

Roll No.

3218

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

COMMUNICATION ENGG.

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 any **five** questions. All questions carry equal marks.

1. Define :

3 × 5 = 15

- (a) Mean
- (b) Entropy
- (c) Probability
- (d) Power spectral density
- (e) Ergodic process

2. (a) Prove that Dirac comb is its own Fourier transform.

10

(b) What do you understand by convolution theorem ? Explain its properties.

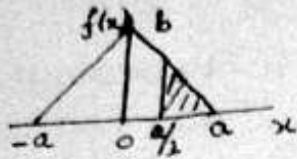
5

P. T. O.

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3. Explain Auto correlation and its properties. 15

4. For the Pdf shown in fig. find : 15

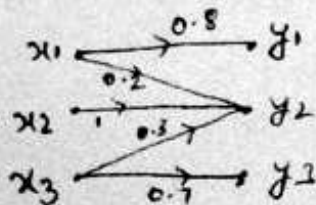


(a) Relationship between a and b .

(b) $P\left(x > \frac{a}{2}\right)$

5. Find the transferred information : 15

$$P(x_1) = 0.2, P(x_2) = 0.5, P(x_3) = 0.3$$



6. State and prove Shannon -Hartley Theorem ? 15

7. Apply Huffman coding for the following message

$$\text{ensemble : } [x] = [x_1 \ x_2 \ x_3 \ x_4 \ x_5 \ x_6 \ x_7]$$

$$[P] = [0.4 \ 0.2 \ 0.12 \ 0.08 \ 0.08 \ 0.08 \ 0.04]$$

take $M = 2$ 15

8. (a) What do you understand by central limit theorem ? 7.5

(b) Explain Linear Block code. 7.5

9. Write short note on any two : 7.5 × 2 = 15

(a) Entropy

(b) Variance

(c) Baye's theorem