Reg. No. :

Question Paper Code: 43806

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Third Semester

Information Technology

14UIT306-ANALOG AND DIGITAL COMMUNICATIONS

(Regulation 2014)

Duration: Threehours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The modulation index for FM is given as

    (a) Fm/ΔF   (b) 2ΔF/Fm   (c) ΔF/Fm   (d) ΔF*Fm

2. A carrier of 100W is modulated to the depth of 50% .The total transmitted power is

    (a) 112.5W   (b) 125W   (c) 150 W   (d) 100W

3. QPSK is a _____ modulation

    (a) One level   (b) Two level   (c) Multilevel   (d) None

4. The technique that may be used to increase average information per bit is

    (a) Shannon-Fano algorithm   (b) ASK
    (c) FSK   (d) Digital modulation techniques

5. Analog to digital conversion includes

    (a) Sampling   (b) Quantization

    (c) Both (a) and (b)   (d) None of these

6. The aliasing effect can be eliminated by_____

    (a) Using a anti aliasing filter
    (b) Reducing the sampling frequency
    (c) Increasing the modulating frequency
    (d) Altering the carrier frequency

7. The minimum bandwidth required to transmit the PCM signal is

    (a) 64KHZ   (b) 8 KHZ   (c) 16 KHZ   (d) 32 KHZ

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9. The spread spectrum is a _____ in nature

    (a) Binomial   (b) Bi-Orthogonal
    (c) Pseudo Random   (d) Autocorrelation

10. The bandwidth of spread signal is _____

    (a) $1/T_C$ (b) $1/T_S$ (c) $1/T_f$ (d) $1/T_P$

PART - B (5 x 2 = 10 Marks)

11. Sketch the amplitude modulation wave forms with modulation index *(m)* =1, *m>1*, *m<1*.

12. Define bandwidth efficiency.

13. Briefly explain the term fading.

14. What is the need for error control coding?

15. List the advantages of spread spectrum techniques.

PART - C (5 x 16 = 80 Marks)

16. (a) Derive expression for an AM wave and draw its spectrum.   (16)

Or

    (b) Derive the voltage and power equation for AMDSBFC and draw its spectrum. (16)

2

43806

17. (a) (i) Describe the two techniques of achieving carrier recovery circuit. (8)

(ii) Discuss in detail about the DPSK transmitter and DPSK receiver. (8)

Or

(b) What is carrier recovery? Discuss how carrier recovery is achieved by the squaring loop and Costas loop circuits. (16)

18. (a) Write short notes on: (i) Noise and fading (ii) Non-linear sequences. (16)

Or

(b) Explain about light wave system models. (16)

19. (a) Explain the operation of DPCM transmitter and receiver. (16)

Or

(b) (i) Explain the operation of DPCM transmitter and receiver. (8)

(ii) Explain in detail about ISI and Eye diagram. (8)

20. (a) (i) Describe the concept of frequency hopping spread spectrum in details. (10)

(ii) List some applications of spread spectrum techniques. (6)

Or

(b) (i) Describe the application of CDMA in wireless communication system. (8)

(ii) Explain the basic principle of TDMA. (8)

43806