Seat No.:	Enrolment No.
Seut 110	Emonient 10:

Subject Code:181602

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII EXAMINATION - SUMMER 2016

Date:05/05/2016

	•	ect Name:Data Compression :10:30 AM to 01:00 PM Total Marks: 70)
		 Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks. 	
Q.1	(a)	Define Compression and Decompression. Mention aim of it. State Merits and Demerits of Data Compression.	07
	(b)	A source image file (pixels 256×256) with $65,536$ bytes is compressed into a file with $16,384$ bytes. Find out the compression ratio. State your answer whether it is positive or negative compression.	07
Q.2	(a) (b)	Explain how to distinguish Lossless data compression from Lossy data compression. Derive step by step a canonical minimum-variance Huffman code and tree for alphabet {A, B, C, D, E, F}, given that the probabilities that each character occurs in all messages are as follows: Symbol Probabilities: A= 0.3, B= 0.2, C= 0.2, D= 0.1, E= 0.1, F= 0.1. Also compute the average length of the Huffman code derived. OR	07 07
	(b)	Given S = {A, B, C, D, E, F, G, H} and the symbols' occurring probabilities 0.25, 0.2, 0.18, 0.09, 0.05, 0.02, 0.01. Construct a canonical minimum-variance Huffman code and tree for this input. Also compute the average length of the Huffman code derived.	07
Q.3	(a) (b)	<u> </u>	07
		Distortion Theory. OR	
Q.3	(a)	What is Quantization? Explain Vector and Companded Quantization with respect to it. Also state two types of Quantization error.	07
	(b)	**	07
Q.4	(a) (b)	What is Delta modulation & differential PCM? Explain in depth. Use LZ78 to trace encoding and decoding the string SATATASACITASA	07 07
0.4	(a)	OR Find the frequency of each character and Encode the following string using	07
Q.4	(a) (b)	Huffman Coding Method → "beep boop beer!" Use LZ77 to encode "WEDWEWEEWEWET"	07 07
Q.5	(a)	Why adaptive Huffman coding is prefer over Huffman code? Explain Adaptive	07
	(b)	Huffman compression with suitable example. Also brief swapping process in it. Explain sliding window compression technique with an example.	07
	(b)	OR	U/
Q.5	(a) (b)	Describe the audio compression with proper diagrams. Write Short Note on 1. JPEG Compression 2. Adaptive Coding	07 07
