Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2019

CS3CO24 / IT3CO11 Computer Graphics & Multimedia

Programme: B.Tech. Branch/Specialisation: CS/IT

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated.Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. The number of pixels stored in the frame buffer of a graphics system is known as **1**

(a) Resolution (b) Depth

(c) Picture (d) Persistence

ii. LCD is an _____ device **1**

(a) Emissive (b) Non emissive

(c) Gas discharge (d) None of these

iii. Aspect ratio of high-resolution monitor is **1**

(a) 1:1 (b) 2:1 (c) 16:9 (d) 3:4

iv. The transformation that is used to alter the size of an object is **1**

(a) Scaling (b) Rotation (c) Translation (d) Reflection

v. The Painter's algorithm is also called **1**

(a) Depth sort algorithm (b) Priority algorithm

(c) Both (a) and (b) (d) None of these

vi. The _____ projection is generated when the center of projection is at infinity. **1**

(a) Parallel (b) Perspective

(c) Both (a) and (b) (d) None of these

vii. More the control points of a Bezier curve, _____ quality of the curve **1**

(a) Lower (b) Bad (c) Better (d) None of these

viii. The RGB colour model the code "000" is for **1**

(a) White (b) Black (c) Blue (d) Green

P.T.O.

ix. Sampling frequencies and quantization used in CD quality digital Audio is **1**
(a) 88 kHz, 32 bit (b) 44.1 kHz 16 bit
(c) 11 kHz, 16 bit (d) 8 kHz, 8 bit

x. Intuitive color model for user **1**
(a) RGB (b) CMY (c) YIQ (d) HSV

Q.2 i. Explain raster refresh color monitor. **2**

ii. Write Boundary fill algorithm. **3**

iii. Explain Bresenham's line drawing algorithm to draw a line segment between Point A (5,5) and B (15,11). Also, calculate pixel coordinates. **5**

OR iv. Explain the midpoint circle generating algorithm. Given: Center point (0, 0) and radius10. Calculate first 4 pixel coordinates and error terms. **5**

Q.3 i. Define Window and Viewport. **2**

ii. Write transformation matrices to translate the square ABCD having co-ordinates A (0,0), B (3,0), C (3,3), and D (0,3) by 2 units in X-directions and then scale it by 1.5 units in X-direction and 0.5 units in Y-direction about origin (0,0). **8**

OR iii. Explain 4-bit region code for clipping of a line against rectangle window. Explain Cohen-Sutherland Line clipping algorithm with suitable examples. **8**

Q.4 i. Write transformation matrix to rotate a point P (10,20,30) about Y axis by 30 degree clockwise. **3**

ii. Define Perspective projection. Write equation to calculate perspective projection of a point P (x, y, z) on projection plane with Centre of projection at (0, 0, -d). **7**

OR iii. What is hidden surface elimination? Explain. **7**
Write Z-buffer algorithm.

Q.5 i. Draw CIE-Chromaticity diagram and explain the terms: Color gamut, complimentary color. **4**

ii. Mention the importance of Color model. Give the difference between RGB and CMY Color models. **6**

OR iii. What is diffuse illumination? Explain. Describe Phong Shading and Gouraud Shading. **6**

Q.6 Answer any two:

i. Define Multimedia. Explain the following terms: Digital Audio, MIDI. **5**

ii. List various Text, Audio, Video, Image file formats and mention their features. **5**

iii. Define Animation. Mention its importance. Explain following terms: key frames, morphing. **5**

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Marking Scheme
CS3CO24 / IT3CO11 Computer Graphics & Multimedia

Q.1	i.	The number of pixels stored in the frame buffer of a graphics system is known as (a) Resolution		**1**
	ii.	LCD is an _____ device (b) Non emissive		**1**
	iii.	Aspect ratio of high-resolution monitor is (c) 16:9		**1**
	iv.	The transformation that is used to alter the size of an object is (a) Scaling		**1**
	v.	The Painter's algorithm is also called (c) Both (a) and (b)		**1**
	vi.	The _____ projection is generated when the center of projection is at infinity. (a) Parallel		**1**
	vii.	More the control points of a Bezier curve, _____ quality of the curve (c) Better		**1**
	viii.	The RGB colour model the code "000" is for (b) Black		**1**
	ix.	Sampling frequencies and quantization used in CD quality digital Audio is (b) 44.1 kHz 16 bit		**1**
	x.	Intuitive color model for user (d) HSV		**1**
Q.2	i.	Raster refresh color monitor. (As per answer)	2 marks	**2**
	ii.	Explanation	1 mark	**3**
		Algorithm	2 marks	
	iii.	Explanation	1 mark	**5**
		Algorithm	2 marks	
		Numerical	2 marks	
OR	iv.	Explanation	1 mark	**5**
		Algorithm	2 marks	
		Numerical	2 marks	
Q.3	i.	Define Window and Viewport.(As per explanation)	2 marks	**2**
	ii.	Transformation matrices	4 marks	**8**
		Solution	4 marks	
OR	iii.	Explanation	3 marks	**8**
		Algorithm	2 marks	
		Example	3 marks	
Q.4	i.	Transformation matrices	1 mark	**3**
		Solution	2 marks	
	ii.	Explanation	3 marks	**7**
		Numerical Solution	4 marks	
OR	iii.	Explanation of hidden surface	3 marks	**7**
		Z- buffer algorithm	4 marks	
Q.5	i.	Draw CIE-Chromaticity diagram and explain the terms: Color gamut, complimentary color. (As per Explanation)	4 marks	**4**
	ii.	Importance	3 marks	**6**
		Difference	3 marks	
OR	iii.	Diffuse illumination	2 marks	**6**
		Phong Shading and Gouraud Shading.	4 marks	
Q.6		Answer any two:		
	i.	Explanation of Multimedia	2 marks	**5**
		Explain the following terms: Digital Audio, MIDI.	(1.5 mark*2)	
	ii.	List various Text, Audio, Video, Image file formats and mention their features. (As per explanation)	(1.25 mark*4)	**5**
	iii.	Explanation of animation.	1 mark	**5**
		Importance.	2 marks	
		Explain following terms:		
		Key Frames	1 mark	
		Morphing.	1 mark	

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