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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-3 EXAMINATION- JUNE -2016

B.Tech VI Semester

COURSE CODE: 11B1WCI611 MAX. MARKS: 35

COURSE NAME: COMPUTER GRAPHICS

COURSE CREDITS: 04 MAX. TIME: 2 HRS

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

Q1 Short answer: **[5 Marks]**

a) Explain the vanishing Points for perspective projections.
b) Explain Blobby Objects and Octree?
c) What is 3D viewing Explain the steps taken for 3D viewing?
d) Find the transformation matrix for:
   i) Reflection with respect to yz plane
   ii) Scaling with respect to fixed point
e) List the different types of text clipping methods available.

Q2. i) Explain Bezier curve with derivation? Construct a Bezier curve of order 3 and with 4 polynomial vertices P_0 (1,1),P_1(1.1,3),P_2(1.5,2.5) and P_3(2,1) **[3+3 marks]**

ii) What are the different techniques of Curve Generation? Discuss anyone technique in detail. **[1+2 marks]**

Q3 i) Write the steps required to perform rotation in 3D space with respect to any arbitrary axis. Derive a composite matrix for the same by showing the required mathematical expressions? **[2+2 marks]**

ii) Find a matrix for parallel projection onto the plane 3x+y+4z+1=0 when **[2+2 marks]**

a) An Orthographic Projection is used
b) An Oblique projection is used

Q4 i) Perform a 45 degree rotation of triangle A (0, 0), B (1, 1), C (5, 2) **[2+2 marks]**

a) About origin and
b) About point P(-1,-1)

ii) Write the algorithm for Bresenham's line drawing algorithm. With an example, show its working. **[2+2 marks]**

Q5 Explain 3D Cohen–Sutherland clipping algorithm for perspective projection [write its six plane conditions]. **[5 marks]**