

A-0795

Total Pages : 5

Roll No.

BCA-14

Bachelor of Computer Application (BCA)

(Data Communication and Computer Networks)

Examination, June 2025

Time : 2:00 Hrs.

Max. Marks : 70

Note :- This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these sections according to the detailed instructions given therein. *Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.*

Section-A

(Long Answer Type Questions) 2×19=38

Note :- Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any two (02) questions only.

1. Answer the following :
 - (a) What is a computer network ? Discuss its goals and structure. (5 marks)
 - (b) Describe the different types of networks : LAN, MAN, and WAN. Discuss their characteristics and applications. (7 marks)
 - (c) Explain the concepts of synchronous and asynchronous communication with examples. (7 marks)
2. Answer the following :
 - (a) Explain the different types of network topologies with diagrams. (5 marks)
 - (b) Discuss the advantages and disadvantages of each network topology. (7 marks)
 - (c) Explain the factors that determine the choice of a network topology in a given environment. (7 marks)
3. Answer the following :
 - (a) What is the OSI reference model ? Explain the functions of each layer in detail. (5 marks)

- (b) Discuss the connection-oriented and connectionless services in networking. (7 marks)
 - (c) Compare and contrast the OSI model with the TCP/IP model. (7 marks)
4. Answer the following :
- (a) What are the different transmission media used in networking ? Explain guided media (wired) with examples. (5 marks)
 - (b) Discuss the advantages and disadvantages of fiber optic cables over coaxial and twisted pair cables. (7 marks)
 - (c) Explain the role of wireless transmission in networking. Discuss the propagation methods for wireless communication. (7 marks)
5. Answer the following :
- (a) What are network connectivity devices ? Discuss the role of repeaters, bridges, switches, and routers in networking. (5 marks)

- (b) Explain the concept of a gateway and its function in a network. (7 marks)
- (c) How do firewalls and proxy servers enhance network security ? (7 marks)

Section–B

(Short Answer Type Questions) 4×8=32

Note :- Section ‘B’ contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. What is a computer network topology ? Explain the different types of network topologies with examples.
2. Discuss the different modes of communication : Simplex, Half Duplex, and Full Duplex, with suitable examples.
3. Explain the functions and importance of a Network Interface Card (NIC). Discuss its different types and applications.
4. What is the role of Internet Service Providers (ISPs) in providing Internet access ? Explain the process of connecting to the Internet.

5. What is the difference between synchronous and asynchronous communication ? Provide examples of each.
6. Discuss the components of a fiber optic cable. Explain the advantages and disadvantages of fiber optics as a transmission medium.
7. Describe the Internet addressing system. What are IP addresses, DNS, and URLs, and how do they function in Internet communication ?
8. Explain the different types of Ethernet frames (IEEE 802.3, IEEE 802.4, IEEE 802.5) and their significance in network communication.
