

Code No: R05311902

R05**Set No. 2****III B.Tech I Semester Examinations, November 2010****COMPUTER GRAPHICS****Electronics And Computer Engineering****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions****All Questions carry equal marks**

1. Explain the steps involved in transforming a sphere into a specified polyhedron. [16]
2. (a) Consider a non interlaced raster monitor with a resolution of n by m (m scan lines and n pixels per scan line), a refresh rate of r frames per second, a horizontal retrace time of t_{horiz} and vertical retrace time of t_{vert} . What is the fraction of total refresh time per frame spent in retrace of the electron beam.
(b) Explain the applications for large-screen displays. What graphical output devices support it? [12+4]
3. (a) Distinguish between local illumination and global illumination models.
(b) Find a formula to compute the reflection vector (R) of an input vector (L) with respect to surface normal vector N . [16]
4. (a) Explain the depth-buffer method to display the visible surfaces of a given polyhedron.
(b) How can the storage requirements for the depth buffer be determined from the definition of the objects to be displayed? [8+8]
5. (a) Describe the transformations used in magnification and reduction with respect to the origin.
(b) Find the new Coordinates of the triangle $A(0,0)$, $B(1,1)$ and $C(5,2)$ after it has been [8+8]
 - i. magnified to twice its size and
 - ii. reduced to half its size.
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
 - (c) Stages in the clipping operations using Cohen-Sutherland algorithm. [16]
7. (a) Implement the line-type function by modifying Bresenham's line drawing algorithm to display either solid, dashed or dotted lines.

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- (b) Modify the mid-point algorithm for scan converting lines to write pixels with varying intensity as a function of line slope. [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]

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R05**Set No. 4****III B.Tech I Semester Examinations, November 2010****COMPUTER GRAPHICS****Electronics And Computer Engineering****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions****All Questions carry equal marks**

1. (a) Implement the line-type function by modifying Bresenham's line drawing algorithm to display either solid, dashed or dotted lines.
(b) Modify the mid-point algorithm for scan converting lines to write pixels with varying intensity as a function of line slope. [8+8]
2. (a) Explain the depth-buffer method to display the visible surfaces of a given polyhedron.
(b) How can the storage requirements for the depth buffer be determined from the definition of the objects to be displayed? [8+8]
3. Explain the steps involved in transforming a sphere into a specified polyhedron. [16]
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,
(b) Its clipping category and
(c) Stages in the clipping operations using Cohen-Sutherland algorithm. [16]
5. (a) Describe the transformations used in magnification and reduction with respect to the origin.
(b) Find the new Coordinates of the triangle A(0,0), B(1,1) and C(5,2) after it has been [8+8]
i. magnified to twice its size and
ii. reduced to half its size.
6. (a) Consider a non interlaced raster monitor with a resolution of n by m (m scan lines and n pixels per scan line), a refresh rate of r frames per second, a horizontal retrace time of t_{horiz} and vertical retrace time of t_{vert}. What is the fraction of total refresh time per frame spent in retrace of the electron beam.
(b) Explain the applications for large-screen displays. What graphical output devices support it? [12+4]
7. (a) Distinguish between local illumination and global illumination models.

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- (b) Find a formula to compute the reflection vector (R) of an input vector (L) with respect to surface normal vector N . [16]
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]

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R05**Set No. 1****III B.Tech I Semester Examinations, November 2010****COMPUTER GRAPHICS****Electronics And Computer Engineering****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions****All Questions carry equal marks**

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) Explain the depth-buffer method to display the visible surfaces of a given polyhedron.
- (b) How can the storage requirements for the depth buffer be determined from the definition of the objects to be displayed? [8+8]
3. Explain the steps involved in transforming a sphere into a specified polyhedron. [16]
4. (a) Distinguish between local illumination and global illumination models.
- (b) Find a formula to compute the reflection vector (R) of an input vector (L) with respect to surface normal vector N. [16]
5. (a) Describe the transformations used in magnification and reduction with respect to the origin.
- (b) Find the new Coordinates of the triangle A(0,0), B(1,1) and C(5,2) after it has been [8+8]
 - i. magnified to twice its size and
 - ii. reduced to half its size.
6. (a) Consider a non interlaced raster monitor with a resolution of n by m (m scan lines and n pixels per scan line), a refresh rate of r frames per second, a horizontal retrace time of t horiz and vertical retrace time of tvert. What is the fraction of total refresh time per frame spent in retrace of the electron beam.
- (b) Explain the applications for large-screen displays. What graphical output devices support it? [12+4]
7. 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]

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8. (a) Implement the line-type function by modifying Bresenham's line drawing algorithm to display either solid, dashed or dotted lines.
- (b) Modify the mid-point algorithm for scan converting lines to write pixels with varying intensity as a function of line slope. [8+8]

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R05**Set No. 3****III B.Tech I Semester Examinations, November 2010****COMPUTER GRAPHICS****Electronics And Computer Engineering****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions****All Questions carry equal marks**

1. (a) Distinguish between local illumination and global illumination models.
(b) Find a formula to compute the reflection vector (R) of an input vector (L) with respect to surface normal vector N. [16]
2. Explain the steps involved in transforming a sphere into a specified polyhedron. [16]
3. 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]
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) Describe the transformations used in magnification and reduction with respect to the origin.
(b) Find the new Coordinates of the triangle A(0,0), B(1,1) and C(5,2) after it has been [8+8]
 - i. magnified to twice its size and
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6. (a) Implement the line-type function by modifying Bresenham's line drawing algorithm to display either solid, dashed or dotted lines.
(b) Modify the mid-point algorithm for scan converting lines to write pixels with varying intensity as a function of line slope. [8+8]
7. (a) Explain the depth-buffer method to display the visible surfaces of a given polyhedron.
(b) How can the storage requirements for the depth buffer be determined from the definition of the objects to be displayed? [8+8]

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8. (a) Consider a non interlaced raster monitor with a resolution of n by m (m scan lines and n pixels per scan line), a refresh rate of r frames per second, a horizontal retrace time of t_{horiz} and vertical retrace time of t_{vert} . What is the fraction of total refresh time per frame spent in retrace of the electron beam.
- (b) Explain the applications for large-screen displays. What graphical output devices support it? [12+4]

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