M.E. First Semester (Electronics & Tele.) (Full Time) (C.G.S. - New)

13336 : Elective - I : Data Compression : 1 ENTC 5

P. Pages : 2 **AU - 3462**

Time : Three Hours Max. Marks : 80

Notes : 1. All question carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answer necessary with the help of neat sketches.
5. Use of pen Blue/Black ink/refill only for writing the answer book.

1. a) With the help of flowchart explain the update procedure for the adaptive Huffman coding algorithm. 7

   b) Prove Kraft- McMillan inequality theorem. 7

OR

2. a) Explain how Markov model is useful in text compression. 7

   b) Design a Huffman code for a source that puts out letters from an alphabets $A = \{a_1, a_2, a_3, a_4, a_5\}$ with $P(a_1) = P(a_3) = 0.2$ $P(a_2) = 0.4$ and $P(a_4) = P(a_5) = 0.1$ The entropy for this source is 2.122 bits | symbol. Find average length for this code. 7

3. a) Discuss how arithmetic coding overcomes the problem of assigning integers codes to individual symbols by assigning one code to entire input file, explain with example. 7

   b) Explain in brief. 6

      i) Static dictionary.

      ii) Adaptive dictionary.

OR

4. a) Explain concept of file compression and image compression. 7

   b) Explain the Graphics Interchange Format (GIF) used for image compression. 6

5. a) Draw the functional block diagram of a general image compression system and explain each block. 7

   b) Explain prediction with partial match (PPM) algorithm. 6

OR

6. a) Explain Run length encoding used for data compression. Also explain why fixed length coding is used for the length of run. 7

   b) Discuss applications of Transform coding to image and audio. 6

7.	a)	Explain the following terms.	6
		i) Boundaries.	
		ii) Reconstruction level.	
		iii) Quantizer distortion.	
	b)	Discuss Linde- Buzo- Gray algorithm.	7

OR

8.	a)	What is uniform and non- uniform quantization.	6
	b)	With the help of block diagram explain vector quantization procedure.	7
9.	a)	With the help of diagram explain a two stage Inverse wavelet transform synthesis bank.	7
	b)	Explain Haar Transform.	6

OR

10.	a)	With the help of Block diagram explain basic subband coding system.	7
	b)	Explain discrete Wavelet transform.	6
11.	a)	Compare PCM, DPCM and DM.	7
	b)	Explain various MPEG-2 video standards.	7

OR

12.	a)	With the help of Black diagram explain compression algorithm for packet video.	7
	b)	What are the different compression issues in ATM Networks?	7

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