

[Total No. of Questions - 9] [Total No. of Printed Pages - 2]
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B. Tech 3rd Semester Examination

Computer Graphics (N.S.)

IT-213

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Each question carries 20 marks. Attempt one question from each section. Section E is compulsory.

SECTION - A

1. (a) What do you mean by resolution of an image and image's aspect ratio? **(10)**
(b) List and explain applications of computer graphics. **(10)**
2. Give advantages and disadvantages of hard copy displays, DVST displays, Vector refresh displays, and raster displays. Suggest an application area for which each class of devices is best suited. **(20)**

SECTION - B

3. (a) Develop an algorithm to draw a thick line between two points. **(10)**
(b) Plot a circle centered at (2, 5) having radius of 7 units using the midpoint circle algorithm. **(10)**
4. Give the advantages and disadvantages of the DDA and Bresenham's algorithm. Explain mid point circle algorithm. **(20)**

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SECTION - C

5. Derive the window-to-viewport transformation equations by first scaling the window to the size of the viewport and then translating the scaled window to the viewport position **(20)**
6. Explain the working of the Sutherland - Hodgeman algorithm for polygonal clipping with the help of suitable example. **(20)**

SECTION - D

7. Explain the following:
 - (a) Painter's algorithm
 - (b) Warnock's algorithm **(20)**
8.
 - (a) Explain rendering. What is the process of rendering?
 - (b) Explain Z-buffer method for elimination of hidden surfaces. **(20)**

SECTION - E

9. Write short notes on:
 - (a) Define outside-inside test
 - (b) For hidden surface removal of objects with non-planar surface, which algorithm(s) are suitable?
 - (c) What is frame buffer?
 - (d) Explain view port.
 - (e) What do you mean by horizontal retrace?
 - (f) Differentiate between interior clipping and exterior clipping.
 - (g) What is constant intensity shading?
 - (h) What is halftone image?
 - (i) How raster scan display is different from random scan display?
 - (j) What is aliasing and anti-aliasing? **(2×10=20)**