

(b) (i) Write a brief note on multimedia authoring and editing tools. Illustrate with an example.

(ii) Explain how video animation differs from full-motion video.

15. (a) (i) Classify the various MDBMS applications and explain each category with suitable example.

(ii) Specify the synchronization issues that occur in coordinating various multimedia elements in a complete multimedia presentation. Explain it in detail with a suitable example.

Or

(b) (i) Write a short note on the video conferencing applications of multimedia with their merits and demerits.

(ii) Discuss in detail about the multimedia communication system with a neat block diagram.

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Question Paper Code : K1360

M.C.A. DEGREE EXAMINATION, AUGUST/SEPTEMBER 2016.

Second Semester

DMC 7204 — COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

(Regulations 2013)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define vanishing point with an example.

2. What is meant by aliasing?

3. Differentiate splines from Bezier curves.

4. What is surface rendering?

5. What is Perspective projection?

6. List the characteristics of Blobby Object.

7. Write the concept of VGA mixing?

8. Define Holography?

9. What are the factors that affect video performance?

10. What are the main characteristics of voice recognition system?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the basic concept of Midpoint ellipse algorithm. Derive the decision parameters for the algorithm and write down the algorithm steps. (8)

(ii) Derive Bresenham's algorithm for lines with slope magnitude> 1. (8)

Or

(b) (i) Explain the Cohen Sutherland line clipping algorithm. (8)

(ii) Obtain a transformation matrix for rotating an object about a specified pivot point. (8)

12. (a) (i) Explain about socket, connect, bind, listen and accept functions. (8)

(ii) Explain two dimensional Translation and Scaling with an example. (8)

Or

(b) (i) What is polygon clipping? Explain Sutherland-Hodgeman algorithm for polygon. (8)

(ii) Perform a 60° rotation of object A[2, 1], B[5, 1], C[5, 6] in clockwise direction and give the coordinates of the transformed objects. (8)

13. (a) Derive the 3D transformation matrix for rotation about

(i) an arbitrary axis (8)

(ii) an arbitrary plane. (8)

Or

(b) (i) Explain three dimensional geometric and modeling transformations in detail. (8)

(ii) Draw the CIE chromaticity diagram and explain. (8)

14. (a) (i) Explain the different file formats used in multimedia. (8)

(ii) Write short notes on multimedia system architecture. (8)

Or

(b) (i) Explain Database Organization for Multimedia Applications. (8)

(ii) Explain various multimedia interface standards. (8)

15. (a) Define MIDI. List its attribute. Compare and contrast the use of MIDI and digitized audio in multimedia production. (16)

Or

(b) (i) Briefly explain integrated document management in multimedia. (8)

(ii) Explain how synchronization is achieved in various layers of synchronization reference model. (8)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : J1399

M.C.A. DEGREE EXAMINATION, AUGUST/SEPTEMBER 2016.

(From Academic Year – 2015 – New Question Paper Pattern)

Second Semester

DMC 7204 — COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

(Regulations 2013)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define data glove.

2. Rasterize the line having end points A(5,6), B(10,10) using Bresenham's line drawing algorithm.

3. Define spline.

4. State the importance of Bezier curves.

5. Give the transformation matrix for 3D z-axis rotation.

6. What is meant by morphing?

7. What is the difference between image and video?

8. State the design issues of multimedia authoring?

9. Write about the QoS layered model for multimedia communication.

10. List any four applications of interactive video.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Differentiate random scan and raster scan displays. (6)

(ii) Explain working of display file interpreter and video controller. (7)

Or

(b) (i) Compute points on line using mid point line drawing algorithm for a line passing through end points A(2, 3) and B (10, 8). (6)

(ii) Discuss the DDA line drawing algorithm with necessary derivation. (7)

12. (a) (i) Explain two dimensional Translation and scaling with example. (6)

(ii) How a picture in a window is mapped onto viewport? Explain. (7)

Or

(b) (i) Perform a 45 degree rotation of triangle A(0,0),B(1,1),C(5,2). (5)

(ii) Explain Sutherland Hodgman polygon clipping algorithm. (8)

13. (a) Explain the back face detection method with the algorithm. (13)

Or

(b) (i) Describe about parallel projection. (6)

(ii) Explain in detail about RGB color model and CMY color model. (7)

14. (a) Explain how audio and video are mixed in multimedia system. (13)

Or

(b) What are the advantages of animation? Explain the different types of animation? (13)

15. (a) Illustrate video conferencing system with required diagram and components used for the system. (13)

Or

(b) Explain the principles and working of video on demand. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Given window diagonal corner as (10,10) and (100,100) and view port's corners as (5,5) and (50,50). Find window to view port transformation matrix. Given a line in the window from (10,50) to (50,100) find the transformed object in the view port. (15)

Or

(b) You are a multimedia application developer and you are involved in the process of developing a web portal for news. Explain in detail the design process involved, the implementation challenges and the testing process to be done using an authoring tool. (15)

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Question Paper Code : S1360

M.C.A. DEGREE EXAMINATION, FEBRUARY/MARCH 2016.

Second Semester

DMC 7204 – COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

(Regulations 2013)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define resolution.

2. How do you clip a point?

3. Write the matrix representation of 2D rotation.

4. Compare Spline and Bezier curves.

5. Brief about scientific visualization.

6. State various functions of morphing.

7. List the components of multimedia systems.

8. How animation is used in multimedia presentation?

9. Discuss any two classes of multimedia database.

10. State the types of video on demand.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss about raster graphics system. (8)

(ii) Explain Bresenham's line drawing algorithm with example. (8)

Or

(b) Discuss Cohen Sutherland line clipping with example. (16)

12. (a) The triangle Q is defined by the points $a(2,6)$, $b(2,10)$ and $c(16,8)$. Translate Q by 4 in x direction and -3 in y direction. Rotate in anti-clock wise by 90° about (0,0). Write the transformation matrices and resultant triangle in Cartesian plane. (16)

Or

(b) (i) Discuss about polygon surface. (8)

(ii) Explain logical classification of input devices. (8)

13. (a) (i) Explain HSV color model with HSV hex cone. (8)

(ii) Write short notes about Morphing and simulation acceleration. (8)

Or

(b) (i) Describe about parallel projection. (8)

(ii) Describe scan line method for removal of hidden surface. (8)

14. (a) Discuss any two hardware and software components of multimedia systems. (16)

Or

(b) (i) Discuss about MPEG video standard. (8)

(ii) Explain about multimedia authoring. (8)

15. (a) Discuss the issues of synchronization. (16)

Or

(b) Illustrate video conferencing system with required diagram and components used for the system. (16)

Reg. No. | | | | | | | | | | | | |

Question Paper Code : 80360

M.C.A. DEGREE EXAMINATION, AUGUST 2015.

Second Semester

DMC 7204 – COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

(Regulations 2013)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Compare and contrast between raster graphics and vector graphics.

2. Define clip window in a graphics system.

3. Write the transformation matrix reflecting 'window to view port' transformation.

4. Differentiate Splines with Bezier Curves.

5. What are the basic principles behind "Key Frame Systems"?

6. Draw a neat sketch of CIE chromaticity diagram.

7. Name some of the hardware devices that form an integral part of multimedia.

8. Define morphing and list out the functionalities of Morphing.

9. What is meant by video on demand?

10. Write the significance of virtual reality in multimedia systems.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Write the Bresenham's circle drawing algorithm. (8)

(ii) Explain the Cohen Sutherland line clipping algorithm with suitable illustrations. (8)

Or

(b) (i) Describe Bresenham's line drawing procedure with an example. (12)

(ii) How does the Bresenham's line drawing algorithm can be modified so that antialiasing effects are reproduced while generating the straight lines can be handled? (4)

12. (a) (i) Let R be the rectangular window whose lower left hand comer is at L(–3, 1) and upper right hand corner is at R(2,6). Find the region codes for the points A(–4, 2), B(–1, 7), C(–1, 5), D(3, 8), E(–2, 3), F(1, 2), G(1, –2), H(3, 3), I(–4, 7) and J(–2, 10). Find whether the line segments AB, CD, EF, GH and IJ require clipping or not. (8)

(ii) Explain in detail the procedures of various methods used in the interactive picture construction. State the input methods. (8)

Or

(b) (i) Scale a square at (0,0) (0,1) (1,1) (1,0) and form a new image transformed which will show the image rotated 45 degree counter clock wise and scaled by 0.5 from the last image displayed. The image should remain centered on the screen. (6)

(ii) Explain the Sutherland-Hodgernan polygon clipping algorithm with an example. (10)

13. (a) (i) Find a matrix for parallel projection onto the plane $3x + y + 4z + 1 = 0$ when (1) an orthographic projection is used (2) an oblique projection is used. (4 + 4)

(ii) Write brief notes on RGB, YIQ and HSV color models. (8)

Or

(b) (i) Explain about back face detection method with suitable illustrations. (8)

(ii) Discuss in detail about Depth buffer method for detection with suitable example. (8)

14. (a) (i) With the help of a block diagram, explain MPEG audio compression algorithm. (10)

(ii) Explain how MIDI devices are used to transmit the information between the components. Give example. (6)

Or

(b) (i) Write a short note on various classification schemes of computer animation. Explain each scheme with suitable examples. (10)

(ii) Elaborate the multimedia authoring techniques. (6)

15. (a) (i) Write about the design and significance of multimedia database. Also specify the key challenges involved in its design. (8)

(ii) Discuss the various phases involved in video conferencing system with a neat sketch. (8)

Or

(b) (i) Explain in brief about the synchronization related problems in multimedia communication systems. (8)

(ii) What is the significant role played by video servers in multimedia retrieval systems? (8)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 22362

M.C.A. DEGREE EXAMINATION, FEBRUARY/MARCH 2015.

Second Semester

DMC 7204 — COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define aspect ratio.

2. Brief about text clipping.

3. Write transformation equations and transformation matrix for scaling.

4. Define convex hull.

5. Compare parallel projection with perspective projection.

6. Draw the unit cube representation for RGB color model.

7. Define morphing.

8. List the components of multimedia tools.

9. State the building block of video on demand.

10. What is meant by virtual reality?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the mid-point circle drawing algorithm. (16)

Or

(b) Discuss cohen-sutherland line clipping algorithm. (16)

12. (a) With required diagrams and examples, explain 2D transformation. (16)

Or

(b) Describe about Bezier curves and surface. (16)

13. (a) Write short notes on following :

(i) Back face detection. (8)

(ii) Area subdivision method. (8)

Or

(b) Discuss any three color models. (16)

14. (a) Discuss in detail about animation. (16)

Or

(b) Express how audio and video are mixed in multimedia. (16)

15. (a) (i) Discuss about synchronization issues. (8)

(ii) Illustrate Video conferencing. (8)

Or

(b) Explain in detail about Virtual reality. (16)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 46359

M.C.A. DEGREE EXAMINATION, AUGUST 2014.

Second Semester

DMC 7204 — COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

(Regulations 2013)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the types of text clipping.
2. Rasterize the line having end points A(5, 6), B(10,10) using Bresenhams line drawing algorithm.
3. Give the explicit form of the 3 × 3 matrix representing the transformation: scaling by a factor of 2 in the x direction.
4. Write down the expression of the B spline curve.
5. Give the principle of key frame animation.
6. Define orthographic projection and give one example.
7. Compare and contrast Gif and Jpeg image.
8. How does a joystick operate?
9. Write about the Qos layered model for multimedia communication.
10. List any four applications of interactive video.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Using Bresenhams circle generating algorithm determine the pixel position for drawing a circle with centre as origin and radius 8 and the circle to be placed in the first quadrant. (8)

(ii) Differentiate random scan and raster scan displays. (8)

Or

(b) (i) A clipping window ABCD is specified as A(0, 0), B(40, 0) C(40, 40). D(0, 40) Clip the two lines P(–20, 70) Q(20, 30) and R(50, 10) S(70, 70) against the window. Use a standard line clipping algorithm to find visible portions of the line. (8)

(ii) Discuss on the graphics softwares used to generate pictures, graphs and charts. (8)

12. (a) (i) Find a normalization transformation from the window whose lower left corner is (0, 0) and upper right corner is (8, 6) on the normalized device screen so that the aspect ratio is preserved. Assume that x extent is from 0 to 1 for the viewport. (8)

(ii) Discuss the nature of blending functions used in Bezier curve formulation. (8)

Or

(b) (i) Reflect a diamond shaped polygon whose vertices are A(–1, 0) B(0, –2) C(1, 0) and D(0, 2) about the horizontal line $y = 2$ and then translate it by a factor of (2, 0). (8)

(ii) Explain about the interactive picture construction techniques in detail. (8)

13. (a) (i) Write a procedure to obtain different parallel projection views of a polyhedron by first applying a specified rotation. (8)

(ii) Explain the visual representations for vector and multi variate data fields. (8)

Or

(b) (i) Write down a procedure for generating a wire frame display of a polyhedron with the hidden edges of the object shown as dashed lines. (8)

(ii) Explain the YIQ and HSV colour models in detail. (8)

14. (a) Discuss the digitization principle of audio. What is MIDI? Explain the advantages and disadvantages of MIDI over Digital audio. (16)

Or

(b) You are a multimedia application developer and you are involved in the process of developing a web portal for news. Explain in detail the design process involved, the implementation challenges and the testing process to be done using an authoring tool. (16)

15. (a) (i) Explain the Group communication architecture using the support model in detail. (8)

(ii) Discuss how multimedia data can be stored in databases. Explain the above by taking example from different media. (8)

Or

(b) Write short notes on :

(i) Virtual reality (5)

(ii) Live and synthetic synchronization (5)

(iii) Media entertainment–Games. (6)