(6 pages)   Reg. No. : ....

Code No. : 20486 E   Sub. Code : CMCS 52

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2023.

Fifth Semester

Computer Science – Core

DATA COMMUNICATION AND NETWORKS

(For those who joined in July 2021-2022 onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. How many layers are there in the OSI model?

   (a) 3   (b) 4

   (c) 5   (d) 7

2. Which layer in the OSI model is responsible for routing and forwarding data packets?

   (a) Physical Layer   (b) Data Link Layer

   (c) Network Layer   (d) Transport Layer

3. Which of the following is an example of a guided transmission medium?

   (a) Twisted-pair cable

   (b) Satellite communication

   (c) Wireless LAN

   (d) Infrared communication

4. Which of the following is an example of an unguided transmission medium?

   (a) Coaxial cable

   (b) Fiber-optic cable

   (c) Infrared communication

   (d) Twisted-pair cable

5. Which technology uses the traditional telephone network to establish a connection between a computer and the Internet?

   (a) Cable TV Network

   (b) Digital Subscriber Line (DSL)

   (c) Dial-Up Modem

   (d) Virtual Circuit Network

6. In a Datagram Network, data is transmitted in the form of

   (a) Packets   (b) Circuits

   (c) Frames   (d) Segments

7. Which technique is used in the Data Link Layer to detect errors in data transmission?

   (a) Encryption   (b) Checksum

   (c) Modulation   (d) Compression

8. In the context of Wired LANs, what does IEEE stand for?

   (a) International Electronic and Electrical Engineers

   (b) Institute of Electrical and Electronic Engineers

   (c) International Energy Efficiency Experts

   (d) Institute of Electrical Efficiency Engineers

9. Which Transport Layer protocol ensures reliable data delivery with error checking and flow control?

   (a) UDP   (b) TCP

   (c) IP   (d) DNS

10. Which IEEE standard governs Wireless LANs (WLANs)?

   (a) IEEE 802.3   (b) IEEE 802.11

   (c) IEEE 802.16   (d) IEEE 802.1Q

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain the different modes of data communication.

Or

   (b) Classify the various topologies in Data Communication Network.

12. (a) Why guided media used for transmission? Discuss.

Or

   (b) Distinguish between data rate and signal rate.

13. (a) What is the purpose of Dial-Up Modem? Discuss.

Or

   (b) Explain datagram and its key characteristics.

14. (a) How does error control ensure reliable data delivery? Explain.

Or

   (b) Differentiate between noiseless channels and noisy channels.

15. (a) Differentiate between IPV4 and IPV6 addressing schemes.

Or

(b) Write a short note on Domain Name System.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Demonstrate the OSI reference model with neat diagram.

Or

(b) Summarize the concept of protocol and standard in Data Communication Network.

17. (a) Interpret Time Division Multiplexing with an example.

Or

(b) What are the factors affect the network performance? Discuss.

18. (a) Describe the operation of virtual circuit approach.

Or

(b) How has the cable TV network been adapted to support data transfer? Discuss.

19. (a) Explain the significance of IEEE standards in the context of wired LANs.

Or

(b) Describe the improvement made in the fast Ethernet standard compare to standard Ethernet.

20. (a) Discuss the advantages and challenges using wireless LAN.

Or

(b) Explain about interworking and its importance.

—————