

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2016

B.Tech VI Semester

COURSE CODE: 11B1WCI671

MAX. MARKS: 25

COURSE NAME: Computer Graphics

COURSE CREDITS: 4

MAX. TIME: 1Hr 30 Min

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

Q1 a) Show that transformation matrix for a reflection about  $y = -x$  is equivalent to reflection relative to the  $y$  axis followed by a counter clockwise rotation by 90 degree. [3 marks]

b) Show that the composition of two rotations is additive by concatenating the matrix representations for  $R(Q_1)$  and  $R(Q_2)$  to obtain  $R(Q_1) \cdot R(Q_2) = R(Q_1+Q_2)$ . [3 marks]

Q2 a) Apply Liang and Barsky Line clipping algorithm for calculating the saved portion of line from (2, 7) to (8, 12) in a window. [3 marks]

( $x_{w_{min}} = y_{w_{min}} = 5$  and  $x_{w_{max}} = y_{w_{max}} = 10$ ).

b) A mirror is placed such that it passes through (2,0) and (0,2). Find the reflected view of a triangle with vertices (3,4), (5,5) and (4,7) in this mirror. [3 marks]

Q3 Explain Sutherland Hodgeman polygon clipping algorithm, with example? [5 marks]

Q4 a) What are homogeneous co-ordinates? How are they used in matrix representation of transformations? [1.5 marks]

b) Explain the concept of viewing pipeline with diagram. [1.5 marks]

Q5 a) Discuss the applications of computer graphics? [1.0 marks]

b) What is aliasing? Explain different anti-aliasing techniques. [1.0 marks]

c) Explain Nicholl Lee Nicholl algorithms, with example. [3.0 marks]