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MANIPAL INSTITUTE OF TECHNOLOGY

(Constituent Institute of Manipal University)



V SEMESTER B.TECH.(COMPUTER SCIENCE AND ENGINEERING) DEGREE MAKE-UP EXAMINATION-DEC. 2015/JAN. 2016 SUBJECT: COMPUTER GRAPHICS (CSE 307) TIME: 3 HOURS DATE: 04-01-2016 MAX.MARKS: 50

Instructions to Candidates

• Note: Answer any **FIVE** full questions.

1A. 1B.	List and explain the various applications of Computer Graphics?. Explain the working principles of shadow-Mask CRT with the help of a neat	5M
1C.	diagram. Briefly explain the advantages and disadvantages of DDA algorithm.	3M 2M
2A.	Indicate the raster location that would be chosen by Bresenham's algorithm when scan converting a line from pixel coordinate $(1,1)$ to pixel $(8,5)$.	4M
2B. 2C.	Distinguish between flood-fill and boundary-fill algorithms. What will be the transformation matrix for the following rotations about the origin- i. Counter clockwise by π	2M
	ii. Clockwise by $\pi/2$	4M
3A. 3B.	Obtain the composite matrix for reflection of point <i>p</i> about a line $Y=10X-7$. Apply 3D geometric transformations to make the given tertrahedron A(0,2,1), B(0,0,2.23), C(0,0,0) and D(1,1,1) rotate about the X-axis, making it erect with its base ABC resting on the XZ plane, Next, magnify it four times about a fixed point P(1,1,2).	4M 6M
4A.	Let R be the rectangular window, whose lower left-hand corner is at $L(3,4)$ and upper right-hand corner is at $R(10,9)$. Use the Liang-Barsky algorithm to clip the line AB whose coordinates are $A(2,11)$ and $B(9,2)$.	2.5M
4 B .	Derive the matrix required for window to viewport transformation. Assume (X_{min}, Y_{min}) and (X_{max}, Y_{max}) as window co-ordinates and (U_{min}, V_{min}) and (U_{max}, V_{max}) as viewport co-ordinates. Use the same to find the viewing from a window in the world coordinates with x extent 2 to 6 and y extent 2 to 10 onto a viewport with x extent 0 to 1 and y extent 0 to 1 in device space.	4M
4C.	How are the parallel projections being classified ? Explain briefly.	3.5M

5A.	Explain the various order of connectivity involved in joining two different curves.					
5B.	Derive the Bezier Matrix for cubic curves.					
5C.	Give any four differences between image space and object space methods. With neat sketch, explain all possible relationships between polygon surfaces and a					
	rectangular section of the viewing plane.	4M				
6A.	What is light source? Briefly explain the shadows.	2M				
6B.	What is Dithering Technique? Explain?	3M				
6C.	Define the term Computer Animation? Differentiate between real-time animation and frame by frame animation. And briefly discuss the design of animation					
	sequences.	5M				