7242

BOARD DIPLOMA EXAMINATION, (C-20)

FEBRUARY/MARCH — 2022

DECE - THIRD SEMESTER EXAMINATION

ANALOG AND DIGITAL COMMUNICATION SYSTEMS

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. State the need for modulation.

2. Distinguish analog with digital signals.

3. List the three merits of FM over AM.

4. Define the modulation index of an FM signal.

5. What is the purpose of sample and hold circuit in PCM?

6. Draw the PSK waveform for the data string 011011.

7. State data encoding.

8. State the need for QAM.

9. List three specifications of transmitter.

10. What happens if limiter circuit is NOT included in FM receiver?

Instructions :   (1) Answer **all** questions.

(2) Each question carries **eight** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11.   *(a)* Calculate the percent of power consumed by the carrier and sidebands of total power in AM system.

(OR)

(b) Derive the time domain equation for a single tone modulating signal and calculate its bandwidth.

12.   *(a)* Why is digital transmission advantageous over analog transmission? Justify.

(OR)

(b) Draw one complete cycle of regular waveform and show how it is quantized using eight standard levels.

13.   *(a)* For a given data polynomial data $G(x) = x^7 + x^5 + x^4 + x^2 + x^1 + x^0$ and CRC $p(x) = x^5 + x^4 + x^1 + x^0$, show that CRC will detect the error. (assume single bit error)

(OR)

(b) Explain the circuit diagram of practical AM detector.

14.   *(a)* Explain the working of high level AM transmitter with block diagram.

(OR)

(b) Explain the working of super heterodyne receiver with block diagram.

15. *(a)* Give the reason for naming asymmetric in ADSL technology. How is its bandwidth divided into various channels?

(OR)

(b) Explain the method of multiplexing used for analog signals with block diagram.

<div align="center">

PART—C   10×1=10

</div>

Instructions : (1) Answer the following question.

(2) The question carries **ten** marks.

(3) Answer should be comprehensive and criterion for valuation is the content but not the length of the answer.

16. Mathematically prove that the actual bandwidth required for angle modulation is infinite (∞).

<div align="center">

★ ★ ★

</div>