

III B.Tech II Semester Supplementary Examinations, April/May 2005
COMMUNICATION ENGINEERING
(Common to Electronics & Instrumentation Engineering and Bio-Medical Engineering)

Time: 3 hours**Max Marks: 70**

Answer any FIVE Questions
All Questions carry equal marks

1. (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.
2. (a) Explain the principle of pre-emphasis and de-emphasis in FM with circuits.
(b) A carrier frequency modulator by sinusoidal modulating signal of frequency 2KHz resulting in a frequency deviation of 5KHz. What is the bandwidth occupied by the modulated waveform?. The amplitude of the modulating sinusoidal is increased by factor of 3 and its frequency lowered to 1KHz. What is the new bandwidth?
3. (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.
4. (a) Write short notes on:
 - i. Frequency synthesizers
 - ii. Spurious responses in radio receivers
(b) Bring out the factors influencing the choice of IF and indicate the values of IF employed in each of the following cases
 - i. AM Broadcast receivers
 - ii. FM Broadcast receiver
 - iii. TV receivers in the VHF and UHF bands.
5. (a) Differentiate between simple, delayed and amplified AGC and explain their action with the help of simple circuits blocks.
(b) Discuss briefly similarities and differences between FM and AM receivers.
(c) Write in detail about the limiter used in FM receiver.
6. (a) A narrow band signal has a bandwidth of 10kHz centered on a carrier frequency of 100kHz. It is proposed to represent this signal in discrete time form by sampling its inphase and quadrature components individually. What is the minimum sampling rate can be used for this representation?

- (b) Explain the working of PAM modulator.
- 7. (a) Discuss the noise considerations in PCM. Give the influence of E_b/N_0 on the probability of error.
(b) Discuss the applications of M-ary modulation schemes.
- 8. (a) Draw the time-domain graph for the bit pattern 10110110 as it would appear on an RS-422 circuit, Assume a 1 is 5 volts and a 0 is -5 volts. Draw the complement also.
(b) How much improvement in data rate can be achieved over 1000 feet if we move from RS-423 to RS-422?
(c) What does the functional specification of EIA 232 describe?
