National Institute of Technology Silchar
End-Semester (UG) Examinations, May 2022

Subject Code CS-308.
Semester: VI
Duration: Two Hours.

Subject: Graphics and Multimedia
Department: CSE
Total Marks: 50

Answer any 5 (five) questions.

Q No.		Question	Marks	CO
1.	(a)	Use cross product to find normal vector of a polygon with the following vertices: (0.8, 0.4, 0.2), (-0.4, 0.5, -0.2), (-0.6, -0.4, -0.2), (-0.4, 0.3, 0.1)	2	CO-2
	(b)	What is the homogenous matrix for 3D rotation about y axis, 3D reflection about the yz plane and Composite 2D translation	3	CO-2
	(c)	Discuss Painter's algorithm in detail	5	CO-2
2.	(a)	Prove that two successive 2D rotations are additive.	3	CO-2
	(b)	Why are homogeneous coordinates used for transformation computations in computer graphics?	3	CO-2
	(c)	What is back face removal algorithm? Describe the limitations of back face algorithm	4	CO-2
3.	(a)	i) Explain the terms Holography and Hologram ii) Define Fractals. Give example iii) What are Busy Image and Continuous Tone images?	1+1+1	CO-4
	(b)	Explain Multimedia System Architecture with a neat diagram	4	CO-4
	(c)	Explain some of the multimedia Interface standards for Image, Sound and Video.	1+1+1	CO-4
4.	(a)	Sketch and Explain the JPEG encoding and Decoding algorithm	5	CO-3
	(b)	Compare and contrast JPEG and PNG	2	CO-3
	(c)	You are appointed as a consultant to setup a Multimedia Laboratory in an Engineering Institute. Give specifications of components, configuration, connecting software, etc. along with the assumptions. What are the components of Distributed Multimedia Systems.	3	CO-4
5.		A document contains letter A through F with frequencies as indicated: A(0.25), B(0.1), C(0.2), D(0.15), E(0.26), F(0.04) a) Use Huffman coding to derive a codeword set and draw the Huffman tree for the same. b) Find Average number of bits per second and Redundancy c) Find the minimum number of bits per character assuming fixed-length codewords and hence compression ratio	6+2+2	CO-3
		OR		
6.	(a)	i) Onion skinning is used in _____ a) Image Representation b) Audio Compression c) Video compression d) Animation ii) Two parts of morphing algorithm are called _____ a) Warp & Tweening b) Tweening & Wrap c) Wrap & Dissolve d) Tweening & Dissolve iii) The GIF is limited to an _____ Palette a) 4 bit b) 6 bit c) 8 bit d) 16 bit iv) BMP format uses which of the following algorithms a) Huffman b) Run-Length c) Neither (a) nor (b) d) Both (a) and (b)	2	CO-3
	(b)	Consider a source of seven symbols with their percentage of occurrence as shown below Symbol — percentage of occurrence A — 20% B — 10% C — 20% D — 5% E — 30% F — 5% \# — 10% Apply Arithmetic coding algorithm to encode the message BCCEF#	8	CO-3