| BCS-041 |

BACHELOR OF COMPUTER APPLICATIONS (BCA) (Revised)

Term-End Examination

December, 2022

BCS-041 : FUNDAMENTALS OF COMPUTER NETWORKS

Time : 3 hours   *Maximum Marks : 100*

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

1. (a) What is MD5 Digest ? Explain the steps for the process of generating 128 bit MD5 digest from any given number and key. *10*

   (b) How is sampling done from analog signals ? Explain through an illustration. *7*

   (c) Given data frame as 1101011011 and generator polynomial $G(x) = x^4 + x + 1$, derive the transmitted frame using CRC method. Write all the steps involved in the process. *10*

(d) How many networks can each IP address class A, B and C have ? Also find the number of hosts per network in each of the given address class. 6

(e) Discuss the working of ARP and RARP. Also, differentiate between the two. 7

2. (a) Discuss the following in context of network management : 6

(i) Configuration management

(ii) Accounting management

(b) What are the important features of an ATM switch ? 4

(c) What are the two categories of ICMP messages ? Give two examples of each. 6

(d) Differentiate between Virtual circuit and Datagram. 4

3. (a) Explain the following features of IPv6 : 5

(i) Tunneling

(ii) Dual IP Stack

(b) What is the problem with PSK ? Explain how it may be solved. 5

(c) What is TCP's sliding window ? Explain Silly Window Syndrome with the help of a diagram. 10

4. (a) Explain Time Division Multiplexing (TDM). Discuss the advantages and disadvantages of TDM. Also, give applications of TDM. *10*

(b) What is Three-way handshaking method ? Draw and explain the connection establishment and termination in TCP using Three-way handshaking method. *10*

5. (a) Differentiate between the following : *10*

(i) Circuit switching and Packet switching

(ii) IPv4 and IPv6

(b) Write short notes on the following : *10*

(i) RSA

(ii) OSI Model

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