

Reg. No. :

--	--	--	--	--	--	--	--	--	--	--

**Question Paper Code: 35406**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Fifth Semester

Electronics and Communication Engineering

01UEC506 – INFORMATION THEORY AND CODING

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Give the Kraft McMillan inequality for instantaneous code.
2. List the properties of mutual information.
3. Compare LZ and LZW coding.
4. What is Dolby AC3?
5. What is TIFF?
6. Distinguish between motion compensation and estimation.
7. What is Hamming distance? Give an example.
8. What is syndrome?
9. Define constraint length in convolutional codes.
10. What are convolutional codes?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Apply the Shannon-Fano algorithm to a source which generates symbols  $x_1, x_2, x_3, x_4$  with the probabilities  $1/8, 1/2, 1/4$  and  $1/8$  respectively. Calculate the code efficiency. (8)
- (ii) Discuss about mutual information and its properties. (8)

Or

- (b) Describe the different types of channels used in information coding techniques. (16)
12. (a) Apply arithmetic coding to encode the message “went#”, with the following symbols and their probability of occurrence are as described here: (16)

Symbols	$e$	$n$	$t$	$w$	$\#$
Probability	0.3	0.3	0.2	0.1	0.1

Or

- (b) With neat illustrations explain linear predictive coding. (16)
13. (a) With the neat block diagram, explain the working of JPEG encoder and decoder. (16)

Or

- (b) Describe about the video compression standard which are defined by ITU-T for video conferencing services over ISDN? (16)
14. (a) (i) Discuss in detail about single parity codes with example. (8)
- (ii) Design a syndrome calculator for  $(7, 4)$  cyclic Hamming code generated by the polynomial  $G(p) = p^3 + p + 1$ . Calculate the syndrome for  $Y = (1001101)$ . (8)

Or

- (b) Discuss in detail about cyclic codes. (16)
15. (a) (i) Discuss the development of code tree with example. (12)
- (ii) Compare code tree with trellis diagram. (4)

Or

- (b) Paraphrase the viterbide coding algorithm with suitable example. (16)