TED (15) – 5201

(REVISION — 2015)

Reg. No. .....

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

DIGITAL COMMUNICATION

[*Time* : 3 hours

(Maximum marks : 100)

PART A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. State Nyquist rate of sampling.
2. List three basic digital carrier modulation methods.
3. Differentiate message and information.
4. Write the two interleaving methods to avoid burst error.
5. Write the two types of switching in digital data communication. (5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Compare PWM and PPM.
2. Explain the term companding in connection with Pulse Code Modulation.
3. Describe Gaussian minimum shift keying.
4. Explain Shanon - Hartely theorem. Mention the importance of this theorem in data communication.
5. Describe how convolution code is generated.
6. Differentiate circuit switching and packet switching.
7. Distinguish Synchronous and Asynchronous data transmission. (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

III (a) With circuit diagram and waveforms explain PAM modulation and demodulation. 8

(b) With a block diagram explain different stages of PCM generation. 7

OR

IV (a) With circuit diagram and waveforms explain the generation of PWM. Mention applications of PWM. 8

(b) What are slope overload and granular noise ? How these problems are rectified in adaptive delta modulation. 7

UNIT — II

V (a) Give the principle of binary frequency shift keying. Briefly describe any one method of generation and demodulation of BFSK. 8

(b) Explain QPSK modulation. Give the advantages of QPSK over BPSK. 7

OR

VI (a) Give the principle of binary phase shift keying. With a block diagram explain the generation of BPSK signal. 8

(b) Give the principle of Minimum Shift Keying. List the features and advantages of MSK over similar systems. 7

UNIT — III

VII (a) Define the terms amount of information and entropy. Derive the expression for finding Entropy. 8

(b) Describe CRC method of error detection. 7

OR

VIII (a) With an example show Shanon - Fano algorithm for coding and hence justify the need for coding. 8

(b) Illustrate how bit error is detected and corrected in a (7, 4) hamming code. 7

UNIT — IV

IX (a) Explain simplex and duplex data transmission methods with example. 8

(b) Describe public key algorithm in connection with data security. 7

OR

X (a) Describe the terms Ciphers, Public key algorithm, RSA and digital Signature in connection with data security. 8

(b) Briefly explain different methods of ARQ for error control in data transmission. 7