A–1143

Total Pages : 4 **Roll No. .....**

BCA (N)-203

Computer Network

Examination February, 2026

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. (a) Explain the historical evolution of computer networks, classification of networks (LAN, MAN, WAN), and broadcast *Vs*. point-to-point transmission. (10)

   (b) Discuss different network topologies : mesh, bus, star, ring, and tree with examples. (9)

2. (a) Explain guided and unguided transmission media in detail. (10)

   (b) What are attenuation, delay distortion and noise ? Explain how they affect channel capacity. (9)

3. (a) Describe IEEE 802.3 Ethernet architecture, MAC sublayer, and the basic Ethernet frame format. (10)

   (b) Explain the working of CSMA/CD in Ethernet and compare it with ALOHA and CSMA. (9)

4. (a) Explain the architecture, operation and features of Token Ring (IEEE 802.5) and Token Bus (IEEE 802.4). (10)

   (b) Compare Token Ring, Token Bus and Ethernet based on performance, topology and MAC mechanism. (9)

5. (a) What is IPv4 addressing ? Explain subnetting and Network Address Translation (NAT) with examples. (10)

(b) Describe the IPv6 header format, key features of IPv6 and the role of ARP and ICMP. (9)

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. Write short notes on any two Bluetooth layers :

   (a) Radio Layer

   (b) Baseband Layer

   (c) Link Manager Protocol (LMP)

2. What is the **frequency reuse principle** in cellular networks ? Explain mobility management briefly.

3. Differentiate between **Repeater, Hub, Bridge, Switch**, and **Router**.

4. Explain the format of an **IP Datagram**.

5. Write short notes on the following :

   (a) UDP

   (b) TCP

6. Explain **Link-State Routing** in OSPF and list its advantages.

7. What is a **Firewall** ? Explain any two types of firewalls with examples.

8. Write short notes on the following :

   (a) Leaky Bucket Algorithm

   (b) Token Bucket Algorithm

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