Code :R7420308 **1**

IV B.Tech II Semester(R07) Regular Examinations, April 2011
INTERACTIVE COMPUTER GRAPHICS
(Mechanical Engineering)

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

Answer any FIVE questions
All questions carry equal marks

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1. What are the various input devices and explain then clearly.
2. (a) Write the digital differential analyzer routine for rastarizing a line.
   (b) Rastarize the line joining the two points (0,0),(6,6) by using Bresanham's algorithm.
3. Explain the 'reflection' and 'shear' transformations with suitable examples.
4. Write the Cohen-Sutherland algorithm for line clipping and explain it, with an example how is works.
5. (a) List out various quadric surfaces and explain them.
   (b) Write a program which illustrates a method for generating Bezier Curves.
6. (a) Discuss about rotation with quaternions.
   (b) Explain the three dimensional reflections and shears.
7. (a) Write the Depth- Buffer Method for detecting visible surfaces.
   (b) Explain the area-subdivision method.
8. Discuss about direct motion specification and goal directed systems.

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Code :R7420308 **2**

IV B.Tech II Semester(R07) Regular Examinations, April 2011
INTERACTIVE COMPUTER GRAPHICS
(Mechanical Engineering)

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

Answer any FIVE questions
All questions carry equal marks

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1. (a) Compare the Raster-Scan display and Random-Scan display.
   (b) Discuss briefly about graphics monitors and work stations.
2. Rastarize the line joining the two points (1,1),(6,6) by using DDA and Bresenham's algorithms separately and compare the results.
3. What are the basic two-dimensional transformations? Explain them with suitable examples.
4. What is meant by 2D-viewing? Derive the necessary transformation matrix for transforming window to view-port coordinates. Explain it with an example.
5. (a) Explain how Bezier curves can be generated?
   (b) Discuss briefly about B-spline curves.
6. (a) Discuss about "reflections" and "shears" in 3D.
   (b) Derive the transformation matrix for rotation about an arbitrary axis.
7. Discuss the classification of visible surface detection algorithms? And explain any two of these algorithms.
8. What is meant by computer animations? Discuss about computer animation languages and key-frame systems.

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Code :R7420308 **3**

IV B.Tech II Semester(R07) Regular Examinations, April 2011
INTERACTIVE COMPUTER GRAPHICS
(Mechanical Engineering)

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

Answer any FIVE questions
All questions carry equal marks

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1. (a) Discuss about various graphics monitors and work stations.
   (b) List out various input devices and explain any three of them.
2. (a) Explain the bresanham's line algorithm.
   (b) Rastarize the line joining the two points (0,0), (5,5) by using DDA algorithm.
3. (a) What is meant by transformations between coordinate systems? Explain it clearly with necessary derivations for it.
   (b) Explain the 'shear' transformation.
4. Write the flow chart and algorithm for the cyrus-Beck line clipping and explain it with an example.
5. (a) Explain the hermit interpolation.
   (b) State and explain various quadratic surfaces.
6. (a) Explain about coordinate axes rotation.
   (b) Derive the transformation matrix for rotation about an arbitrary axis.
7. Explain the depth-sorting method and scan-line method for visible surface detection.
8. What are general animation function? Discuss about motion specifications.

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Code :R7420308 4

IV B.Tech II Semester(R07) Regular Examinations, April 2011
INTERACTIVE COMPUTER GRAPHICS
(Mechanical Engineering)

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

Answer any FIVE questions
All questions carry equal marks

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1. Explain clearly the Raster scan systems and also compare it with Random-scan systems.
2. Write the midpoint circle algorithm and explain it with an example.
3. (a) What is meant by homogeneous coordinates? Why these coordinates are required for transformations?
   (b) Explain the reflection transformation.
4. Write the Sutherland-Hodgeman polygom clipping algorithm and explain it with an example.
5. (a) Discuss about non uniform B-splines and B-spline surfaces.
   (b) List out various quadratic surfaces and explain any three of them.
6. Write a procedure to implement general rotation transformations using the rotation matrix. Explain it with an example.
7. Explain the A-buffer method and depth-sorting method for visible surface detection.
8. Discuss about Raster animations and computer animations languages.

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