C1-R4: ADVANCED COMPUTER GRAPHICS

NOTE :

1.	**Answer question 1 and any FOUR from questions 2 to 7.**
2.	**Parts of the same question should be answered together and in the same sequence.**

Time: 3 Hours **Total Marks: 100**

1. (a) What do you mean by Raster animations ?

   (b) What is Key-frame system used in Animation ?

   (c) Explain the CMYK Color model. Where it is used ?

   (d) What are the types of perspective projections ?

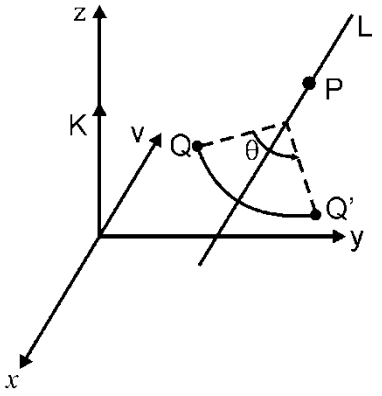
   (e) What do you mean by Antialiasing ?

   (f) Bezier curve touches first and last control point. Why ?

   (g) Discuss in brief the word Ray Casting.

(7×4)

2. (a) Say 'L' be an axis of rotation specified by a direction vector 'V' and a location point 'P'. Find the transformation for rotation of theta about L. Refer to the figure below:



   (b) Explain how Octrees are used to represent the solid model.

(10+8)

3. (a) Find a normalization transformation from the window with lower left corner at (0,0) and upper right corner at (4,3) onto the normalized device screen so that aspect ratios are preserved.

(b) What is Non-Uniform Non rational B-Spilne ? Explain with examples.

(9+9)

4. (a) Explain the difference between RGB & HSV color model. What is Hue and Saturation ?

(b) Discuss any 5 basic principles of animation out of standard 12.

(8+10)

5. (a) Discuss the Gouraud versus Phong shading.

(b) What are the usages of Z-Buffer algorithm ?

(9+9)

6. (a) For solid object modelling, discuss the advantages of Binary space partitioning trees.

(b) Discuss the polygon clipping algorithm which works by extending each line of the convex clip polygon in turn and selecting only vertices from the subject polygon that are on the visible side.

(9+9)

7. (a) Explain Back-face culling algorithm with an example.

(b) In Ray tracing's, Effects such as reflections and shadows, which are difficult to simulate using other algorithms (such as scanline rendering or ray casting etc) are a natural result. Are there any disadvantages of ray tracing algorithm ? If yes discuss those.

(9+9)

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