Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII(NEW) EXAMINATION – SUMMER 2019

Subject Code: 2181607 **Date: 17/05/2019**

Subject Name: Multimedia And Animation

Time: 10:30 AM TO 01:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	Compare and Contrast Lossy and Lossless compression technique.	**03**
	(b)	Compare Entropy and Self Information of a source with appropriate	**04**
	(c)	Explain MPEG 4 and H.264 standard in detail.	**07**
Q.2	**(a)**	Discuss elements of multimedia communication system.	**03**
	(b)	Why DCT transformation is used in JPEG compression? Explain.	**04**
	(c)	Construct an LZW dictionary and decode the following transmitted sequence: 5 2 3 3 2 1 6 8 10 12 9 11 7 16 5 4 4 11 21 23 4. Consider the initial dictionary with symbol {$, i, w, o, b}.	**07**
		OR	
	(c)	Given an initial dictionary consisting of the letters {@,a,b,o,w}, encode the following message using the LZW algorithm: wabba@wabba@wabba@wabba@woo@woo@woo	**07**
Q.3	**(a)**	Define following terms: (i) Compression ratio (ii) SNR (iii) PSNR	**03**
	(b)	Determine whether the following codes are uniquely decodable. (i) {000, 001, 11, 10, 01} (ii) {0101, 110, 001, 11, 00}	**04**
	(c)	Encode ‘college’ using Dynamic Huffman coding depicting Huffman tree after encoding each symbol in the source.	**07**
		OR	
Q.3	**(a)**	Why DC and AC coefficient are encoded separately in JPEG?	**03**
	(b)	Given an alphabet A= {a1,a2,a3,a4), find the first order entropy in the following cases: (i) P(a1)= P(a2)= P(a3)= P(a4)= 0.25 (ii) P(a1)= 0.5, P(a2)= 0.25, P(a3)= P(a4)= 0.125	**04**
	(c)	Give the algorithm for decoding procedure of both Huffman Coding and Arithmetic Coding procedures, with suitable examples. Outline the differences in both.	**07**
Q.4	**(a)**	Explain the concept of entropy coding for text compression.	**03**
	(b)	Is Huffman code optimum prefix code? Prove your answer.	**04**

(c) Consider the frequency counts shown in the Table below, answer the following questions, assuming that the data is to be encoded using arithmetic coding with integer implementation: **07**

Letter	Count
A	40
B	1
C	9

i) What is the word length required for unambiguous encoding?

ii) Find the binary code for the sequence "ACB" using the rescaling conditions, wherever necessary).

OR

Q.4 **(a)** Explain the concept of source coding for text compression. **03**

(b) Explain Key frame animation in brief. **04**

(c) Find the real valued tag for the sequence **1 3 2 1** using the following probability model: **07**

P(1) = 0.8, P(2) = 0.02, P(3) = 0.18

Q.5 **(a)** Explain MPEG encoder for Audio Compression **03**

(b) Describe the process of Morphing in brief. **04**

(c) Explain ADPCM encoder and decoder for Audio compression. **07**

OR

Q.5 **(a)** Explain MPEG decoder for Audio Compression. **03**

(b) Briefly discuss the process of 3D Modeling. **04**

(c) Explain the process of prediction in DPCM. **07**

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