

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
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