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BIEL-014

B.Tech. – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

00443

Term-End Examination

December, 2016

BIEL-014 : ANALOG COMMUNICATION

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Missing data, if any, may be suitably assumed. Use of scientific calculator is permitted.*

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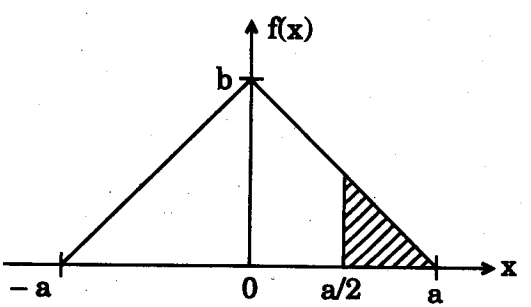
1. (a) For the Probability Density Function (PDF) shown below, find (i) Relation between a and b, (ii) $P\left(x > \frac{a}{2}\right)$. *3+3=6*



(b) The joint probability function of two random variables X and Y is given as

$$f(X, Y) = \begin{cases} C(X^2 + 2Y); X = 0, 1, 2 \& Y = 1, 2, 3, 4 \\ 0; \quad \text{otherwise} \end{cases}$$

Find (i) Value of C (ii) $P(X = 2, Y = 3)$ (iii) $P(X \leq 1, Y > 2)$ (iv) Marginal probability function of X and Y. *2×4=8*

2. What are the various methods for detection of AM waves ? Explain each in brief. *14*

3. Explain the phase discrimination method for generation of an SSB modulated wave. *14*

4. What do you mean by the term frequency translation ? Give a detailed comparison of various AM techniques. Explain the envelop detection method of VSB-SC. *3+5+6=14*

5. What are the various direct methods used for the generation of FM waves ? Explain these methods. *14*

6. What are the various non-linear effects used in FM systems ? Explain them. *14*

7. Explain the concept of Noise in DSB-SC receivers. *14*

8. Write short notes on any ***two*** of the following : *2×7=14*

   (a) Wide Band FM

   (b) Noise Figure

   (c) Properties of Gaussian Process