CS8092 COMPUTER GRAPHICS AND MULTIMEDIA

IMPORTANT QUESTIONS AND QUESTION BANK

UNIT I - ILLUMINATION AND COLOR MODELS

2-Marks

1. Classify the nature of line primitive in graphics?
2. What do you mean by 'color model'?
3. What is scan conversion?
4. What is the difference between Bresenham's and DDA line drawing algorithm?
5. What do you infer by complementary colors and primary colors?
6. Point out, how Y,I,Q represent in YIQ color model?
7. Applying DDA algorithm to rasterize the line from (0,0) to (6,7)?
8. Applying the use of error term in Bresenham's line drawing algorithm?
9. Write the conversion matrix of CMY to RGB representation?
10. What would you Understanding the Octant symmetry of a circle?

Part-B

1. Use the midpoint method to derive decision parameters for generating points along a straight line path with slope in the range 0<m<1. Compose that the midpoint decision parameters are the same as those in the Bresenham's line drawing algorithm?
2. Describe about the Bresenham's ellipse drawing algorithm?
3. Using midpoint circle algorithm calculate the pixel that will be put ON for an origin center at (4,5) of a circle with radius 4?
4. Make a detailed comparison of all color models?
5. Explain in detail about halftone patterns and dithering techniques in detail?
6. Illustrate the basic illumination model in detail?
7. Describe about the various types of shading?
8. Write a short notes on RGB and HSV color models?
9. Explain the basic concepts of Midpoint ellipse algorithm. Apply the decision parameter for the algorithm and write down the algorithm steps?
10. Consider the line from (0,0) to (-8,-4).Use general Bresenham's line algorithm to rasterize this line. Evaluate and tabulate all the steps involved?
11. Write down and explain the midpoint circle drawing algorithm. Assume 10 cm as the radius and co-ordinate origin as the centre of the circle?
12. Explain about additive and subtractive color models in detail?
13. Explain different light source models with illustration? Explain the following 1.Ambient illumination 2.Diffuse Reflection 3.Specular

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reflection?

14. Depict and discuss the HSV and HLS color models in detail?
    Discuss briefly on standard primaries and chromaticity diagram?
15. Discuss about the properties of light.? Interpret light source in
    detail?

UNIT II TWO-DIMENSIONAL GRAPHICS

2-Marks

1. List out the basic geometric transformation?
2. What is point clipping and line clipping?
3. Point out, how you will clip a point?
4. Define - View Up Vector?
5. Outline viewing pipeline?
6. What is the effect of inverse transformations?
7. Define text clipping?
8. Apply the equation for homogeneous transformation?
9. What is curve clipping?
10. Distinguish between window and viewport?

Part -B

1. Describe 2D geometric transformations? Show that two
   successive reflections about the coordinate axes is equivalent to
   a single rotation about the coordinate origin?
2. Discuss about matrix representation and
   homogeneous coordinates? Give composite transformation for
   translation and rotation?
3. Illustrate with example the available twodimensional geometric
   transformations?
4. Scale a square ABCD A(0,0) , B(3,0),C(3,3),D(0,3) three units
   in X direction and three units in Y direction? Explain the brief
   notes on pivot point rotation of an object?
5. How would you transform an object from one coordinate system
   to another coordinate system? Give a brief note on
   twodimensional viewing transformation pipeline?
6. What are the stages involved in 2D viewing
   transformation pipeline? Describe briefly about each stage?
   Describe in detail about viewing coordinate reference frame?
7. List and Explain 2D viewing functions? Compare between
   window port and view port?
8. Analyze the window to viewport coordinate transformation?
9. Show the different types of clipping operations with neat
   diagram? Write short notes on exterior clipping?
10. Explain Cohen-Sutherland line clipping with example?
    Summarize the notes on clipping against
    rectangular boundaries?
11. Examine the Sutherland Hodgeman polygon clipping

algorithm with example? Explain the possible relationships between the line positions and a standard rectangular clipping region?

12. Explain in brief on point and curve clipping? Point out about text clipping techniques?

13. Use Cohen Sutherland algorithm to clip the line P1(70,20) and p2(100,10) against a window lower lefthand corner (50,10) and upper righthand corner (80,40)?

14. Explain with neat diagram of Processing the vertices of the polygon through the boundary clipping pipeline using Sutherland Hodgeman polygon clipping algorithm?

15. At R be Rectangular window whose lower left head corner is at L (-3,1) and upper right head corner is at R (2,6). Find the region codes for the endpoints A (-4,2), B(-1,7), C(-1,5),D(3,8),G(1,-2),H(3,3),I(-4,7),and J(-2,10) ?

UNIT III THREE-DIMENSIONAL GRAPHICS

2-Marks

1. Define Quadratic surface?
2. What is blobby object?
3. How do you represent sphere in three dimensions??
4. List the classifications of visible surface detection algorithm?
5. Define Uniform B-Spline curve with example?
6. Compare orthographic and oblique parallel projections?
7. Formulate the single point perspective projection transformation matrix when projectors are placed on Z-axis?
8. Classify the common representation in solid modeling technique?
9. Differentiate: Parallel and perspective projections?
10. What do you infer about polygon surface?

Part-B

1. With suitable examples describe 3D transformations (i) Rotation (ii) translation?
2. Write short notes and analyse on the list given below (i)Polygon surfaces and Curved line surfaces? Quadratic surfaces?
3. With suitable examples discuss the following (i)Reflection and Scaling? (ii) shearing?
4. (i)Describe B spline and Bezier surfaces? (ii)Tabulate the advantages and disadvantages of B spline surfaces over Bezier surfaces?

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5. Explain and illustrate three dimensional display methods with example? Illustrate Blobby objects and examples?

6. (i) Describe in brief parallel projections with examples?
   (ii) Describe in brief perspective projections with examples?

7. Explain and analyse on Clipping in 3D for the following
   (i) Normalized view volumes and Viewport clipping
   (ii) Clipping in homogeneous coordinates?

8. Describe on the following visible surface detection methods (i) Depth –Buffer method and A-Buffer method?
   (ii) Back face detection?

9. (i) Show the general characteristics of B spline curves?
   (ii) Demonstrate uniform and cubic periodic B splines curves?

10. Given the plane parameters A,B,C,D for all surfaces of an object, device and algorithm to determine whether any specified points is inside or outside the object?

11. What are the two advantages of B-splines over Beizer curve? Briefly explain how curves are generated using B-spline function and properties of B-Spline curves?

12. Evaluate the 3D transformation matrix rotation about an arbitrary axis and arbitrary plane?

13. Explain different types of projection in detail and also explain the perspective projection for projecting 3D objects on a 2D surface?

14. Explain and illustrate the various representation schemes and types of spline?

15. Construct three dimensional transformations with example? Compare parallel projections from perspective projections?

UNIT IV MULTIMEDIA SYSTEM DESIGN & MULTIMEDIA FILE HANDLING

2-Marks

1. Write short notes on multimedia element?
2. What is meant by multimedia database and list out its characteristics?
3. Show the basic objects of multimedia?
4. Point out basic objects of multimedia systems?
5. Write about how are image annotation useful for information systems?
6. Show the data objects used in multimedia system?
7. Classify the methods of defining objects for multimedia systems?
8. Assess the challenges in multimedia databases?
9. Relate the preferred database management systems for multimedia data?
10. Rearrange the types of file formats standards for data?

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Part-B

1. What are the evolving technologies for multimedia systems? Explain them? Describe multimedia system architecture of a multimedia workstation environment?
2. Describe in detail about multimedia database?
3. Discuss multimedia applications in detail?
4. Show how to define objects for multimedia system? Illustrate short notes on multimedia data interface standards?
5. Explain How will you design the network architecture for multimedia system?
6. Derive the issues involved in multimedia storage and retrieval?
7. What are the types of compression available in multimedia? Explain any two types of compression technology? Describe about Digital audio and voice in multimedia I/O technologies?
8. Explain how does RAID technologies help in efficient storage and retrieval of multimedia data?
9. Give a detailed summary of MIDI?
10. Illustrate briefly about WORM technology. How does a magneto optical technology differ from WORM technology?
11. Explain the MPEG encoder with sequence of events for MPEG? Explain CGA in detail?
12. Explain briefly about multimedia I/O technologies? Explain briefly about types of voice recognition system?
13. In a document imaging system where would you compress the image in the scanner node, in host system, or in the storage node? Examine the implications of where compression and decompression take place in a document imaging system?
14. Develop a simple multimedia application that receives one of the biometrics of an employee and announces the status of matching with the records along with suitable displays?
15. Explain How a multimedia application used in your current college or work environment?

UNIT V – HYPERMEDIA

2-Marks

1. What is meant by multimedia authoring system?
2. What is Simulation loop?
3. Classify the characteristics of Document store?
4. Define Large Capacity file system?
5. Prepare the list of any four kinds of user interface development tools?
6. Define video panning?
7. What are the functions of an object request broker in managing distributed multimedia objects?
8. Formulate the essential steps needed for designing a good hypermedia system?
9. List the pros and cons of linking and embedding multimedia objects?
10. Classify the components of a distributed multimedia application?

Part-B

1. Explain the various types of database replication techniques used in handling very large distributed databases? Explain about the Hypermedia Message Components?

2. Write a short note on following (i) Explain about Mass storage for multimedia servers (ii) Explain in detail about Multi server network topologies?

3. What is editing features? Analyze it briefly? Explain Integrated multimedia message standards?

4. Generalize full motion video authoring system? Explain the process of creating hypermedia messages?

5. Describe the common forms of navigation for information access? Explain any two components of a typical multimedia application environment?

6. Illustrate about distributed multimedia systems?

7. Discuss in brief about hypermedia linking and embedding? Give in detail about transaction management for distributed multimedia database systems?

8. Describe about the popular user interface design metaphors? List out and define briefly about playback issues for image audio and video objects?

9. Chart the navigation through an application for editing a hypermedia mail message. What menu items are required for this application? Can the user customize this sequence? Describe Hypermedia messaging?

10. Describe mobile messaging? Compare multimedia system and hypermedia system?

11. Show the features and facilities incorporated in any one of the integrated document management systems?

12. Write short notes on (i) Object Revision Management (ii) Components of a distributed multimedia system (iii) Metaphors for multimedia applications?

13. How would you address the requirements for dynamic customization of display resolution to suite the destination system on which an object is being rendered? What happens if the resolution of the display device is higher than the resolution of the stored object?

14. How does video conferencing related to hypermedia messaging? What are the implications of building a system where the user starts with video conferencing and switches to integrated stored messaging?

15. Develop a design scheme for automatic load balancing of video objects in a cross enterprise wide area network. What are the main design issues that must be addressed.?

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