STATE BOARD OF TECHNICAL EDUCATION AND TRAINING, TELANGANA
DIPLOMA EXAMINATION (C-18) , C-18-REGULAR-FEB-2021
SEMESTER III , SEMESTER END EXAM

18EC-304C

ANALOG COMMUNICATION SYSTEMS

6334

Exam Date: 22-02-2021 Session: FN
Duration: 3 Hours [09:30 AM To 12:30 PM] [Total Marks: 60]

PART-A

Instructions: 1. Answer any **TWELVE** questions 12 X 1 = 12
2. Each question carries **ONE** mark

1. Define phase modulation.
2. Define frequency modulation.
3. List any two applications of SSB.
4. State the need for SSB modulation
5. Define fidelity of a radio receiver.
6. List two requirements of radio transmitter.
7. Define Polarization of Electromagnetic wave.
8. What is meant by Vertical Polarization of an electromagnetic wave ?
9. List two advantages of SSB.
10. Mention two limitations of TRF receiver.
11. Define Beam width of an antenna.
12. Define amplitude modulation.
13. List two applications of Turnstile antenna.
14. List two types of radiation patterns.
15. Mention the unit for power density.
16. Mention the unit for modulation index of FM system.

PART-B

Instructions 1. Answer any **SIX** questions 6 X 3 = 18
2. Each question carries **THREE** marks

17(a). Classify different types of noise.

----- OR ----

17(b). What is meant by distortion in wireless communication ? Write about total harmonic distortion.

18(a). Write short notes on noise triangle in FM.

----- OR ----

18(b). Derive the expression for calculating bandwidth of an AM Signal.

19(a). State the functions of Buffer and Balanced modulator in SSB transmitter.

----- OR ----

19(b). Distinguish between low level and high level modulation.

20(a). What is meant by Line of Sight (LOS) communication ? Write the expression for distance between transmitting and receiving antenna in LOS communication .

----- OR ----

20(b). What is meant by fading effect of radio waves?

21(a). Distinguish between time domain and frequency domain with an example.

----- OR ----

21(b). What is the need for folded dipole in an antenna array ?

22(a). Explain about electromagnetic wave attenuation.

----- OR ----

22(b). What are the important parameters in the design of helical antenna?

23(a). Write about parasitic elements in an antenna array.

----- OR ----

23(b). Write the advantages of antenna array

24(a). Find the bandwidth of commercial FM transmission system if frequency deviation is 75 KHz and modulating signal frequency is 15 KHz

----- OR ----

24(b). An amplifier has noise figure of 2 dB. Calculate its equivalent noise temperature

PART-C

Instructions: 1. Answer any **SIX** questions 6 X 5 = 30
2. Each question carries **FIVE** marks

25(a). Describe communication system with block diagram.

----- OR ----

25(b). What are the various types of distortions in transmission of a signal ?

26(a). Explain wide band FM.

----- OR ----

26(b). Compare AM and FM

27(a). Draw the block diagram of FM receiver and explain its working.

----- OR ----

27(b). Explain the process of demodulation in AM receiver.

28(a). Explain Duct Propagation of electromagnetic waves.

----- OR ----

28(b). Explain Space Wave Propagation of electromagnetic waves.

29(a). Explain frequency spectrum and mention the usage of frequencies for different applications

----- OR ----

29(b). Explain the principle of parabolic reflector antenna

30(a). Describe the various factors on which the Intermediate frequency is selected in a radio receiver..

----- OR ----

30(b). Calculate bandwidth and modulation index of FM signal having carrier swing of 200 KHz when the modulating signal has frequency of 5 KHz .

31(a). Explain the principle of working of mobile antenna.

----- OR ----

31(b). Explain different feed arrangements in a parabolic reflector antenna.

32(a). Calculate front to back ratio of an antenna in dB which radiates 3.5 kW power
in most optimum desired direction and 0.5 kW in opposite direction

----- OR ----

32(b). In a broadcast superheterodyne receiver having no RF amplifier, the loaded quality factor of antenna coupling circuit is 150. If the IF is 455 KHz, calculate the image frequency and its rejection ratio at 1400 KHz.