



**Q.P. Code: 24574**

**Time: 3 Hours**

**Marks: 80**

- N.B**
- (1) Question No. 1 is compulsory
  - (2) Out of remaining questions attempt three
  - (3) Figures to right indicate full marks.

**Q1 Solve any four**

- a) Compare ground wave & sky wave propagation (5)
- b) Define modulation & explain any two need of modulation (5)
- c) State in brief different types of noise. (5)
- d) With reference to receiver define sensitivity, selectivity, fidelity and image frequency rejection (5)
- e) Draw BASK & BFSK signal for 10111010. (5)

- Q2**
- a) Explain with neat diagram Indirect method of FM generation (10)
  - b) Prove Friss formula with reference to noise factor in cascade. (10)

- Q3**
- a) What is multiplexing in communication system? Explain in brief transmitter and receiver of FDM. (10)

- b) A sinusoidal carrier has an amplitude of 20 V & frequency of 200 Khz. It is amplitude modulated by a sinusoidal voltage of amplitude 6 V & frequency 1 Khz. Modulated voltage is developed across a 80  $\Omega$  resistance 1. Write the equation of modulated wave 2. Determine modulation index 3. Draw the spectrum of modulated wave & 4. Calculate total average power. (10)

- Q4**
- a) Explain generation & demodulation of PWM. (8)

- b) In an AM receiver the loaded Q of antenna circuit at the input to mixer is 100. Calculate image frequency & its rejection at 1 MHz (8)

- c) State in brief different types of communication channel (4)

- Q5**
- a) Explain delta modulator transmitter & receiver with neat block diagram (10)

- b) State & prove following properties of Fourier transform.

- (i) Time shifting (ii) convolution in time domain (10)

- Q6** Write short notes (Any Four) (20)

- 1 Sampling theorem
- 2 Frequency spectrum allocation
- 3 Tropospheric scatter propagation
- 4 Inter symbol interference
- 5 Noise figure & noise factor