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**Question Paper Code : 80342**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Fifth Semester

Electronics and Communication Engineering

EC 6501 — DIGITAL COMMUNICATION

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define companding.
2. What is meant by aliasing?
3. What is the need of prediction filtering?
4. How to overcome the slope overlap?
5. Define correlative level coding.
6. For the binary data 01101001 draw the unipolar and RZ signal.
7. Distinguish coherent vs non coherent digital modulation techniques.
8. Draw a block diagram of a coherent BFSK receiver.
9. Generate the cyclic code for (n, k) syndrome calculator.
10. Define channel coding theorem.

PART B — (5 × 16 = 80 marks)

11. (a) Illustrate and describe the types of quantizer? Describe the midtread and midrise type characteristics of uniform quantizer with a suitable diagram. (16)

Or

- (b) Draw and explain the TDM with its applications. (16)



12. (a) Describe delta modulation system in detail with a neat block diagram. Also, Illustrate the two forms of quantization error in delta modulation. (16)

Or

- (b) Describe Adaptive Delta Modulation with neat sketch and compare it with Delta Modulation of ADPCM. (16)
13. (a) Explain how Nyquist's Criterion eliminates interference in the absence of noise for distortion-less baseband binary transmission. (16)

Or

- (b) Describe how eye pattern is helpful to obtain the performance of the system in detail with a neat sketch. (16)
14. (a) (i) Describe the generation and detection of Coherent binary PSK Signals. (10)
- (ii) Illustrate the power spectra of binary PSK signal. (6)

Or

- (b) (i) Describe the generation and detection of Coherent QPSK Signals. (12)
- (ii) Illustrate the power spectra of QPSK signal. (4)
15. (a) (i) Describe the cyclic codes with the linear and cyclic property. Also represent the cyclic property of a code word in polynomial notation. (12)
- (ii) List the different types of errors detected by CRC code. (4)

Or

- (b) (i) Describe how the errors are corrected using Hamming code with an example. (12)
- (ii) The code vector [1110010] is sent, the received vector is [1100010]. Calculate the syndrome. (4)