

Roll No.

3218

**B. Tech. 5th Semester (ECE)
Examination – December, 2022**

COMMUNICATION ENGINEERING

Paper : PCC-ECE-305-G

Time : Three Hours]

[Maximum Marks : 75

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 Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. (a) What do you mean by continuous signal ?
- (b) Define asymmetric channel with *one* example.
- (c) What do you mean by ergodic process ?
- (d) Define information.
- (e) Define auto correlation and what is its significance.
- (f) Define Entropy. 2.5 × 6 = 15

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UNIT - I

2. State and explain convolution theorem. Also describe in detail cross correlation. 15
3. Analyze Fourier Transform of: 15
- (a) $x(t) = \delta(t)$
 - (b) $x(t) = t\delta(t-3)$
 - (c) $x(t) = t\delta(t+6)$

UNIT - II

4. Analyze Huffman coding procedure to find coding efficiency for the following message ensemble: 15
- $P(x_1) = 0.4, P(x_2) = 0.2, P(x_3) = 0.12, P(x_4) = 0.08, P(x_5) = 0.08, P(x_6) = 0.08, P(x_7) = 0.04$
5. State and prove Shannon Hartley theorem. 15

UNIT - III

6. (a) Describe Baye's theorem for probability. 10
- (b) Define the concept of conditional probability. 5
7. What is joint probability density function ? Explain its different properties. 15

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UNIT - IV

8. State and explain central limit theorem. 15
9. Explain the following: 15
- (a) Power spectral density
 - (b) Cyclic code

3218- (P-3)(Q-9)(22) (3)