Code No: EC05032 **RA**

II B.Tech I Semester(R05) Supplementary Examinations, May/June 2010
ANALOG COMMUNICATIONS
(Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Define multiplexing. Explain with a block diagram the process of FDM.
   (b) A modulating signal is given by m(t) = 2 sin $2\prod 10^4$t is used to amplitude modulate a carrier given by c(t) = 10 sin $2\prod 10^6$t.
      i. Write the expression for the modulated wave.
      ii. Draw the two sided spectrum of the modulated wave. [8+8]

2. (a) Consider the wave obtained by adding a non coherent carrier A_c cos (2 Π f_c t + φ) to DSB-SC wave m(t) cos (2 Π f_c t) where X (t) is the message waveform. This waveform is applied to an ideal envelope detector. Find the resulting detector out put. Evaluate the output for.
      i. $\varphi = 0$ and
      ii. $\varphi \neq 0$ and $|X\ (t)| << A_c/2$.
   (b) Explain the DSB-SC generation by balanced modulator using FET amplifiers. [8+8]

3. (a) Describe the frequency response of VSB filter used in TV receivers.
   (b) An audio signal 10 sin 1000 π t is used to modulate a carrier of 50 sin $2\pi\ 10^5$t. Calculate the bandwidth and power delivered to a load of 600 ohms in case of
      i. AM
      ii. DSB-SC and
      iii. SSB. [4+12]

4. (a) Explain the operation of the balanced slope detector using a circuit diagram and draw its response characteristics. Discuss in particular the method of combining the outputs of the individual diodes. In what way is this circuit an improvement on the slope detector and in turn what are the advantages?
   (b) Compute the bandwidth requirement for the transmission of FM signal having a frequency deviation 75 KHz and an audio bandwidth of 10KHz. [12+4]

5. (a) Explain the equivalent model of a generalized communication system for noise calculation.
   (b) Explain the noise performance of DSB SC scheme with the help of block diagram. [16]

6. (a) Classify radio transmitters in detail.
   (b) Compare low level modulation and high level modulation of radio transmitters. [16]

7. (a) Explain the purpose of Mixer / Local oscillator circuits.
   (b) A receiver has a sensitivity of 1 μ v and a blocking dynamic range of 100 dB. What is the strongest signal that can be present along with the 1 μ v signal without blocking taking place ? [16]

8. (a) How is PDM wave converted into PPM system.
   (b) Explain why a single channel PPM of system requires the transmission of synchronization signal, where as a single channel PAM or PDM system does not it. [16]

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