(i) **Printed Pages : 3** **Roll No. .....**

(ii) **Questions : 9** **Sub. Code :** 0 9 4 7

Exam. Code : 0 0 3 1

Bachelor of Computer Applications 5th Semester

(2123)

COMPUTER NETWORKS

Paper : BCA-16-501

Time Allowed : Three Hours] **[Maximum Marks : 65**

Note :— Candidate is required to attempt **FIVE** questions in all including Question No. **9** (which is compulsory) and attempt remaining **FOUR** questions by selecting **ONE** question from each Section.

SECTION–A

1. Discuss different network topologies such as star, bus and ring. Provide examples of real world scenarios where each topology might be most suitable, considering factors like scalability and fault tolerance. 13

2. Explain in detail modems (modulator-demodulator) in networking. Describe how modems facilitate the conversion of digital and analog signals, and discuss their significance in connecting different types of communication networks. 13

SECTION–B

3. Explain the concept of framing in the data link layer. Describe various framing methods used in data communication and discuss their advantages and disadvantages. 13

4. Explain the principles of the sliding window protocol and how it enhances data link layer efficiency. Discuss the differences between Stop-and-Wait ARQ, Go-back-N ARQ and Selective Repeat ARQ. What are the advantages and limitations of each approach ? 13

SECTION–C

5. Discuss the principles of routing algorithms in the network layer. Explain the concept of shortest path routing and its importance in determining optimal routes for data transmission. 13

6. Describe broadcast and multicast routing algorithms. How do they differ from unicast routing and what are the specific use cases for these routing methods ? 13

SECTION–D

7. Describe the functions and types of DNS servers. How do DNS servers work together to provide domain name resolution ? Discuss the responsibilities of authoritative DNS servers and caching DNS resolvers. 13

8. Explain the Post Office Protocol (POP) and its role in email retrieval. How does POP work to download email messages from a server to a local client device ? 13

COMPULSORY QUESTION

9. (a) Explain circuit switching, message switching and packet switching. 3

(b) How do IEEE standards like 802.3 impact networking ? 2

(c) What are remote login and file transfer protocols used for ? 2

(d) What are the different classes of IP addresses ? 2

(e) Explain network layer addressing and its importance. 2

(f) What are MIME and its functions in emails ? 2