

No. of Printed Pages : 4

**BCS-041**

**BACHELOR OF COMPUTER  
APPLICATIONS**

**(BCA) (REVISED)**

**Term-End Examination**

**December, 2023**

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

*Time : 3 Hours*

*Maximum Marks : 100*

---

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

---

---

1. (a) What is a Frame Relay ? Explain the advantages of Frame Relay over X.25 Network. 6

**P. T. O.**

- (b) How are Hubs, Switches and Routers different from each other ? 6
- (c) Explain POP and IMAP. What are the advantages of IMAP over POP ? 6
- (d) Compare CSMA/CD and Ethernet protocol. 6
- (e) How does circuit switching and packet switching differ ? Give merits and demerits of both. 6
- (f) Write the steps of Distance Vector Routing Algorithm. Show case the working of this algorithm with an example. 10
2. (a) Explain the working of 3-way handshake used in TCP using a suitable diagram. 10
- (b) What is Windowing ? How are flow control and reliability achieved through windowing at transport layer ? 10

3. (a) List various connecting devices in a LAN. Explain the functioning of each. Also show the interconnectivity between devices with suitable diagram. 10
- (b) Briefly discuss the utility of CRC. Calculate CRC if the message is  $x^7 + x^5 + 1$  and the generator polynomial is  $x^3 + 1$ . 10
4. (a) Differentiate between Analog and Digital Modulation. Compare and contrast between ASK, PSK and FSK (digital modulation techniques). 10
- (b) What is MD5 ? Write step by step procedure for generating 128 bit MD5 digest. 10

5. (a) Differentiate between adaptive and non-adaptive routing. Explain the working of hierarchical routing using suitable topological structure and routing table. 10
- (b) Discuss the error control techniques used at the data link layer. Also write the step by step procedure of Go-BACK-N ARQ Method. 10