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Question Paper Code : 50908

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024.

Fourth/Fifth Semester

Computer Science and Engineering

CS 3591 – COMPUTER NETWORKS

(Common to : Computer Science and Engineering (Cyber Security)/ Computer and
Communication Engineering/ Artificial Intelligence and Data Science and
Information Technology)

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define socket.
2. What are the functionalities of SNMP protocol?
3. List the features of connection oriented services.
4. Assume that in a stop and wait system, the bandwidth of the line is 1 Mbps and 1 bit takes 20 milliseconds to make a round trip. What is the bandwidth-delay product?
5. What is Round Trip Time?
6. Identify the protocol which is used to map the IP address to MAC address for delivering the packet to its destination host. Specify the request and response packet format of that protocol.
7. Differentiate between Unicast and Multicast routing.
8. How are the packets routed using Link state routing protocol?
9. Define Bandwidth.
10. Consider there are 7 nodes in the mesh topology. Identify the number of duplex links required to connect the nodes.

PART B — (5 × 13 = 65 marks)

11. (a) How DNS help in Internet? Illustrate the namespace of DNS.

Or

- (b) Explain OSI Reference model with neat diagram.

12. (a) Discuss the congestion control and flow control mechanism in transport layer.

Or

- (b) Compare and contrast UDP and TCP protocols. Explain it briefly.

13. (a) Write short notes on ICMP and DHCP protocols.

Or

- (b) Discuss in detail about classful and classless IP addressing.

14. (a) Explain distance vector routing with an example.

Or

- (b) Write short notes on Path vector routing and Multicast routing.

15. (a) Explain propagation of guided and unguided mediums.

Or

- (b) (i) Explain the types of transmission media. (7)

- (ii) Write short notes on wireless LAN (802.11). (6)

PART C — (1 × 15 = 15 marks)

16. (a) Consider the code word $M(X) = 111100010101$ is transmitted in an unreliable medium. $X^2 + 1$ is the divisor commonly used for both sender and receiver. Calculate the CRC at the sender side as $T(X)$. An error occurred at the bit position 6 (Note : from left to right) in $T(X)$. Prove that the error occurs at the receiver side using CRC.

Or

- (b) An ISP is granted a block of addresses starting with 198.60.4.0/24. The ISP wants to distribute these blocks to 3 organizations with each organization receiving 12 addresses, 25 addresses and 50 addresses. Design the sub-blocks and give the CIDR notation for each organization. Find out how many addresses are still available after these allocations.