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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.*

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

(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