

II B.Tech II Semester Supplementary Examinations, Nov/Dec 2005
ANALOG COMMUNICATIONS
 (Common to Electronics & Communication Engineering and Electronics & Telematics)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Explain the working of a teleprinter. What is the characteristic of the code used in teleprinters? How does the receiver remain in step with the transmitter. [16]
2. (a) Explain filter method of suppressing unwanted sideband.
 (b) A SSB-SC transmitter operating at a 16MHz has frequency stability of 1 part per million. If its transmission is reproduced by a receiver whose stability is 8 part per million, what is the maximum frequency error at the output of the receiver could have in reproducing the transmission. [16]
3. (a) Explain clearly the difference between Amplitude, Frequency, and Phase modulations, beginning with the definition of each type and the meaning of the modulation index in each case.
 (b) Explain with the block diagram the Armstrong method of FM generation. [8+8]
4. (a) Distinguish between negative peak clipping and diagonal peak clipping in an envelope detector. The output of a diode envelope detector is fed through a DC blocking capacitor to an amplifying stage, which has an input resistance of 10 kilo-ohms. If the diode load resistor is 5k-ohm, determine the maximum depth of sinusoidal modulation the detector can handle with out negative peak clipping.
 (b) Consider a composite wave obtained by adding a non coherent carrier $A_c \cos (2\pi f_c t + \phi)$ to DSB-SC wave $X(t) \cos (2\pi f_c t)$ where $X(t)$ is the message waveform. This composite waveform is applied to ideal envelope detector. Find the resulting detector output. Evaluate this for .
 i. $\phi = 0$ and
 ii. $\phi \neq 0$ and $|X(t)| \ll A_c$ [8+8]
5. (a) Explain how frequency stability is achieved in modern transmitter.
 (b) Describe with aid of suitable diagram, the principal method of SSB power generation.
 (c) Describe the advantages of a SSB system for high frequency point to point communication and explain why it is unsuitable for broadcasting. [4+6+6]
6. (a) Discuss the factors influencing the choice of Intermediate frequency for a radio receiver.

- (b) Explain the operation of a self-excited transistor mixer by 3-frequency approach, with a neat diagram.
- (c) Write about double spotting. [6+6+4]
- 7. (a) State the difference between AM receivers and FM receivers. [4+8+4]
- (b) Briefly explain the function of each block in a FM superheterodyne receiver.
- (c) Write about hard limiter.
- 8. (a) Show that for AM, when the noise is small compared to the signal the performance of the envelope detector is identical to that of synchronous detector.
- (b) What is the use of calculating noise figure? [12+4]

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