d) Describe an illustrative example of procedural technique? Why are such techniques useful in computer animation?

OR

Briefly describe the architecture of multimedia. Discuss its various components and elaborate them.

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Total No. of Questions : 5] *[Total No. of Printed Pages : 4*

Roll No .....

CS-504

B.E. V Semester

Examination, December 2016

Computer Graphics and Multimedia

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each questions are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) What is Flickering on screen? How can the flickering be overcome?

b) Explain the term aliasing. How is the concept of filtering related to anti-aliasing?

c) Discuss the advantages and disadvantages of the bitmapped and the outlined font rendering methods.

d) What are the steps required to plot a line whose slope is between 45° and 90° using Bresenham's method?

OR

Write down the algorithm for drawing a circle using midpoint circle drawing. Implement your algorithm to draw a circle of radius 10.

2. a) Explain homogeneous coordinate system. Why do we need it in modelling transformation?

   b) What are the new co-ordinates of the point P(2, –4) after rotating it by 30° about origin?

   c) Determine the maximum and minimum number of operations required to clip the line using the Cohen-Sutherland clipping algorithm.

   d) Consider a clipping window with corner points (1, 1), (5, 1), (5, 5) and (1, 5). A square with vertices (3, 3), (7, 3), (7, 7) and (3, 7) needs to be clipped against the window. Apply Sutherland Hodgman algorithm to perform clipping.

OR

Find the form of the matrix for reflection about a line L with slope m and y intercept (O, b). Show clearly all the steps while deriving the matrix.

3. a) How coherence is useful in hidden surface removal?

   b) Write down the problems associated with halftoning.

   c) Derive the iterative Gouraud shading algorithm. What are its limitations?

   d) Find a transformation Av which aligns a given vector V with the vector k along the positive Z axis.

OR

Discuss the importance of hidden surface removal in a 3D graphics system. What are the broad closser of hidden surface removal methods? Write each class in brief with its pros and cons.

4. a) Explain the term hypermedia. What differentiates it from multimedia?

   b) Write down the components of an audio system.

   c) Explain the idea of authoring metaphor. Write down any three metaphors used for multimedia content creation.

   d) What are the main steps involved in H.261 video coding? Describe the format of a H.261 compliant video file.

OR

Discuss the main difference of MPEG-1 video standard from H.261 with illustrative diagram. How is the MPEG-1 video file structured?

5. a) Mention the principles of animation. How do the principle help computer animation?

   b) Write a short note on multimedia databases.

   c) Discuss the main stages of JPEG compression. How is a JPEG file structured?