

**BACHELOR OF COMPUTER
APPLICATIONS
(BCA) (REVISED)**

Term-End Examination

June, 2026

**BCS-041 : FUNDAMENTALS OF COMPUTER
NETWORKS**

Time : 3 Hours

Maximum Marks : 100

Note : *Question No. 1 compulsory and carries 40 marks. Attempt any **three** questions from the rest.*

1. (a) Explain the concept of communication system with the help of diagram. What are the components required for communication ? 10

- (b) What is Network Topology ? Explain the advantages and disadvantages of the following Network topologies : 10
- (i) Star Topology
 - (ii) Mesh Topology
- (c) Explain the working of 3-way handshake used in TCP, using a suitable diagram. 10
- (d) Find the class of the following IPv4 addresses : 5
- (i) 194.15.56.18
 - (ii) 250.25.58.20
 - (iii) 252.15.15.111
 - (iv) 134.11.27.13
 - (v) 193.15.56.22
- (e) Explain frequency reuse in cellular system. 5

2. (a) Write and explain Message Digest 5 (MD5) algorithm. 10
- (b) What is packet switching ? What are its merits and demerits ? Explain. 10
3. (a) What is the need of network security ? Briefly explain the following with respect to networking security : 10
- (i) Confidentiality
 - (ii) Integrity
 - (iii) Authentication
 - (iv) Access Control
- (b) What is modulation ? What are its benefits ? Explain Amplitude modulation and its advantages. 10
4. (a) What is OSI-model ? List *two* functions of each layer of OSI model. 10
- (b) Draw IP header format and explain the significance of each field. 10

5. Write short notes on the following : 4×5=20

- (a) File Transfer Protocol
- (b) Network Management
- (c) ATM Cell
- (d) Synchronous and Asynchronous
Transmission

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