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BTECH
(SEM VIII) THEORY EXAMINATION 2021-22
DATA COMPRESSION

Time: 3 Hours**Total Marks: 70****Note:** Attempt all Sections. If you require any missing data, then choose suitably.**SECTION A****1. Attempt all questions in brief.****2*7 = 14**

Q.no	Questions	Marks
(a)	Discuss Huffman code. Is Huffman coding is a lossless or lossy compression?	2
(b)	Differentiate between Fidelity and quality.	2
(c)	Write down the application of Huffman Coding in Text compression and audio compression.	2
(d)	Define data compression and compression ratio.	2
(e)	What do you mean by Binary Code? Compare Binary Code with Huffman Code.	2
(f)	Define Graphic Interchange Format.	2
(g)	Differentiate between Uniform and non-uniform quantization.	2

SECTION B**2. Attempt any three of the following:****7*3 = 21**

Q.no	Questions	CO
(a)	Explain the Tree structured Vector Quantizers with suitable examples.	7
(b)	What do you mean by lossless compression and lossy compression? Compare lossless compression with lossy compression with suitable example.	7
(c)	What is Facsimile Encoding? Explain Run-Length Coding technique used earlier for Facsimile. Give a brief comparison of MH, M& MMR and JBIG.	7
(d)	What do you understand by Adaptive Quantization? Explain the various approaches to adapting the quantizer parameters.	7
(e)	Explain physical, probability, Markov and composite source model in detail.	7

SECTION C**3. Attempt any one part of the following:****7*1 = 7**

Q.no	Questions	Marks
(a)	Explain the steps of the Linde-Buzo-Gray algorithm.	7
(b)	Determine whether the following codes are uniquely decodable or not: (i) {0,01,11,111} (ii) {0,01,110,111} (iii) {1,10,110,111} (iv) {0,01,10}	7



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4. Attempt any *one* part of the following:

7 * 1 = 7

Q.no	Questions	Marks	CO
(a)	Explain modeling and coding with the help of example. What do you understand by prefix code?	7	1
(b)	Explain the JBIG standard of Bi-level image compression.	7	3

5. Attempt any *one* part of the following:

7*1 = 7

Q.no	Questions	Marks	CO
(a)	What is lossy data encoding? Write down the distortion measure criteria's to check the fidelity of a reconstructed source sequence to the original one in such type of encoding techniques.	7	4
(b)	Explain scalar & vector quantization. Write the differences with suitable examples of the approaches.	7	5

6. Attempt any *one* part of the following:

7*1 = 7

Q.no	Questions	Marks	CO
(a)	Design Golomb code for m=5 and n= 0,1,2,3,4,5,6,7,8,9,10.	7	2
(b)	Why data Compression is needed? Explain Compression and Reconstruction with the help of block diagram.	7	1

7. Attempt any *one* part of the following:

7*1 = 7

Q.no	Questions	Marks	CO
(a)	What are two observations on which Huffman procedure is based regarding optimum prefix code? What are the various applications of Huffman coding?	7	3
(b)	What are the advantages of vector quantization over scalar quantization? Explain with the help of an example.	7	4