[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2127)

17218(N)

B. Tech 5th Semester Examination

Computer Graphics (CBS)

CS-503

Time : 3 Hours **Max. Marks : 60**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five question in all, selecting one question from each of the sections A, B, C and D and all the subparts of the question in section E.

SECTION - A

1. (a) Compare and contrast raster and vector graphics system with an example. (6)

   (b) Write the difference between shadow mask and penetration CRT with example. (6)

2. (a) What are the different design issues involved in display processors? Explain with example. (6)

   (b) What are the characteristics of flat panel display? Explain with example. (6)

SECTION - B

3. (a) A polygon has four vertices located at A(20, 10), B(60,10), C(60,30), D(20,30). Calculate the vertices after applying a transformation matrix to double the size of polygon with point A located on the same place. (6)

   (b) The reflection along the line y=x is equivalent to the reflection along the X axis followed by counter clock wise rotation by 'μ' degree. Find the value of 'μ'. (6)

4. (a) Explain composite transformation with an example. (6)

   (b) Discuss on Area subdivision method of hidden surface identification algorithm. (6)

SECTION - C

5. (a) A cube has its vertices located at A(0,0,10), B(10,0,10), C(10,10,10), D(0,10,10), E(0,0,0), F(10,0,0), G(10,10,0), H(0,10,0). The Y axis is vertical and Z axis is oriented towards the viewer. The cube is being viewed from point (0, 20, 80). Calculate the perspective view of the cube on XY plane. (6)

   (b) Discuss the various visualization technique in detail. (6)

6. (a) Calculate the new co-ordinate of a block rotated about x-axis by an angle of 30 degree. The original coordinated of block are given relative to the global xyz axis system. (1,1,2), (2,1,2), (2,2,2), (1,2,2), (1,1,1), (2,1,1), (2,2,1), (1,2,1). (6)

   (b) Explain general techniques for three dimensional rotation with example. (6)

SECTION - D

7. (a) Discuss various color models in detail. (6)

   (b) Discuss various methods used in OPENGL for handling a window and also write a simple program to display a window on the screen. (6)

8. (a) Discuss the process of adding texture to faces of real object. (6)

   (b) Compare flat shading and smooth shading with respect to their characteristics and type. (6)

SECTION - E

9. (a) List the different types of text clipping method available.

(b) Where does the ray r(t)=(4,1,3) + (–3, –5, –3)t hit the generic plane?

(c) How objects are modeled using constructive solid geometry technique?

(d) What are the types of reflection of incident light?

(e) Give the general expression of Bezier Bernstein polynomial.

(f) List any four real time animation technique. (6×2=12)