

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: BE
BRANCH: CSE**

**SEMESTER: VI
SESSION: SP/19**

**SUBJECT: CS6011 COMPUTER GRAPHICS AND MULTIMEDIA
TIME: 3 Hours**

FULL MARKS: 60

INSTRUCTIONS:

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
 2. Candidates may attempt any 5 questions maximum of 60 marks.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) How much time is spent scanning across each row of pixels during screen refresh on a raster system with resolution of 1280X1024 and a refresh rate of 60 frames per second? [2]
- Q.1(b) Discuss the types of color monitors. [4]
- Q.1(c) Explain the architecture of a 3D viewing device with diagram. [6]
- Q.2(a) What is picket fence problem? [2]
- Q.2(b) Design a scan conversion method for parallel lines drawing. [4]
- Q.2(c) Write an algorithm for scan conversion of ellipse. [6]
- Q.3(a) What is a geometric transformations and is it differ from coordinate transformations? [2]
- Q.3(b) A unit square is transformed by a 2 X 2 transformation matrix. The resulting position vectors are $\begin{pmatrix} 0 & 2 & 8 & 6 \\ 0 & 3 & 4 & 1 \end{pmatrix}$. Find the transformation matrix. [4]
- Q.3(c) Write the general form of the matrix for rotation about a point P(h,k). [6]
- Q.4(a) What is Spline? [2]
- Q.4(b) Use the Cohen Sutherland algorithm to clip line P₁(70,20) and P₂(100,10) against a window lower left-hand corner (50,10) and upper right-hand corner (80,40). [4]
- Q.4(c) List the requirements for Curve design in detail. [6]
- Q.5(a) What is orthographic projection? [2]
- Q.5(b) Find the coordinates of a unit cube whose one vertex is (0,0,0) after a reflection about the XY plane. [4]
- Q.5(c) Write the procedure for a polygon clipping and explain with diagram. [6]
- Q.6(a) What is the underlying concept of the painter's algorithm? [2]
- Q.6(b) List the coherence with respect to scan line. [4]
- Q.6(c) Write an algorithm hidden surface problem and explain in detail. [6]
- Q.7(a) What is canonical view volume? [2]
- Q.7(b) Write the Bezier Curve function and explain with diagram. [4]
- Q.7(c) Explain a polygon rendering method. [6]

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