Q. Code:481031

Reg. No. | | | | | | | | | | | | | |

B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Third Semester

IT18303 – INFORMATION AND CODING THEORY

(Information Technology)

(Regulation 2018/2018A)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Calculate Entropy, mutual information and channel capacity for various channels	**3**
CO 2	Demonstrate different encoding and decoding of digital data streams.	**3**
CO 3	Evaluate various methods of generating and detecting different types of error correcting codes	**5**
CO 4	Identify different compression and decompression techniques.	**3**
CO 5	Evaluate the performance of digital communication system by evaluating the probability of error for different errors.	**5**

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

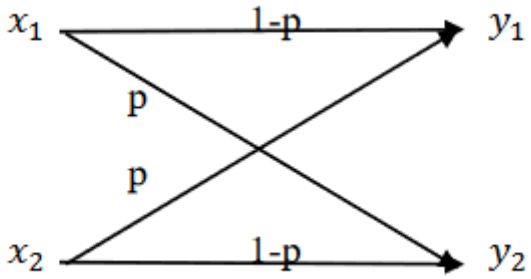
		CO	RBT LEVEL
1.	Solve the entropy of the event of throwing a fair die.	**1**	**3**
2.	Summarize the properties of mutual information.	**1**	**2**
3.	Identify the merits and demerits of pulse code modulation.	**2**	**2**
4.	Explain Adaptive Differential Pulse Code Modulation.	**2**	**2**
5.	Examine the features of syndrome decoding.	**3**	**3**
6.	Infer the applications of Viterbi decoding.	**3**	**3**
7.	Summarize the principles of text compression.	**4**	**2**
8.	Explain the features of GIF.	**4**	**2**
9.	Mention the concept of sampling.	**5**	**3**
10.	Summarize the principles of video compression.	**5**	**3**

PART- B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	A message source generates ten messages with probabilities 0.1, 0.13, 0.01, 0.04, 0.08, 0.29, 0.06, 0.22, 0.05 and 0.02. The rate of message generation is 300 message/sec. Calculate the entropy of source and information rate. Obtain the Huffmann codes for message and calculate the average number of bits/message.	**(14)**	**1**	**3**

(OR)

(b)	Apply the concept of mutual information and derive the capacity of the given channel.	**(14)**	**1**	**3**



12. (a)	Compare and contrast the features of delta modulation and adaptive delta modulation.	**(14)**	**2**	**3**
	(OR)			
(b)	Identify the techniques used for coding of speech signal at low bit rates and explain in detail.	**(14)**	**2**	**3**
13. (a)	Generate all possible (n,k) codewords assuming n=7,k=4 using linear block code.	**(14)**	**3**	**3**
	(OR)			
(b)	Apply convolutional coding and explain how codeword is generated.	**(14)**	**3**	**3**
14. (a)	Implement the differences between static Huffman coding and dynamic Huffman coding.	**(14)**	**4**	**3**
	(OR)			
(b)	List the differences between GIF and TIFF.	**(14)**	**4**	**3**
15. (a)	Examine the features of Code excited LPC with neat diagrams.	**(14)**	**5**	**4**
	(OR)			
(b)	Analyze the characteristics of various MPEG video standards.	**(14)**	**5**	**4**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Analyze and choose a suitable lossy compression technique for compressing digital images.	**(10)**	**4**	**4**

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