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Question Paper Code: 41836

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

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. What is the bandwidth of AM?
(a) F_m (b) $2F_m$ (c) $F_m/2$ (d) $4F_m$
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. Which type of signal is represented by discrete values?
(a) analog (b) digital (c) linear (d)nonlinear
4. Costas loop is used for _____ synchronization
(a) Bit (b) Carrier (c) Frame (d) Byte
5. Troposcatter uses the as the region that affects the radio signals being transmitted.
(a) troposphere (b) stratosphere (c) mesosphere (d) thermosphere
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 condition for aliasing is
 (a) $F_s < 2F_m$ (b) $F_s > 2F_m$ (c) $2F_s < F_m$ (d) $F_s = 2F_m$
8. The quantization error in PCM system has _____ distribution
 (a) Gaussian (b) Uniform (c) Poisson (d) None of them
9. The no. of ones is always greater than no. of zeros, then the property is
 (a) run (b) correlation (c) gold (d) balance
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. Define bandwidth efficiency.
13. Define bandwidth efficiency.
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) Define angle modulation. What are the types of angle modulation. Mention the bandwidth requirements of angle modulated waves. (16)
17. (a) Describe the two techniques of achieving carrier recovery circuit. (16)
- Or
- (b) Describe with neat diagram, the operation of a QPSK modulator. Draw its phasor and constellation diagram. (16)
18. (a) Describe about Troposcatter and Satellite channels. (16)
- Or
- (b) Explain about digital channel model – Gilbert model of bursty channels. (16)

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

Or

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

20. (a) Describe slow and fast frequency hopping. (16)

Or

(b) Describe any two common multiple access techniques in detail. (16)
