

**Subject Code: XXXXX**

**Roll No:**

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**BTECH  
(SEM-5) COMPUTER GRAPHICS 2021-22**

**TIME:3 HOUR**

**Total Marks: 100**

**Instruction:** Attempt the questions as per the given instructions. Assume missing data suitably.

**SECTION - A**

**Attempt *All Parts* in Brief**

**2\*10 = 20**

<b>Q1</b>	<b>Questions</b>	<b>Marks</b>
(a)	What is the difference between raster and random scan ?	2
(b)	What is the role of frame buffer in raster method ?	2
(c)	What is the difference between computer graphics and image processing?	2
(d)	Distinguish between pixel ratio and aspect ratio.	2
(e)	What is the difference between generation of character by stroke and bitmap method?	2
(f)	What do you mean by 3-D geometry ?	2
(g)	What do you mean by composite transformation ?	2
(h)	Explain 2 D translation with diagrams	2
(i)	List the properties of Bezier Curves.	2
(j)	What is specular reflection ?	2

**SECTION - B**

Attempt Any Three of the following

3\*10 = 30

Q2	Questions	Marks
(a)	What do you understand by shadow mask CRT? Give its advantages and disadvantages.	10
(b)	Explain 3-dimensional clipping ? What are the problems that are encountered in perspective projections ?	10
(c)	What do you understand by clipping? Give Liang-Barsky's line clipping algorithm.	10
(d)	Explain reflection in detail. What is reflection about an arbitrary line ?	10
(e)	Draw a simple Illumination model. Include the contribution of Diffuse, Ambient and Specular Reflection.	10

**SECTION - C**

Attempt Any One of the following

5\*10 = 50

Q3	Questions	Marks
(a)	Consider two raster systems with resolutions of 640* 480 and 1280* 1024. How many pixels could be accessed per second in each of these systems by a display controller that refreshes the screen at a rate of 60 frames per second ?	10
(b)	Consider the line from (5, 5) to (13, 9). Use the Bresenham algorithm to rasterize the line.	10
Q4	Questions	Marks
(a)	Use the Cohen-Sutherland algorithm to clip line $P_1(70, 20)$ and $P_2(100, 10)$ against a window lower left hand corner (50, 10) and upper right hand corner (80, 40).	10
(b)	Obtain the mirror reflection of the triangle formed by the vertices A(0, 3), B(2, 0) and C(3, 2) about the line passing through the points (1, 3) and (-1,-1).	10
Q5	Questions	Marks
(a)	What is window-to-view point coordinate transformation ? What are issues related to multiple windowing ?	10
(b)	What do you mean by projection ? Differentiate between parallel projection and perspective projection.	10
Q6	Questions	Marks
(a)	What do you understand by the term "Back-Face Removal" ? Explain a Back-Face Removal algorithm, you find convenient to implement. Justify your answer.	10
(b)	Explain Z-Buffer algorithm.	10
Q7	Questions	Marks

(a)	What do you understand by quadric surfaces ?	10
(b)	Explain the difference between : i. Bezier and B-Spline curves ii. Bezier and Hermite curves	10