

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

**Term-End Examination**

**December, 2022**

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

*Time : 3 hours*

*Maximum Marks : 100*

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

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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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