5E3129

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B. Tech. (Sem. V) (Main/Back) Examination, December - 2013
Electrical Engg.
5EE6.2 Principle of Communication System

Time : **3** Hours] [Total Marks : **80**
[Min. Passing Marks : **24**

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used / calculated must be stated clearly.

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. NIL 2. NIL

UNIT - I

1 (a) Evaluate the expression for equivalent noise temperature in two port cascade network. 8

(b) Explain the following :

(i) Noise bandwidth

(ii) Resistor noise. 8

OR

1 (a) The noise figure of the individual stage of a two-stage amplifier is 2.03 and 1.54 respectively. The available power gain of the first stage is 62. Evaluate the overall noise figure. 8

(b) Derive noise figure in terms of available gain and hence derive the formula for noise figure of a cascaded system. 8

UNIT - II

2 (a) Determine the power content of each of the sidebands and of the carrier, of an AM signal that has a percentage modulation of 85% and contains 1200 W of total power. 8

(b) Explain SSB modulation by phase shift method. 8

OR

2 (a) Explain AM superhetrodyne receiver with neat block diagram. 8

(b) What are the generating methods for SSB-SC signal ? 8

UNIT - III

3 (a) Differentiate between FM and PM. How one can be generated from the other ? 8

(b) Explain the role of pre-emphasis and de-emphasis in FM system. 8

OR

3 (a) A single tone FM is represented by the voltage equation as :
$V(t) = 12 \cos (6 \times 10^8 t + 5 \sin 1250 t)$
Determine the following :
(i) Carrier frequency
(ii) Modulating frequency
(iii) Modulation index
(iv) Maximum frequency deviation. 8

(b) Explain the PLL demodulator used in FM. 8

UNIT - IV

4 (a) Calculate the output signal to noise ratio of square law demodulator. 8

(b) Calculate the output signal to noise ratio of envelope detector. 8

OR

4 (a) Explain why FM is better than AM. Calculate signal to noise ratio for FM and AM. 8

(b) Prove that for a DSB-SC system there is an improvement in SNR by a factor of 2. 8

UNIT - V

5 (a) Why sampling is required in digital communication ? Explain natural and flat-tip sampling. 8

(b) Compare PPM and PWM. How PPM can be obtained from PWM ? 8

OR

5 (a) Explain the generation and demodulation method of PAM. 8

(b) Compare the PAM, PPM and PWM with neat diagram. 8