

Basics of communication Engineering

Con. 4878-06.

(REVISED COURSE)

YM-5222

(3 Hours)

[Total Marks : 100]

N. B. : (1) Question No. 1 is compulsory.

(2) Attempt any **four** questions out of the remaining **six** questions.(3) Figures to **right** indicate **full** marks.(4) Assume **suitable** data wherever **necessary**.

- 21/6/06
1. (a) Draw a neat block diagram of a superheterodyne AM radio receiver and explain its functioning. 10
Draw all the waveforms.
 - (b) Explain PCM system with the help of a neat block diagram. 10
 2. (a) Derive an expression for an AM voltage. Why modulation index cannot exceed 1 in AM ? 10
 - (b) Explain how to determine the modulation index value from an AM waveform. 10
An AM transmitter transmits 95 watts of power. The carrier is modulated by 2 signals simultaneously by 2 signals with modulation indices of 0.65 and 0.60. Calculate the carrier power and total side band power.
 3. (a) State and prove the sampling theorem for low pass signal. 10
 - (b) Explain Pulse Code Modulation with the help of a neat block diagram. Why companding is needed in PCM ? 10
 4. (a) Explain the various types of noises that affect communication. 10
 - (b) Derive an expression for total noise factor of a cascaded amplifier. Define 'Equivalent Noise Temperature' and 'Signal to Noise Ratio'. 10
 5. (a) Explain Armstrong method of FM generation with the help of a neat block diagram. 10
 - (b) Draw the block diagram of Delta modulation scheme and explain the working with the help of waveforms. 10
 6. (a) Explain the following terms with respect to Ionospheric propagation. 10
 - (i) Ionospheric layers
 - (ii) Critical frequency
 - (iii) Maximum usable frequency
 - (iv) Virtual height
 - (v) Skip distance.
 - (b) Explain TDM and FDM. 10
 7. Write short notes on (any three) :— 20
 - (a) Squelch Circuit
 - (b) Collector Modulation
 - (c) Pre-emphasis & De-emphasis
 - (d) Phase Shift Method of SSB Generation.