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BCS–041

BACHELOR OF COMPUTER APPLICATIONS [BCA (REVISED)]

Term-End Examination

June, 2025

BCS-041 : FUNDAMENTALS OF COMPUTER NETWORKS

Time : 3 Hours *Maximum Marks : 100*

Note : *Question No.* ***1*** *compulsory. Attempt any* ***three*** *questions from the rest. Use of calculator is allowed.*

1. (a) Discuss the need of modulation in computer network. Also, differentiate between the Amplitude and Frequency Modulation. 5

(b) What is time division multiplexing ? Give the advantages and disadvantages of time division multiplexing. 5

(c) Why network models are divided into layers ? Write the similarities between TCP/IP and OSI model. 5

(d) Explain the working of RARP (Reverse Address Resolution Protocol) with the help of a suitable diagram. 5

(e) How is CRC (Cyclic Redundancy Check) code used for error detection in digital network ? Give an example to illustrate your answer. 5

(f) Differentiate between "Peer-to-Peer" and "Client-Server" networking. 5

(g) Explain silly window syndrome at transport layer, with suitable example. 5

(h) Discuss the sublayers of data link layer. Also, give characteristics of these sublayers. 5

2. (a) Write the steps of RSA algorithm. Assume two primary members $p = 3$ and $q = 11$, use RSA algorithm to calculate encryption and decryption keys. 10

(b) Write the working of Selective Repeat method. Also, compare it with Go-Back-N using example. 10

3. (a) Explain the functions of the following network devices. Also, give *one* advantage and *one* disadvantage of each : 10

   (i) Hub

   (ii) Bridge

   (iii) Repeater

   (iv) Modem

   (v) Switch

   (b) What is SNMP ? Discuss the functions performed by SNMP for network management. 10

4. (a) Write Link state routing algorithm. Explain its working with the help of an example. 10

   (b) Compare 1G, 2G and 3G wireless generations, based on the following criteria : 10

   (i) Communication method

(ii) Modulation technique

(iii) Services

(iv) Channel Assignment

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

(i) ICMP

(ii) ALOHA

(iii) Sliding Window Protocol

(iv) TCP/IP Model

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