R16

Code No: 135BY

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, May/June - 2019
COMPUTER GRAPHICS
(Common to CE, CSE, IT)

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) Define points and lines. [2]
b) Write the differences between a general graphics system designed for a programmer and one designed for a specific application, such as architectural design. [3]
c) Define rotation of an object and write equivalent rotational matrix. [2]
d) Differentiate a window from a viewport. [3]
e) Give the block diagram of general three-dimensional transformation pipeline. [2]
f) Compare Octrees and BSP Trees. [3]
g) Write a short note on scan line. [2]
h) How wireframe displays might be generated with the various visible-surface detection methods? [3]
i) Define animation. [2]
j) Give a note on raster animations. [3]

PART - B

(50 Marks)

2.a) Set up a procedure for a parallel implementation of the midpoint circle algorithm.
b) Draw and explain the architecture of a raster-graphics system with a display processor. [5+5]

OR

3.a) Discuss the boundary-fill and flood-fill algorithms in detail.
b) Compare and contrast the operating characteristics of random scan systems and raster scan systems. [5+5]

4. Give 2D transformation matrix for:
a) Rotation
b) Scaling. [5+5]

OR

5.a) List out and explain the steps involved in Sutherland-Hodgeman polygon clipping algorithm.
b) Write short notes on Reflection transformation. [5+5]

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6. Write an example, explain 3D translation and rotation. [10]

OR

7. How to setup a view volume using the window boundaries for parallel and perspectives projectors? Explain. [10]

8. Write a program to display the visible surfaces of a convex polyhedron using the BSP-tree method. [10]

OR

9. Enumerate the steps involved in Depth buffer algorithm for Hidden surface removal and compare it with A - Buffer method. [10]

10.a) Explain the computer animation languages.
b) Give a note on Direct Motion Specification. [5+5]

OR

11. List and explain the general computer-animation functions. [10]

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