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

Question Paper Code: 43806

B.E. / B.Tech. DEGREE EXAMINATION, NOV 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 100MHz carrier is frequency modulated by 10 KHz wave. For a frequency deviation of 50 KHz, calculate the modulation index of the FM signal

   (a) 100 (b) 50 (c) 70 (d) 90

2. FM signal is better than AM signal because

   (a) Less immune to noise
   (b) Less adjacent channel interference
   (c) Amplitude limiters are used to avoid amplitude variations
   (d) All the above

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. Equalization in digital communication

(a) Reduces inter symbol interference
(b) Removes distortion caused due to channel
(c) Is done using linear filters
(d) All the above

6. Analog to digital conversion includes

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

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

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

8. Eye pattern is

(a) Is used to study ISI (b) May be seen on CRO
(c) Resembles the shape of human eye (d) All the above

9. In DPSK technique, the technique used to encode bits is

(a) AMI (b) Differential code
(c) Uni-polar RZ format (d) Manchester format

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 amplitude modulation.

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

13. Briefly explain the term fading.

14. What is meant by SQR?

15. List the advantages of spread spectrum techniques.

PART - C (5 x 16 = 80 Marks)

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

Or

(b) (i) Write a note on frequency spectrum analysis of angle modulated waves. (8)

(ii) Compare FM and PM. (8)

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

Or

(b) With block diagram explain M-array PSK receiver. Compare M-array modulation schemes. (16)

18. (a) Explain about digital channel model – Gilbert model of bursty channels. (16)

Or

(b) Discuss the concepts involved in switched telephone channels. (16)

19. (a) Explain the delta and adaptive delta modulation technique with a neat block diagram. . (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 slow and fast frequency hopping. (16)

Or

(b) Explain direct sequence spread spectrum with coherent binary PSK (16)