Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree Regular and Supplementary Examination December 2020

Course Code: IT367

Course Name: COMPUTER GRAPHICS AND MULTIMEDIA

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks. Marks

1 a) Explain the basic working of raster and random scan display systems. (8)

b) Explain major steps of data compression in multimedia systems. (7)

2 a) Explain Mid-point circle drawing algorithm and draw a circle with centre (3,3) and its radius 5. (8)

b) Compare source coding and entropy coding in multimedia. (7)

3 a) Differentiate Boundary fill algorithm and flood fill algorithm. (8)

b) Explain different types of MPEG frames/image coding for processing and audio encoding. (7)

PART B

Answer any two full questions, each carries 15 marks.

4 a) Explain the working principle of LCD. (7)

b) Consider the square A(1,0), B(0,0), C(0,1), D(1,1). Rotate the square ABCD by 45 degree clockwise about fixed point A(1,0).(hint-, sin 45= cos 45= $\sqrt{2}/2$)). Write composite Transformation Matrix and draw resulting figure. (8)

5 a) Explain OLED and AMOLED. (8)

b) What is a *shearing* transformation? Give the transformation matrices for *x*-direction and *y*-direction *shear*. (7)

6 a) How E-Paper displays works? (7)

b) A triangle is defined by matrix (8)

$$\begin{matrix} 2 & 4 & 4 \\ 2 & 2 & 4 \end{matrix}$$

Find the transformed coordinates after the following transformation

(1) 90o rotation about origin.

(2) Shearing along x axis by 1 unit

PART C

Answer any two full questions, each carries 20 marks.

7 a) A triangle PQR whose coordinate given by P (100,150), Q(200,250),and R(300,200) is to clipped against a rectangular window whose coordinates are given by A(150,150),B(150,),C(200,200) and D(200,150). Apply Sutherland Hodgeman polygon clipping algorithm to generate a new set of output vertices. Draw the final clipped polygon (10)

b) Explain histogram equalization and perform histogram equalization on following 8×8 image. The gray level distribution of image is given below (10)

Gray level:	0	1	2	3	4	5	6	7
No. Of pixel:	8	10	10	2	12	16	4	2

8 a) Let ABCD be the rectangular window with A(10,10) B(80,10) C(80,70) and D(10,70). Find region code for the end points to clip the line PQ using Cohen-Sutherland algorithm with P(0,30)and Q(60,90). (10)

b) Explain Back Face Detection method for visible surface detection Scan line. (10)

9 a) Explain 3D Transformation and its composite matrix formation. (10)

b) Explain different steps involved in Digital Image Processing. (10)

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