03:00 pm - 06:00 pm

Principle of Communications **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 Ω 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