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VIGNAN'S

Foundation for Science, Technology & Research

(Deemed to be University)

-Estd. u/s 3 of UGC Act 1956

Regulation : R22

Code No : 22DEC204/2

II Diploma I Semester Supplementary Examinations – April, 2024

ANALOG AND DIGITAL COMMUNICATIONS

Time: 3 Hrs

(ECE)

Max. Marks:60M

SECTION – A

Answer all Ten questions

10×1M=10M

1. Define modulation index for AM
2. An 800W carrier is modulated to a depth of 80 %. Calculate the total power in the modulated wave.
3. Define Carson's rule for bandwidth of FM systems?
4. What is the required bandwidth for FM signal, in terms of frequency deviation?
5. Write the advantages of PSK
6. Point out the digital modulation technique which gives better error Probability
7. List the factors on which selectivity depends?
8. Define Base Band?
9. Elements of the communication system?
10. Advantages of SSB.

SECTION – B

Answer All Four questions

4×5M=20M

11. Explain the bandwidth of the AM wave.
(OR)
12. Derive the expression for FM
13. State the principle of Angle Modulation. Derive modulation index, frequency deviation and percent modulation.
(OR)
14. A single-tone FM is represented by the voltage equation as: $v(t) = 12\cos(6 \times 10^6 t + 5\sin 1250t)$ Determine the following:
 - (i) Carrier frequency
 - (ii) Modulating frequency
 - (iii) Modulation index
15. Explain how AM is generated using square law modulator?
(OR)
16. Explain how DSBSC is generated using balanced modulator?

17. Explain the function of each block of communication system

(OR)

18. A given AM broadcast station transmits a total power of 5kW when the carrier is modulated by sinusoidal signal with a modulation index of 0.7071. Determine Carrier power and Transmission Efficiency.

SECTION – C

Answer All Three questions

3×10M=30M

19. With a block diagram and necessary equations explain generation and detection of QAM?

(OR)

20. Discriminate the input and output waveforms for the PWM, PPM PAM and PCM.

21. Explain Time division multiplexing with a neat block diagram? Also give the applications.

(OR)

22. Discuss about the need of modem? Compare TDM and FDM.

23. Explain ASK and FSK.

(OR)

24. Types of noise- signal-to-noise ratio, noise figure.