

Lib

Basic of Analog & Digital Comm. Systems.

- N.B. : (1) Question No. 1 is **compulsory**.
 (2) Attempt any **four** questions from the remaining **six** questions.
 (3) **Figures** to the **right** indicate **full marks** for the question. 2-30 to 5-30
 (4) Assume **suitable** data whenever **necessary**.

1. Attempt any **four** of the following :- 20
 - (a) Derive an expression for an A.M. signal
 - (b) Compare A.M. and F.M.
 - (c) Write a note on F.M. noise triangle
 - (d) Write a note on VSB transmission
 - (e) Explain Time Division multiplexing.

2. (a) Compare the following amplitude modulated systems :- 12
 DSB-FC, DSB-SC, SSB, ISB, VSB.
 (b) Draw the block diagram of high level A.M. transmitter and explain in detail. 8

3. (a) Define :- 8
 - (i) Signal to Noise Ratio
 - (ii) Noise Factor
 - (iii) Noise Figure
 - (iv) Noise Temperature.
 (b) Explain Armstrong method of F.M. generation with the help of a neat block diagram and phaser diagram. 12

4. (a) With the help of neat block diagram and waveforms explain superheterodyne A.M. radio receiver. 10
 (b) Explain the working of a phase discriminator F.M. detector with the help of neat circuit diagram and wave. 10

5. (a) Explain the following in relation to propagation of radio waves :- 10
 - (i) Virtual height
 - (ii) Maximum usable frequency
 - (iii) Skip distance
 - (iv) Fading
 - (v) Critical frequency.
 (b) Draw the block diagram of PCM system and explain each block in detail. Also draw the waveforms. 10

6. (a) Explain with the help of waveforms P.A.M., P.W.M. and P.P.M. generation and detection. 10
 (b) Explain adaptive delta modulation. How does it overcome slope overload error? Which error it increases? 10

7. Write a notes on :- 20
 - (a) Companding Curve
 - (b) Frequency Division Multiplexing
 - (c) Collector Modulator.