



MUTHAYAMMAL ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi, Accredited by NAAC & Affiliated to Anna University)
Rasipuram - 637 408, Namakkal Dist., Tamil Nadu.

Department of Electronics and Communication Engineering Question Bank - Academic Year (2020-21)

Course Code & Course Name : 19ECC06 & ANALOG COMMUNICATION SYSTEMS
Name of the Faculty : Mrs. P.Subhasundari
Year/Sem/Sec : II / IV / C

Unit-I: AMPLITUDE MODULATION

Part-A (2 Marks)

1. Write the advantage of modulation
2. What is the need for modulation?
3. Draw the envelop of AM.
4. What is phase modulation? Give its mathematical expression.
5. Draw the frequency spectrum of FM.
6. Define Modulation index and percent modulation for an AM wave.
7. Give the bandwidth of AM.
8. What is angle modulation? Give its mathematical expression.
9. Describe the USB and LSB.
10. What is frequency modulation?

Part-B (16 Marks)

1. What is the principle of Amplitude modulation? Derive expression for the AM wave and draw its spectrum. (16)
2. With the help of neat diagram explain AM Envelop and equation of AM wave. (16)
3. Explain and derive the expression of Amplitude Modulation power distribution. (16)
4. What is the principle of Angle modulation? Explain DSB-SC modulated signal. (16)
- 5.(i). With the help of neat diagram explain VSB signal. (8)
(ii). With the help of neat diagram and explain Super heterodyne receiver. (8)

Unit-II : ANGLE MODULATION

Part-A (2 Marks)

1. Define bit rate.
2. Differentiate FM form PM.
3. State the advantage of frequency modulation.
4. Define angle modulation.
5. Give two applications of FM signal.
6. Differentiate Narrowband and Wideband FM.
7. State the advantage of FM stereo receives.
8. What is frequency modulation?
9. Compare Pre-emphasis and de-emphasis FM.
10. Give the difference between standard AM and FM systems.

Part-B (16 Marks)

1. What is the principle of Angle modulation? Explain frequency deviation and percent modulation. (16)
2. With the help of neat diagram explain AM current distribution. (16)
3. Describe the frequency analysis of angle modulated waves. (16)
4. Explain and derive Narrowband and wideband FM. (16)
5. Draw the block diagram of FM Broadcast receivers and explain the operation. (16)

Unit-III : RANDOM PROCESS / NOISE THEORY

Part-A (2 Marks)

1. Define random process.
2. Give the Laws of probability.
3. Define a random variable.
4. What is Gaussian process?
5. What is a stationary random process?
6. Define noise temperature.
7. Define noise figure.
8. What is thermal noise? Give the expression for the thermal noise voltage across a resistor
9. What is white noise?
10. Find the thermal noise voltage developed across a resistor of 700ohm. The bandwidth of measuring instrument is 7MHz and the ambient temperature is 27°C.

Part-B (16 Marks)

1. Derive the effective noise temperature of a cascade amplifier. Explain how the various noise are generated in the method of representing them. (16)
2. i) Write notes on noise temperature and noise figure. (16)
ii) Derive the noise figure for cascade stages.
3. What is narrowband noise? Discuss the properties of the quadrature components of a narrowband noise. (16)
4. Discuss the following: i) noise equivalent bandwidth. ii) narrow band noise iii) noise temperature iv) noise spectral density (16)
5. What is meant by noise equivalent bandwidth? Illustrate it with a diagram (16)

Unit-IV : NOISE PERFORMANCE OF CW MODULATION SYSTEMS

Part-A (2 Marks)

1. What do you understand by Capture Effect in FM?
2. What is sensitivity and selectivity of receivers?
3. What is the purpose of pre emphasis and de-emphasis in FM?
4. Define SNR.
5. How to achieve threshold reduction in FM receiver?
6. What is FM threshold effect?
7. Define Pre-emphasis and De-emphasis.
8. What is threshold effect with respect to noise?
9. What is the SNR for AM with small noise case?
10. What is meant by FOM of a receiver?

Part-B (16 Marks)

1. Explain the working of Super heterodyne receiver with its parameters. (16)
2. Derive the noise power spectral density of the FM demodulation and explain its performance with diagram. (16)
3. Compare the noise performance of AM and FM systems. (16)
4. Draw the block diagram of FM demodulator and explain the effect of noise in detail. Explain the FM threshold effect? (16)
5. Derive the expression for output signal to noise for a DSB-SC receiver using Coherent detection. (16)

Unit-V : APPLICATIONS OF ANALOG COMMUNICATION SYSTEMS

Part-A (2 Marks)

1. What is the selectivity of a radio receiver?
2. Which type of coupling is used in power amplifier?
3. What is impedance matching with example?
4. Define Radio Receiver.
5. What is stereophonic FM broadcasting?
6. Write short note on Voice Coders.
7. Why do we need channel vocoder?
8. Define Linear Predictive Coder.
9. What are the components of mobile communication?
10. Why the cellular concept is implemented for mobile communication?

Part-B (16 Marks)

1. What are the types of radio receivers? Explain the types with detailed diagram. (16)
2. Give brief note on the various data communication codes used in the network. (16)
3. Write a short note on Linear Predictive Coder. And briefly explain about the process of linear predictive coder with neat diagram and example. (16)
4. Explain briefly about Tuned Radio Frequency Receiver. And also mention its drawback. (16)
5. Discuss different techniques used for improving coverage and capacity in cellular systems. (16)

Course Faculty

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