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**Question Paper Code: 51836**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Third Semester

Information Technology

15UIT306 - ANALOG AND DIGITAL COMMUNICATION

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. In amplitude modulation, bandwidth is \_\_\_\_\_ the audio signal frequency  
(a) thrice                      (b) four times                      (c) twice                      (d) none of the above
2. ASK, PSK, FSK, and QAM are examples of \_\_\_\_\_ conversion.  
(a) digital-to-digital                      (b) digital-to-analog  
(c) analog-to-analog                      (d) analog-to-digital
3. The biggest disadvantage of PCM is  
(a) its inability to handle analog signals  
(b) the high error rate which its quantizing noise introduces  
(c) its incompatibility with TDM  
(d) the large bandwidths that are required for it
4. In Frequency Hopping Spread Spectrum (FHSS), sender and receiver can have privacy if hopping period is  
(a) short                      (b) long                      (c) zero                      (d) infinity

5. Binary Huffman coding is a
- |                           |                           |
|---------------------------|---------------------------|
| (a) Prefix condition code | (b) Suffix condition code |
| (c) Both of the mentioned | (d) None of the mentioned |

PART - B (5 x 3 = 15 Marks)

6. In an AM transmitter the carrier power is 12 kW and the modulation index is 0.6. Calculate the total RF power delivered.
7. Illustrate ASK and PSK waveforms for a data stream 101101.
8. Describe the eye pattern and indicate how ISI is measured from it.
9. Define the spread spectrum.
10. Define the Shannon-Fano coding.

PART - C (5 x 16 = 80 Marks)

11. (a) (i) Define modulation index and express its value in terms of maximum and minimum voltage value of signals. (6)
- (ii) Express the equations for AM power distribution. (10)

Or

- (b) (i) Point out the notes on frequency deviation, phase deviation, and modulation index for FM and PM waves. (8)
- (ii) Explain the frequency analysis of angle modulated waves. (8)
12. (a) Describe the principle of operation of QPSK transmitter and receiver. (16)

Or

- (b) Discuss quadrature amplitude modulation with the help of relevant diagram. (16)
13. (a) Explain the intersymbol interference? Obtain the Nyquist criteria for distortion less baseband binary transmission system. (16)

Or

- (b) List the drawbacks of delta modulation. And how they are overcome in adaptive delta modulation? Explain with the help of neat block diagram. (16)

14. (a) Express the operation of direct sequence spread coherent BPSK and obtain the derivation for processing gain. (16)

Or

- (b) Explain the multiple access technique. (16)
15. (a) (i) Discuss about the viterbi decoding algorithm. (8)
- (ii) Discuss about the cyclic codes. (8)

Or

- (b) Design the code tree for the convolutional encoder shown in figure. Trace the path through the tree that corresponds to the message sequence 10111. (16)



