

- B : 1) Question No. 1 is **compulsory**.
- (2) Attempt in **all five** questions.
- (4) Answer **suitable** data if **necessary**.

Answer the following :-

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- (a) Compare FM and PM
- (b) SSB transmission
- (c) Pulse code modulation
- (d) Pulse modulation
- (e) Noise figure and Noise temperature.

- (a) Draw the block diagram of an FM receiver and explain its working. 10
- (b) Describe the following with respect to superheterodyne receivers :- 10
 - (i) Sensitivity
 - (ii) Selectivity
 - (iii) Image Rejection
 - (iv) Fidelity
 - (v) Intermediate frequency.

- (a) Draw the block diagram of a phase cancellation SSB generator and explain how the carrier and the unwanted sideband are suppressed. What change is necessary to suppress the other sideband? 10

- (b) In an FM system, the modulating frequency and voltages are 1 KHz and 4 V respectively. The deviation is 6.8 KHz. If the modulating voltage is increased to 6 V, calculate the new frequency deviation. Determine the modulation index in both cases. 5

- (c) Explain any one method of generation of FM signals. 5

- (a) (i) Develop a neat comparison between TDM and FDM systems. 5
- (ii) Draw a block diagram of a PCM system and explain the function of each block. What makes it a digital system? 5

- (b) Explain with diagrams how to obtain PAM signals for baseband transmission for a single information channel, carrying voice frequencies upto 3.3 KHz using a sampling rate of 8 KHz. Determine the bandwidth required. 10

- (a) Differentiate between DCM and delta modulation. 6

- (b) Explain the adaptive delta modulator with reference to a delta modulator. 6

- (c) List the advantages of Digital Communication over Analog communication (8 points). 8

- (a) A 1000 KHz, 360 W carrier is simultaneously amplitude modulated by two audio waves 300 Hz and 800 Hz with % modulation of 55 and 65 respectively. Find the frequencies in the about, total power and sideband power in the output. Derive the necessary equations used. 10

- (b) Clearly explain any two methods of amplitude, modulation using transistorized circuits. Compare them. 10

Write short notes on the following :-

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- (a) NOISE triangle
- (b) Delayed AGC and simple AGC
- (c) Companding
- (d) External and outernal noise
- (e) Balanced modulator.