



C14-EC-404

4458

BOARD DIPLOMA EXAMINATION, (C-14)  
MARCH/APRIL—2017  
DECE—FOURTH SEMESTER EXAMINATION  
DIGITAL COMMUNICATIONS

Time : 3 hours ]

[ Total Marks : 80

**PART—A**

3×10=30

- Instructions** : (1) Answer **all** questions.  
(2) Each question carries **three** marks.  
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Compare analog and digital communication techniques.
2. State the 'sampling theorem'.
3. List different digital signal encoding formats.
4. List different error-detection techniques.
5. What is the need for digital modulation?
6. What are the advantages of FSK?
7. Explain time-division multiplexing.
8. Write the difference between fax and data modem.
9. Compare IN-band and OUT-band signaling systems for telephony.
10. What are the signals present on a local loop?

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**PART—B**

10×5=50

- Instructions** : (1) Answer *any five* questions.  
(2) Each question carries **ten** marks.  
(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- 11.** (a) Explain the Shannon's formula regarding information capacity of a channel. 4  
(b) Define (a) PAM, (b) PWM, (c) PPM and explain with waveforms. 6
- 12.** Describe the coding and decoding of a PCM signal. 10
- 13.** (a) Explain the Hamming code. 3  
(b) Explain importances of Hamming code in error detection and error correction. 7
- 14.** (a) Explain the return-to-zero (RZ) encoding technique. 5  
(b) How does a single-bit error differ from a burst error? 5
- 15.** (a) Explain ASK modulator with block diagram. 5  
(b) Define constellation diagram and its role in transmission. 5
- 16.** (a) Explain quadrature phase shift keying (QPSK). 8  
(b) What are the advantages of ASK modulation? 2
- 17.** (a) Explain the frequency-division multiplexing (FDM) with neat diagram. 7  
(b) What are the disadvantages of TDM? 3
- 18.** (a) Explain the dual tone multiple frequency (DTMF) dialing. 7  
(b) Explain the internet telephony. 3

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