Reg. No. : | | | | | | | | | | |

Question Paper Code: 43806

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Third Semester

Information Technology

14UIT306-ANALOG AND DIGITAL COMMUNICATIONS

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. 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

2. What is the bandwidth of AM?

   (a) Fm (b) 2Fm (c) Fm/2 (d)4Fm

3. Which type of signal is represented by discrete values?

   (a) Analog (b) Digital (c) Linear (d)Nonlinear

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. _____ transmits only one bit per sample instead of N bits transmitted in PCM.

   (a) Delta modulation (b) Digital modulation
   (c) Phase modulation (d) Spread spectrum modulation

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

8. The quantization error in PCM system has_____ distribution

(a)Gaussian (b) Uniform (c) Poisson (d) None of them

9. The spectrum of the sampled signal may be obtained without overlapping only if

(a) $f_s \geq 2f_m$ (b) $f_s < 2f_m$ (c) $f_s > f_m$ (d) $f_s < f_m$

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. Define bandwidth efficiency.

12. List the disadvantages of frequency modulation compared to amplitude modulation.

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)

17. (a) Explain the operation of QPSK transmitter and receiver. (16)

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) Discuss the concepts involved in switched telephone channels. (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) Describe any two common multiple access techniques in detail. (16)

Or

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

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