24800360

I.M.C.A DEGREE EXAMINATION, DECEMBER 2023

Sixth Semester

Faculty of Technology & Applied Science

Integrated MCA

CORE - IMCA6C02 - DATA COMMUNICATIONS

2020 Admission Onwards

2A78F5EF

Time: 3 Hours   Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1.   Define the term Data Communication.

2.   What is analog data .

3.   What is the bandwidth of a signal.

4.   What is the difference between unipolar, polar, and bipolar line coding schemes?

5.   What is a unipolar encoding scheme in the context of analog-to-digital communication, and how does it work?

6.   What Return to zero scheme.

7.   Biefly explain Frequency modulation bandwidth.

8.   How does TDM work, and what are its advantages and limitations in data communication?

9.   Explain the key components of a packet-switched network and their roles in facilitating communication.

10.   In what scenarios is circuit switching more suitable than packet switching, and vice versa?

11.   List the advantages of DSSS technique?

12.   Could you explain the key components of a cellular network and their functions?

(10×3=30 marks)

Part B

*Answer **all** questions*

*Each question carries **9** marks*

13. a) Describe the characteristics of analog periodic signals. Discuss amplitude, frequency, and phase in the context of analog signals, and explain how these characteristics contribute to signal representation.

    OR

    b) Discuss the concept of transmission impairments in communication systems. Explain the various factors that can lead to signal degradation during transmission and their impact on the quality of communication

14. a) Compare and contrast various digital encoding schemes used in digital-to-digital conversion. Discuss the advantages and disadvantages of methods such as non-return-to-zero (NRZ), return-to-zero (RZ), and Manchester encoding.

    OR

    b) Discuss the process of signal generation in PAM. Explain how a digital signal is converted into a series of pulses with varying amplitudes and how this modulation scheme enables the transmission of digital data.

15. a) Discuss the relationship between bit rate and baud rate. Explain how the modulation scheme used in communication systems affects the correspondence between bit rate and baud rate.

    OR

    b) Explain the principles of Wavelength Division Multiplexing (WDM) in optical communication. Discuss how WDM utilizes different wavelengths (colors) of light to transmit multiple signals simultaneously over a single optical fiber.

16. a) What is meant by "line configuration" in the context of data communication? Explain the different types of line configurations and their significance in establishing connections between devices.

    OR

    b) Explain virtual circuit packet switching with neat diagram.

17. a) Explain different types of xDSL technologies available, and how do they vary in terms of speed, distance, and deployment?

b) How does the concept of 'cell' play a pivotal role in cellular networks, and what advantages does it offer in terms of coverage and capacity?

(5×9=45 marks)