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10IS665

Sixth Semester B.E. Degree Examination, June/July 2016
Computer Graphics & Visualization

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART - A

- 1 a. Explain with a neat diagram, the graphics pipeline architecture to render an image. (08 Marks)
b. Briefly explain the applications of computer graphics. (08 Marks)
c. Explain the pin hole camera with a neat diagram. (04 Marks)
- 2 a. Explain the graphics functions which gives good API support with an example for each. (10 Marks)
b. Briefly explain color models for rendering an image in computer graphics. (10 Marks)
- 3 a. List out various features that a good interactive program should include. Write an open GL program for rotation of a square. (08 Marks)
b. What is a display list? How it increases the performance of a graphics system? (06 Marks)
c. Explain various input modes with a neat block diagram. (06 Marks)
- 4 a. Briefly explain frame co-ordinates in OpenGL with suitable example. (10 Marks)
b. Discuss the modeling of a color cube in open GL along with the data structures used. (10 Marks)

PART - B

- 5 a. What are affine transformations? Explain translation, rotation, scaling in homogenous co-ordinate system for 3D. (08 Marks)
b. Explain how object transformation is implemented in OpenGL. (08 Marks)
c. What are Quaternions? Explain with example. (04 Marks)
- 6 a. What are simple projections? Obtain 4×4 matrix representation for simple projections. Give OpenGL functions for perspective and orthogonal projections. (10 Marks)
b. Explain briefly different types of views. (10 Marks)
- 7 a. Explain the Phong lighting model and list its advantages. (10 Marks)
b. Briefly explain different types of light source / material interaction supported in OpenGL. (10 Marks)
- 8 a. Explain the Cohen-Sutherland line clipping algorithm with a neat pseudocode. (10 Marks)
b. Write the pseudocode for DDA line drawing algorithm. (04 Marks)
c. Discuss the 2-buffer algorithm for hidden surface removal. (06 Marks)

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In part (a) of the question, you are asked to draw diagrams and cross lines on the remaining 10 pages. Do not use the space for writing answers. The symbols used are: 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. All the marks are for the questions.