

Roll No. :

Total No. of Questions : 9]

[Total No. of Pages : 3

22662

**M.Tech. (ECE) 1st Semester
Examination, March-2021
(CBCS Scheme)**

**INFORMATION AND COMMUNICATION
THEORY**

Paper-MTECE21C3

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note :- Attempt five questions in all, selecting one question from each Section. Question No. 1 is compulsory.

1. Explain the following :

- (a) Joint information.
- (b) Codes for channel coding.

- (c) Viterbi decoding algorithm.
- (d) Code incurable error probability. $4 \times 5 = 20$

Section-A

- 2. (a) What is self-information ? Mention its various measuring units and also mention the reasons for choosing logarithmic function.
- (b) Write and explain the Shannon's theorems. $10,10$
- 3. (a) Define information. State all various units of information and find relationship between them.
- (b) Explain the Discrete and Continuous entropy. $10,10$

Section-B

- 4. What are the advantages and disadvantages of Error Control Coding ? Discuss the Methods of controlling errors. 20

- 5. (a) What is source coding ? Define code length and code efficiency. Give the relation between it.
- (b) Explain the various codes for channel coding. $10,10$

Section-C

- 6. (a) Explain the generator and parity check matrices.
- (b) Describe a single error correction with linear block code. $10,10$
- 7. (a) Explain the various code used in information theory.
- (b) Discuss the Hamming code for 1 bit error correction with example. $10,10$

Section-D

- 8. What do you understand by Convolution Codes ? How are these constructed ? 20
- 9. Explain the performance of linear block codes. 20