

Total No. of Questions: 6

Total No. of Printed Pages:3

Enrollment No.....



Faculty of Engineering
End Sem (Odd) Examination Dec-2022

CS3CO24 / IT3CO25

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. Scan Conversion Technique is most suitable for computer graphics because the screen is made of pixels arranged as- 1
(a) Matrix (b) Rows (c) Columns (d) All of these
- ii. Bresenham's line drawing algorithm is superior to DDA because of- 1
(a) Simple calculations (b) Less calculations
(c) No truncation (d) Integer operations
- iii. Which of these 2D transformations requires matrix addition? 1
(a) Translation (b) Rotation (c) Scaling (d) Shear
- iv. When a Polygon is clipped what is more likely to happen to its number of edges- 1
(a) Decrease (b) Increase
(c) Remain same (d) Cannot say anything
- v. Which of the following is not a set of complementary colours? 1
(a) Red + Yellow (b) Green + Magenta
(c) Blue + Yellow (d) Cyan + Red
- vi. Parameterization is necessary while drawing curves because- 1
(a) Approximation
(b) Blending
(c) Interpolation
(d) All 3 directions are considered equally
- vii. Specular reflection occurs when the surface is- 1
(a) Rough (b) Transparent
(c) Translucent (d) Shiny

P.T.O.

[2]

- viii. Colour model is a set of- **1**
 (a) Wavelengths (b) Frequencies
 (c) Spectrums (d) Methods
- ix. Which of the following is not a Text File Format? **1**
 (a) Rich Text format (b) Doc
 (c) Pdf (d) MP3
- x. Which of the following MPEG is called Multimedia content description standard? **1**
 (a) MPEG-2 (b) MPEG-3
 (c) MPEG-7 (d) MPEG-21
- Q.2 i. What is presentation graphics? **2**
 ii. Define horizontal retrace, vertical retrace and interlacing. **3**
 iii. Explain DDA line drawing algorithm with a suitable example. **5**
- OR iv. Draw a circle with radius 10 using either midpoint algorithm or Bresenham's algorithm. **5**
- Q.3 i. What is a viewing pipeline? **2**
 ii. Translate the square A(0,0) B(3,0) C(3,3) and D(0,3) by 2 units in both x and y directions then scale it by 1.5 in x direction and by 0.5 in the y direction. **8**
- OR iii. Explain Cohen Sutherland line clipping algorithm. How can we use it for Polygon clipping? **8**
- Q.4 i. Differentiate between visible surface detection and back face removal. **3**
 ii. Rotate a Unit cube about the X axis by an angle of 45°. **7**
- OR iii. Explain Painter's algorithm or Z-Buffer algorithm. **7**
- Q.5 i. Construct a rough sketch of the Bezier curve with three control points (4,2), (8,8) and (16,4). What is the degree of the curve and what are the coordinates of the curve at $u = 0.5$. **4**
 ii. What is shading? Compare Phong shading with Gouraud shading. **6**
- OR iii. What are colour models? Why are RGB and YIQ are complementary? Explain CMY colour model. **6**

[3]

- Q.6 Attempt any two:
- i. Explain in detail the three file formats each for Text, Audio, Video and Images. **5**
- ii. What is animation? Explain its uses and principles. **5**
- iii. Explain either Unicode Standard or MPEG Standard. **5**

Marking Scheme

CS3CO24 / IT3CO25 Computer Graphics & Multimedia

Q.1	i.	Scan Conversion Technique is most suitable for computer graphics because the screen is made of pixels arranged as-	1
		(b) Rows	
	ii.	Bresenham's line drawing algorithm is superior to DDA because of-	1
		(d) Integer operations	
	iii.	Which of these 2D transformations requires matrix addition?	1
		(a) Translation	
	iv.	When a Polygon is clipped what is more likely to happen to its number of edges-	1
		(b) Increase	
	v.	Which of the following is not a set of complementary colours?	1
		(a) Red + Yellow	
Q.2	vi.	Parameterization is necessary while drawing curves because-	1
		Blending	
		(d) All 3 directions are considered equally	
	vii.	Specular reflection occurs when the surface is-	1
		(d) Shiny	
	viii.	Colour model is a set of-	1
		(d) Methods	
	ix.	Which of the following is not a Text File Format?	1
		(d) MP3	
	x.	Which of the following MPEG is called Multimedia content description standard?	1
Q.3		(c) MPEG-7	
	i.	Presentation graphics	2
	ii.	Define horizontal retrace, vertical retrace and interlacing.	3
		1 mark for each	
	iii.	DDA line drawing algorithm	3 marks
		Example	2 marks
	OR iv.	Draw a circle with radius 10 using either midpoint algorithm or Bresenham's algorithm.	5
		Solution	4 marks
		Answer	1 mark

Q.3	i.	Viewing pipeline	2
	ii.	Solution	6 marks
		Answer	2 marks
	OR iii.	Cohen Sutherland line clipping algorithm	4 marks
Q.4		Use it for Polygon clipping	4 marks
	i.	Differentiate between visible surface detection and back face removal.	3
		1 mark for each difference	
	ii.	Rotate a Unit cube about the X axis by an angle of 45°.	7
Q.5	OR iii.	Explain Painter's algorithm or Z-Buffer algorithm.	7
		As per the explanation	
	i.	Construct a rough sketch of the Bezier curve with three control points (4,2), (8,8) and (16,4). What is the degree of the curve and what he coordinates of the curve at u = 0.5.	4
	ii.	What is shading	3 marks
Q.6		Compare Phong shading with Gouraud shading	3 marks
	OR iii.	Colour models	1 mark
		RGB and YIQ are complementary	3 marks
		CMY colour model	2 marks
		Attempt any two:	
	i.	Three file formats each for Text, Audio, Video and Images.	5
		1.25 marks for each file format	
	ii.	Animation	2 marks
		Its uses and principles.	3 marks
	iii.	Five Unicode Standard or MPEG Standard.	5
		1 mark for each	
