(7 pages)

Reg. No. : .....

Code No.: 7888 **Sub. Code: WCSE 12/ VCSE 15**

M.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2024.

First Semester

Computer Science

Elective – II : ADVANCED COMPUTER NETWORKS

(For those who joined in July 2023 onwards)

Time : Three hours Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL questions.

Choose the correct answer:

1. How many components data communication consists of?

   (a) 2 (b) 4

   (c) 3 (d) 5

2. A _____cable is made of glass or plastic and transmits signals in the form of light.

   (a) Fiber-optic (b) Coaxial

   (c) Twisted-Pair (d) Wireless

3. Which layer transforms the physical layer, a raw transmission facility, to a reliable link?

   (a) application (b) session

   (c) network (d) data link

4. A switch in a _____ network uses a routing table that is based on the destination address.

   (a) Protocol (b) TCP/IP

   (c) UDP (d) Datagram

5. In a character-oriented protocol, data to be carried are _____ characters from a coding system such as ASCII.

   (a) 16-bit (b) 32-bit

   (c) 64-bit (d) 8-bit

6. _____ in the data link layer is based on automatic repeat request, which is the retransmission of data.

   (a) framing (b) error control

   (c) flow control (d) random access

7. The address space of IPv4 is _____

(a) 2^8 (b) 2^{62}

(c) 2^{32} (d) 2^{16}

8. In classful addressing, the address space is divided into _____classes:

(a) five (b) six

(c) three (d) four

9. The IP packet that carries an IGMP packet has a value of _____in its TTL field.

(a) 2 (b) 3

(c) 4 (d) 1

10. The _____ layer is responsible for process-to-process delivery.

(a) network (b) session

(c) physical (d) transport

11. UDP packets, called user datagrams, have a fixed-size header of _____ bytes.

(a) 16 (b) 32

(c) 64 (d) 8

12. A _____ segment cannot carry data, but it consumes one sequence number

(a) ACK (b) SCTP

(c) SYN (d) TCP

13. In DNS, the tree can have only _____ levels

(a) 128 (b) 127

(c) 255 (d) 254

14. Name space that maps each address to a unique name can be organized in _____-ways.

(a) three (b) five

(c) two (d) four

15. _____ is a general-purpose client/server application program

(a) INTERNET (b) TELNET

(c) ETHERNET (d) UDP

PART B — ($5 \times 4 = 20$ marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

16. (a) Illustrate the various types of data representation in detail.

Or

(b) Clarify about protocols and standards in Data Communications.

17. (a) Categorize the various phases of actual communication in a circuit-switched network.

Or

(b) Analyze variable Variable-Size Framing and its approaches.

18. (a) Construct the network address translation of lPV4.

Or

(b) Change the multicast IP address 230.43.14.7 to an Ethernet multicast physical address.

19. (a) Explain the following

(i) Multiplexing and Demultiplexing.

(ii) Connectionless Versus Connection-Oriented Service transport protocol.

Or

(b) Suppose a TCP connection is transferring a file of 5000 bytes. The first byte is numbered 10,001. What are the sequence numbers for each segment if data are sent in five segments, each carrying 1000 bytes?

20. (a) Illustrate MIME header used in email for transformation parameter.

Or

(b) Write the management components of SNMP and its roles.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

21. (a) Summarize the TCP/IP protocol suite with neat diagram.

Or

(b) Determine the Unguided media — Wireless transmission.

22. (a) Illustrate the concept of Virtual-Circuit Network with neat diagram.

Or

(b) Evaluate the IEEE standards for LAN with neat diagram.

23. (a) Sketch and explain the structure of lPv6 address space.

Or

(b) Summarize the various types of ICMP message in detail with neat diagram.

24. (a) Explain the service offered by TCP to the processes at the application layer.

Or

(b) Discriminate the various techniques to improve the Quality of Services.

25. (a) Justify the DNS different section used in internet with neat diagram.

Or

(b) Sketch and explain the four scenarios architecture of an e-mail.
