Code :RR320502 **RR**

III B.Tech II Semester(RR) Supplementary Examinations, April/May 2011
COMPUTER GRAPHICS
(Computer Science & Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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1. (a) Design a frame buffer for the color graphics display where 3 bits of memory is allocated per color per pixel.
   (b) If the resolution of the video display unit is 540×480, how much frame buffer memory is needed to design the above frame buffer.
2. (a) Explain the steps involved in Bresenham's algorithm for line generation, when the two end points are given as input.
   (b) Compute the intermediate points on the straight line using the above algorithm when the end points are given as (1,1) and (8,5).
3. (a) Show that the composition of two rotations is additive that is, $R(\varphi_1).R(\varphi_2) = R(\varphi_1+\varphi_2)$.
   (b) Characterize the transformation with suitable matrix formulation, for the following operations: $x' = x + a.y, \quad y' = bx + y$.
4. Explain how the line clipping is performed against a non-rectangular clipping window?
5. Derive the transformation matrix for aligning the vector V =I+J+K with the vector K.
6. (a) How is the depth of a polygon determined by the painter's algorithm?
   (b) Assuming that one allows 128 depth value levels to be used, how much memory would a 512×512 pixel display require to store the Z-buffer. If the seence consists of 14 objects what is the frame buffer memory requirement.
7. (a) Distinguish between analytic and synthetic methods of shape description.
   (b) Distinguish curve and surface in 3-D space.
8. (a) What is meant by animation? Explain.
   (b) Discuss the characteristics of key-frame animation.

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