

II B.Tech II Semester Supplementary Examinations, April/May 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. (a) Compare merits and demerits of strowger exchange with electronic exchange
 (b) Explain theory of a telephone receiver.
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.
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.
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 out put. Evaluate this for .
 - i. $\phi = 0$ and
 - ii. $\phi \neq 0$ and $|X(t)| \ll A_c$
5. (a) In an AM radio transmitter you can have modulation at low level or at the final PA stage. Explain briefly both methods and compare their merits.
 (b) Why is frequency stability of a transmitter is important. Explain one method to obtain good stability.
6. (a) What are the advantages of Superheterodyne receiver as compared to a TRF receiver.
 (b) Explain clearly what is meant by image frequency in a superheat receiver and how it can be eliminated.

- (c) Define conversion transconductance of a mixer. With the help of a typical circuit diagram, explain the working of a separately excited mixer.
- 7. (a) Explain the principles of delayed AGC with a circuit diagram.
(b) What are the functions of variable selectivity and sensitivity? How is each achieved in practice?
(c) Draw a block diagram of a FM receiver and explain each block.
- 8. Derive expressions for SNR and Figure of merit in AM receivers
