D 120518   (Pages : 2)   Name......................................

Reg. No...............................

FOURTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION
APRIL 2025

Common course for L.R.P. (Language Reduced Pattern)

A13—DATA COMMUNICATION AND OPTICAL FIBERS

(2019—2023 Admissions)

Time : Two Hours and a Half   Maximum : 80 Marks

Section A

Short Answer (2 *marks each*)

All questions can be attended.

1. Define the term "protocol" in the context of data transmission.

2. Why is understanding transmission modes crucial in the context of data communication ?

3. Briefly explain the role of modems in data transmission.

4. Differentiate between simplex, and half-duplex transmission modes.

5. What is the basic concept of many-to-one multiplexing, and how does it differ from one-to-many multiplexing ?

6. Briefly explain frequency division multiplexing (FDM) ?

7. Differentiate between synchronous TDM and asynchronous TDM.

8. How does the checksum method contribute to error detection ?

9. What is line discipline in data link control, and why is it important in networking ?

10. Explain bit-oriented protocols in networking.

11. Briefly explain token ring in networking.

12. How does subscriber access work in Integrated Services Digital Network (ISDN) ?

13. What are the advantages of Optical Fiber Communication ?

Turn over

14. Briefly explain LEDs as Optical Source.

15. What is a single mode fiber ?

<div align="right">(Ceiling = 25)</div>

Section B

Paragraph Type (5 *marks each*).
All questions can be attended.

16. Explain encoding and modulating in data communication.

17. Explain digital to analog conversion and digital data transmission.

18. Explain wave division multiplexing and TDM with proper examples and applications in data communication.

19. Write on Longitudinal redundancy check and cyclic redundancy check.

20. Explain the fundamental role of data link protocols in computer networks. Provide an overview of asynchronous and synchronous protocols.

21. What is ISDN. Explain the services, history, and subscriber access to ISDN ?

22. Explain about the photo detectors in optoelectronic devices.

23. Describe the basic structure of optical fiber waveguides.

<div align="right">(Ceiling = 35)</div>

Section C

Essay (10 *marks each*)
Answer any **two** *questions.*

24. Compare guided and unguided media with examples for each. How do these media types address the challenges and requirements of data transmission in modern communication systems ?

25. How do error detection and correction improve data reliability in multiplexing ? Give examples and explain their impact on communication reliability.

26. Explore the impact of network size and traffic on the performance of ethernet, token bus, token ring, and FDDI, highlighting their suitability for different scales of local area networks.

27. Write an essay on Optical sources and detectors in optoelectronic devices.

<div align="right">(2 × 10 = 20 marks)</div>