Department of Electronics and Communication Engineering

IIB.Tech (ECE) Sem-II QUESTION BANK

Subject:**Analog Communications (R16)**

UNIT 1

1. What is the principle of amplitude modulation? Derive the expression for the AM wave and draw its spectrum.6M
   b) Explain the need of modulation.4M

2. Explain with the help of diagram how a square law modulator is used to generate AM.6M
   b) Compare low level and high level modulation.4M

3. Derive the equation and power relation of a single tone modulation of AM system. 6M
   b) Explain about switching modulator 4M

4. Explain the working of square law detector with block diagrams. 6M
   b) Explain about advantages and disadvantages of AM 4M

5. With a neat block diagram, explain the operation of Frequency division multiplexing technique. 5M
   b) Explain about diagonal clipping in a diode detector. How it can be eliminated?5M

6. Draw the Envelope detector and illustrate the process of detection of AM wave?5M
   b) Draw and explain switching modulator along with the related transfer characteristics and equation.5M

UNIT 2

Unit 3

1. Explain AM DSB SC modulation 4M
b) Draw the circuit diagram for balanced modulator explain its operation.6M

2. Explain the working of Ring modulator with block diagram. 6 M
b) Explain Coherent detection of DSB-SC Modulated waves.4M

3. Explain AM SSB modulation 4M
b) Explain the frequency discrimination method for generating AM SSB modulated wave.6 M

4. Explain the phase discrimination method for generating AM SSB modulated wave. 5M
b) List Application of different AM systems? 4M

5. With neat diagrams, explain generationofVSB modulatedwave 6M
b) Compare AM, D.S.B-SC, S.S.B-SC and V.S.B transmission.4M

3.Explain the operation of Zero crossing detector.5M
b) Explain the demodulation of F.M signal with the help of PLL.5M

Unit 4

1. Explain about AM transmitters
b) List out the points to be considered while selecting intermediate frequency

2. a) With the aid of the block diagram explain TRF receiver. 6M
b) List out the advantages and disadvantages of TRF receiver.4M

3. With neat block diagram, explain the operation of super heterodyne F.M. receiver.
b)What are the advantages of using RF amplifier in receiver.

4. Explain aboutAutomatic Gain Control (AGC) circuit and its types..10.M

UNIT 5

1. a) What is FM threshold effect? How to achieve threshold reduction in FM system?6M b) Discuss the noise performance of AM system using envelop detection?4M

2. a) What is noise? Explain the difference between thermal noise and shot noise. 5M
b) Explain about noise effect in DSB-SC and obtain necessary expression for figure of merit.5M

3. a) Explain about the noise performance of an FM receiver.5M
b) Derive the expression for the figure of merit of an SSB-SC System.5M

4. a) Why pre-emphasis and de-emphasis are needed in F.M but not in A.M? Explain. 5M b) Explain about noise effect in AM and obtain expression for figure of merit.5M

5. a) Write short notes (i) Average noise figure. (ii) Average Noise Temperature.5M
b) Define White noise and Shot noise.5M

Unit 6

1. a) Define Pulse Amplitude Modulation (PAM).2M
b)Explain the generation of PAM. 8M

2. List out the drawbacks of pulse amplitude modulated signal? 4M
b) With neat sketch explain the generation of PPM from PWM.6M

3. Explain Time Division Multiplexing.6M
b) Compare merits and demerits of TDM and FDM.4M

4. a) Compare continuous wave and pulse modulation techniques.5M
b) Write short notes on transmission bandwidth of PAM.5M

5. Compare PAM, PWM and PPM systems. 5M

   b) Explain the single polarity and double polarity PAM.5M