Set—**01**

Shahjalal University of Science and Technology
Department of Computer Science and Engineering
3^{rd} year 2^{nd} Semester Final Examination—December 2020 (Session 2017-18)
Course No.—**CSE 373**
Course Title—**Computer Graphics**
Time—**5 Hours** Credit: **3.00** Total Marks#**30**

(Answer All the Questions)

Group A

1. Answer the following **Five** Questions. $5 \times 1 = 5$
   (a) What are the CMY coordinates of a color with RGB coordinates **(0.8 , 0.5 , 0.65)**?
   (b) Give an example of a subtractive color model.
   (c) Why do many color printers use black pigments?
   (d) If **(x, y)** is a point on a circle in the **third** quadrant, what will be the corresponding point in the **fourth** quadrant?
   (e) Define dimetric projection.
2. Answer the following **Two** Questions. $2 \times 2.5 = 5$
   (a) What are the steps to scan convert a line ($|m| > 1$) using DDA algorithm?
   (b) Write a pseudo-code to implement the boundary fill algorithm using the 4-connected definition for region pixels.
3. Derive the recurrence relation (with base case) of Bressenham's line drawing algorithm for $-1 < m < 0$. 5

Group B

1. Answer the following **Five** Questions. $5 \times 1 = 5$
   (a) What is the resolution of an image?
   (b) If intensity level of a 768×640 digital image is 8 what will be the size of the image in kilobyte?
   (c) If we use **10-bit** pixel values in a lookup table representation, how many entries does the lookup table have?
   (d) If v = 4**I** - 3**J**, then for **P(7, 11)** find $T_v(P)$.
   (e) The Cohen-Sutherland algorithm divides the two-dimensional space in how many regions?
2. Answer the following **Two** Questions. $2 \times 2.5 = 5$
   (a) Let **R** be the rectangular window whose lower left corner is at **P(-5, -3)** and upper right corner is at **Q(6, 2)**. Find the region codes for the endpoints:

   A(0, 2), B(5, 1), C(-8, 4), D(7, 1), E(6, -3)

   .
   (b) Magnify the triangle with the vertices A(2,0), B(1,1) and C(2,4) to twice its size while keeping C(2,4) fixed.
3. The coordinates of the vertices of the polygon **ABCDEF** are **A(-5, 6), B(3,2), C(3, -4), D(10, 4), E(6, 4)** and **F(8, 12)**. 5
   i. Construct the edge list for the polygon.
   ii. State which edges will be active on scan lines **y = 2, 3, 4, 5, 6.**

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