

Code No: R05221201

R05**Set No. 2****II B.Tech II Semester Examinations, December 2010****COMPUTER GRAPHICS****Common to Information Technology, Computer Science And Systems
Engineering****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions
All Questions carry equal marks**

1. (a) What are the new coordinates of the point $P(2, -4)$ after rotating 30° about the origin.
(b) Write the general form of a scaling matrix with respect to a fixed point $p(h,k)$. [8+8]
2. Let R be a rectangular window whose lower left corner is at $L(-3,1)$ and upper right-hand corner is at $R(2,6)$. If the line segment is defined with two end points $A(-1,5)$ and $B(3,8)$ determine
 - (a) The region codes of the two end points,
 - (b) Its clipping category and
 - (c) Stages in the clipping operations using Cohen-Sutherland algorithm. [16]
3. Explain the procedure to generate the in-betweens for the key frames. [16]
4. Explain how the shearing of an object with respect to the three coordinate axes are implemented. What are the corresponding input values for the shearing parameters. [16]
5. (a) Distinguish between object-space and image-space methods of visible surface detection algorithms. Give examples for each.
(b) Given points $P(1, 2, 0)$, $P(3, 6, 20)$, $P(2, 4, 6)$ and a view point $C(0, 0, -10)$, determine which points obscure the others when viewed from C . [8+8]
6. (a) Show graphically that an ellipse has four-way symmetry by plotting four points on the ellipse:
 $x = a \cos \theta + h$, $y = b \sin \theta + k$ where $a=2$, $b=1$, $h=0$ and $k=0$.
(b) When 8-way symmetry of circle is used to obtain a full circle from pixel coordinates generated from first octant, does overstrike occur? Where? [8+8]
7. (a) Distinguish between passive-matrix and active-matrix LCD displays.
(b) Explain the working of 3-dimensional viewing devices. [8+8]
8. (a) Derive the basis matrix (M_B) for Bezier curve.
(b) What are Bernstein polynomials? What is their significance in Bezier curve? [8+8]

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R05**Set No. 4****II B.Tech II Semester Examinations, December 2010****COMPUTER GRAPHICS****Common to Information Technology, Computer Science And Systems Engineering****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions
All Questions carry equal marks**

1. (a) Derive the basis matrix (M_B) for Bezier curve.
(b) What are Bernstein polynomials? What is their significance in Bezier curve? [8+8]
2. (a) Show graphically that an ellipse has four-way symmetry by plotting four points on the ellipse:
 $x = a \cos \theta + h$, $y = b \sin \theta + k$ where $a=2$, $b=1$, $h=0$ and $k=0$.
(b) When 8-way symmetry of circle is used to obtain a full circle from pixel coordinates generated from first octant, does overstrike occur? Where? [8+8]
3. Explain the procedure to generate the in-betweens for the key frames. [16]
4. (a) Distinguish between passive-matrix and active-matrix LCD displays.
(b) Explain the working of 3-dimensional viewing devices. [8+8]
5. Explain how the shearing of an object with respect to the three coordinate axes are implemented. What are the corresponding input values for the shearing parameters. [16]
6. Let R be a rectangular window whose lower left corner is at L (-3,1) and upper right-hand corner is at R(2,6). If the line segment is defined with two end points A(-1,5) and B (3,8) determine
 - (a) The region codes of the two end points,
 - (b) Its clipping category and
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7. (a) What are the new coordinates of the point P(2, -4) after rotating 30° about the origin.
(b) Write the general form of a scaling matrix with respect to a fixed point p(h,k). [8+8]
8. (a) Distinguish between object-space and image-space methods of visible surface detection algorithms. Give examples for each.
(b) Given points P (1, 2, 0), P (3, 6, 20) P (2, 4, 6) and a view point C (0, 0, -10), determine which points obscure the others when viewed from C. [8+8]

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R05**Set No. 1****II B.Tech II Semester Examinations, December 2010****COMPUTER GRAPHICS****Common to Information Technology, Computer Science And Systems Engineering****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions
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1. Explain how the shearing of an object with respect to the three coordinate axes are implemented. What are the corresponding input values for the shearing parameters. [16]
2. (a) Distinguish between object-space and image-space methods of visible surface detection algorithms. Give examples for each.
(b) Given points P (1, 2, 0), P (3, 6, 20) P (2, 4, 6) and a view point C (0, 0, -10), determine which points obscure the others when viewed from C. [8+8]
3. (a) Show graphically that an ellipse has four-way symmetry by plotting four points on the ellipse:
 $x = a \cos \theta + h$, $y = b \sin \theta + k$ where $a = 2$, $b = 1$, $h = 0$ and $k = 0$.
(b) When 8-way symmetry of circle is used to obtain a full circle from pixel coordinates generated from first octant, does overstrike occur? Where? [8+8]
4. Let R be a rectangular window whose lower left corner is at L (-3,1) and upper right-hand corner is at R(2,6). If the line segment is defined with two end points A(-1,5) and B (3,8) determine
(a) The region codes of the two end points,
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5. (a) Distinguish between passive-matrix and active-matrix LCD displays.
(b) Explain the working of 3-dimensional viewing devices. [8+8]
6. (a) What are the new coordinates of the point P(2, -4) after rotating 30° about the origin.
(b) Write the general form of a scaling matrix with respect to a fixed point p(h,k). [8+8]
7. Explain the procedure to generate the in-betweens for the key frames. [16]
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Engineering****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions
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1. Let R be a rectangular window whose lower left corner is at L (-3,1) and upper right-hand corner is at R(2,6). If the line segment is defined with two end points A(-1,5) and B (3,8) determine
 - (a) The region codes of the two end points,
 - (b) Its clipping category and
 - (c) Stages in the clipping operations using Cohen-Sutherland algorithm. [16]
2. (a) What are the new coordinates of the point P(2, -4) after rotating 30° about the origin.
- (b) Write the general form of a scaling matrix with respect to a fixed point p(h,k). [8+8]
3. Explain the procedure to generate the in-betweens for the key frames. [16]
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6. (a) Distinguish between object-space and image-space methods of visible surface detection algorithms. Give examples for each.
- (b) Given points P (1, 2, 0), P (3, 6, 20) P (2, 4, 6) and a view point C (0, 0, -10), determine which points obscure the others when viewed from C. [8+8]
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- (b) Explain the working of 3-dimensional viewing devices. [8+8]
8. Explain how the shearing of an object with respect to the three coordinate axes are implemented. What are the corresponding input values for the shearing parameters. [16]
