Duration: 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** **20 (5*4)**

a) With the help of typical values ,state various RF bands along with their Applications.
b) State Friiss formula & hence determine the overall noise figure in a two Stage cascaded amplifier if each stage has a gain of 10 dB along with a noise figure of 3 dB. **(1+4)**
c) Define Image frequency of AM receiver & hence calculate image frequency Of AM superheterodyne receiver with RF & IF frequencies of 600 KHz & 455 KHz respectively. **(1+4)**
d) Compare PAM, PWM & PPM system.
e) Define the following
(i) Quantization noise (ii) line coding process (iii) inter symbol interference
(iv) Bit rate (v) Baud Rate
f) Explain ground wave propagation in brief

Q2 a) Explain following in relation to radio receiver with suitable figure
1) Selectivity (2) sensitivity (3)double spotting (4) fidelity **(10)**
b) Explain the principal of TDM with neat diagram. Also explain need of synchronization in TDM. **(10)** **6+4**

Q3 a) What are different sources of noise? Classify & explain various noises that affect Communications. **(10)**

Q4 a) Explain/define/clarify the following term **(10)**
(i) Modulation index in AM (ii) Modulation index in FM
(iii) Over modulation in AM (iv) Total power in AM
(v) Transmission bandwidth in AM & FM
b) State & explain classification of line codes with neat figure **(10)**

Q5 a) Draw the ASK, PSK & FSK waveforms for digital data 11010101
Also compare all three **techniques** of modulation **(6+4)** **(10)**
b) State and prove following properties of Fourier transforms
1) Time scaling 2) frequency shifting. **(10)**
Also state significance of these properties in communication system **(8+2)**

Q6 Write short notes on following: **Any Four** **20 (5*4)**

a) Need of modulation
b) Ratio detector
c) Sky wave propagation
d) Quantization process
e) FM Noise triangle
f) Block diagram of analog communication system
