Printed Pages : 4

120602

EEC608

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 120602

Roll No. [ ][ ][ ][ ][ ][ ][ ][ ][ ]

B Tech.

(SEM. VI) THEORY EXAMINATION, 2014-15
COMMUNICATION ENGINEERING

Time : **3** Hours]   [Total Marks : **100**

Note: Attempt all the questions. Each question carries equal marks.

1   Attempt any four parts of the following: (5×4=20)

   (a)   What is AM? What are different types of AM? Why modulation is needed?

   (b)   What is Superheterodyne Receiver? Also mention its advantages.

   (c)   Draw the block diagram of phase shifter method of generation of SSB and explain how carrier and unwanted sidebands are suppressed.

   (d)   Explain VSB modulation method with its waveform.

   (e)   The efficiency of n ordinary AM is defined as the percentage of the total power carried by the sidebands, that is $n = P_s \big/ P_t$,Where P_s is the power carried by the sidebands and P_t is the total power of the AM signal.

120602]   **1**   **[Contd...**

(i)   Find n for $m_a = 0.5$ (50% modulation)

(ii) Show that for a single tone AM n max is 33% at $m_a = 1$

(f) What is Radio transmitter? What are different blocks used in the transmission of radio signal?

2   Attempt any four parts of the following: (5×4=20)

(a) What is Angle modulation? What are its classifications? Also define modulation index for FM.

(b) What is pre-emphasis and de-emphasis and how SNR improves by using pre-emphasis and de-emphasis? Find out the figure of merit in SSB-SC.

(c) Given a angle modulated

$$signal\ x(t)=20\cos[10^6]\pi t+10\sin 2\pi(10^2)t]$$.

Find the maximum phase deviation and the maximum frequency deviation.

(d) What is difference between AM and FM ?

(e) Explain the working of Stereophonic FM broadcast receiver.

(f) What do you mean by indirect method? Explain one of the indirect method of FM generation.

3   Attempt any two parts of the following: (10×2=20)

    (a)   (i)   Explain the method of Sampling. Also prove the method with relevant waveform.

          (ii)   For a given sequence 1011001011 construct Unipolar NRZ, Unipolar RZ, bipolar NRZ, bipolar RZ, Alternate Mark Inversion (AMI), and Manchester format.

    (b)   Explain modulation and demodulation of PWM system using suitable waveform. Also discuss how is PPM generated using PWM.

    (c)   Why is Quantization needed? What can be done for the removal of Quantization error Support your point with suitable example.

4   Attempt any two parts of the following: (10×2=20)

    (a)   Explain in brief:

          (i)   Delta Modulation

          (ii)   Adaptive Delta Modulation

    (b)   Using Kepler's formulations explain the basis of Geosynchronous orbit for satellite communication. Illustrate different low and medium earth orbits for satellite communication.

    (c)   Discuss the classification, working, advantages and application of each type of Vocoder.

5   Attempt any two parts of the following: (10×2=20)

(a)   Explain the terms KELL FACTOR and ASPECT RATIO. Hence, calculate horizontal and vertical resolution.

(b)   Draw the block diagram of television, transmitter and explain function of each block in brief.

(c)   Explain following terms in connection with camera tube.

    (i)   Spectral response

    (ii)   Image lag

    (iii)   Dark current

    (iv)   light transfer characteristics.

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