(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 131408

Roll No.

B. Tech.

(SEM. IV) THEORY EXAMINATION, 2014-15

INFORMATION THEORY AND CODING

Time : **3** Hours] [Total Marks : **100**

SECTION-A

1 Attempt arty four parts : **5×4=20**

a) What do you mean by measure of information?

b) Give a review of probability theory.

c) Explain Average information content of symbol in long independent sequence.

d) Consider a discrete memory less source alphabet A={s0,s1,s2} with respective probabilities P0=1/4, P1=1/4, P2=1/2 find, the entropy of the source.

e) Show that if there are 'M' numbers of equally likely message then entropy of source is $\log_2 M$.

f) Explain Mark-off stastical model for information source in brief

SECTION - B

2 Attempt any four parts : **5×4=20**

a) What do you mean by data compression and give its type ?

b) Give an equation of Kraft-mcmillan equality and explain it.

c) Write down Shanon's encoding algorithm.

d) Write an algorithm for Shanon-fang-elias coding.

e) Explain LZW compression algorithm with example.

f) What is block code and write its properties.

SECTION-C

3 Attempt any two parts : 10×2=20

a) Differentiate entropy and mutual information for continuous ensembles with suitable example.

b) Explain discrete communication channels in detail.

c) Write down channel capacity theorem.

SECTION-D

4 Attempt any two parts : 10×2=20

a) Explain error correction and detection with examples.

b) Write a note on standard arrays and table look up for encoding.

c) What is an error? Give its types with example.

SECTION-E

5 Attempt any two parts : 10×2=20

a) What is burst error correcting code and convolution code?

b) Explain the encoding using an (n-k) bit shift register.

c) Write short note on

i) BCH code

ii) GOLAY code.