

N.B: 1. Question No 1 is compulsory

2. Answer any four from the remaining.

1. Answer **any four** from the following.

(20M)

- Explain any one type of wireless communication channel.
- State and prove time shifting property of Fourier transform.
- How the selectivity and sensitivity will be improved in super heterodyne receiver as compare to TRF receiver.
- Explain Inter symbol Interference and how to study ISI.
- Explain Time division multiplexing.

2. (a) Derive the expression for Friss formula.

(5M)

(b) State and prove convolution property of Fourier transform.

(5M)

(c) Derive the expression for AM and also draw the envelope of the AM for different modulation indexes.

(10 M)

3. (a) Explain Ratio detector with neat diagram.

(10 M)

(b) Explain generation and degeneration of DSBSC AM.

(10 M)

4 (a) Explain Generation and degeneration of PWM.

(10 M)

(b) Explain Adaptive delta modulation in detail.

(10 M)

5.(a) Explain generation and degeneration of BFSK signal.

(10 M)

(b) The binary data 11101101 is transmitted over a baseband channel. Draw the waveform for transmitted data using the following data formats.

(10 M)

(i) Unipolar NRZ

(ii) Unipolar RZ

(iii) Bipolar RZ

(iv) Split phase Manchester

(v) Polar Quaternary NRZ for M= 4.

6. Write a short note on **any four**

(20M)

(i) Sampling theorem

(ii) Thermal Noise and Noise Temperature

(iii) BASK generation

(iv) SSB SC AM generation method

(v) Need for modulation.
