MCA - Sem III CBSGS
Computer Graphics - Nov 25 2016
QP Code: 514902

(3 Hours)   muadda.com   Total Marks: 80

N.B. (1) Question No. 1 is <u>compulsory.</u>
   (2) Figures to the right indicate maximum marks.
   (3) Attempt any <u>four</u> questions from Question No 2 to 7.

Q.1 (a) What are projections? Explain various types of projections. [10]
   (b) Rasterize the line whose endpoints are A(-2,5), B(-9,7) using DDA [05]
       algorithm.
   (c) Find out the dynamic range of an image if all the slopes in the contrast [05]
       stretched algorithm l, m, n are given as 0.2, 0.5, 0.2 respectively. The
       initial dynamic range of the original image is [0 - 10], a=4 and b=8.

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Q.2 (a) What are the properties of the curve? Derive quadratic and cubic Bezier [08]
       curve.
   (b) Consider the object with coordinates A(2,4), B(3,1) C(5,3). Transform it [07]
       by first reflecting it about x-axis and then rotating it by 60 deg.

Q.3 (a) Write an algorithm for a midpoint circle generation. And Plot a circle [08]
       centered at (10,5) having a radius of 15 units.
   (b) What is visible surface detection? Differentiate between the object space [07]
       method and image space method of detecting visible surface. Explain
       the Depth buffer method for visible surface detection.

Q.4 (a) Use Liang - Barsky line clipping algorithm to find the visible [08]
       portion of the line P1(-10,50) to P2(30,80) against window
           (X_{wmin}=-3, Y_{wmin}=10) (X_{wmax}=20, Y_{wmax}=60).
   (b) What is 2D viewing transformation. Derive the window to viewport [07]
       transformation equation.

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Q.5 (a) Reflect the triangle ABC about the line 3x-4y+8=0. The position vector [08]
       of the coordinate ABC is given as A(4,1), B(5,2) and C(4,3).
   (b) Explain Halftone shading technique and compare this with the Dithering [07]
       technique.

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Q.6 **(a)** For the following image data of 8 bits per pixels . Obtain   [08]
   i)   Image negative
   ii)   Thresholding result (Threshold value = 150)

120	135	215	220	125
135	20	187	50	80
250	115	55	120	45
30	180	200	46	20
60	119	120	255	135

(b) Equalize the given histogram.   [07]

Grey Level	0	1	2	3	4	5	6	7
No. of Pixels	790	1023	850	656	329	245	122	81

Q.7 Write short notes on the following (any 3)   [15]

   (a) Low pass Median Filter   **(b)** Flood Fill Algorithm
   (c) Koch Curve   **(d)** Animation

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