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C14–EC–404

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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?

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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