



QP CODE: 26801803



Reg No :

Name :

IMCA DEGREE EXAMINATION APRIL 2026

Sixth Semester

Faculty of Technology and Applied Sciences

INTEGRATED MCA

CORE - IMCA6C02 - DATA COMMUNICATIONS

2020 Admission Onwards

0A96746D

Time: 3 Hours

Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. What is direct link? Briefly explain point to point and multipoint direct link.
2. What is the frequency of a signal?
3. How does the medium or channel come into play in data communication?
4. What is the significance of data rate and bit rate in digital communication?
5. With neat diagram explain the signal rate.
6. What is analog-to-digital communication, and how does it differ from digital-to-digital communication?
7. Explain binary phase shift keying.
8. What is the concept of wavelength-division multiplexing (WDM), and how does it relate to FDM?
9. Write a note on data transmission. List primary transmission modes used in data communication.
10. What is circuit switching in telecommunications?
11. How does FHSS effectively mitigate interference or jamming in wireless communication systems?
12. What role do cell towers play in cellular telephony?

(10×3=30 marks)





Part B

Answer *all* questions

Each question carries **9** marks

13. a) Describe the role of the message in the simplified data communication model. How is data transformed into a message, and what factors can affect the accuracy of message transmission?

OR

- b) Compare and contrast different types of guided transmission media used in communication systems. Highlight the characteristics, advantages, and disadvantages of at least three types, such as twisted pair, coaxial cable, and optical fiber.
14. a) Compare and contrast bipolar encoding with other line coding schemes, such as unipolar and polar encoding. Describe the characteristics of alternate mark inversion (AMI) encoding, a common bipolar encoding scheme.

OR

- b) Analyze the role of Nyquist theorem in determining the sampling rate for PAM. Discuss the relationship between the signal bandwidth and the minimum sampling rate required to accurately represent the modulated signal.
15. a) Explain the basics of Phase Shift Keying (PSK) in digital communication. Discuss how PSK modulates digital data by varying the phase of a carrier signal and provide examples of scenarios where PSK is commonly used.

OR

- b) Explore the concept of Statistical Time Division Multiplexing (STDM) and how it differs from traditional TDM. Discuss the adaptive nature of STDM and its ability to allocate time slots dynamically based on demand.
16. a) Assess the reliability and error-handling capabilities of synchronous transmission compared to asynchronous transmission.

OR

- b) Discuss the advantages and disadvantages of packet switching in comparison to circuit switching.
17. a) Explain primary advantages and limitations of ADSL technology compared to other high-speed internet access methods.

OR

- b) What are the fundamental principles of cellular telephony?

(5×9=45 marks)

