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Question Paper Code : 90930

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2025.

Computer Science and Engineering

CS 3591 — COMPUTER NETWORKS

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

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the fundamental characteristics of data communication?
2. What is the use of SNMP protocol in a network?
3. Identify the Pseudo header frame format for header.
4. Classify the advantages of connection-oriented services over connectionless services.
5. What is subnetting? Give an example.
6. Determine the two major mechanisms defined to help transition from IPv4 to IPv6.
7. What are the metrics used by routing protocols?
8. Define Border Gateway Protocol with an example.
9. Mention the services provided by the Data link layer.
10. Compose your view on why fragmentation is recommended in a wireless LAN?

PART B — ($5 \times 13 = 65$ marks)

11. (a) Describe the message format, message transfer and the underlying protocol involved in the working of the electronic mail.

Or

- (b) Draw the OSI network architecture and explain the functionalities of every layer in detail.

12. (a) Examine the Three-Way Handshake protocol to establish the transport level connection.

Or

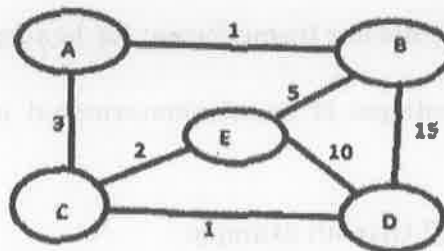
- (b) State the need and operations of UDP. Explain UDP checksum with an example.

13. (a) Briefly explain the different types of packets switching techniques with suitable networks. Write each of its advantages and disadvantages.

Or

- (b) Summarize the ARP and RARP packets and encapsulation of ARP with an example.

14. (a) Discuss the Link State algorithm in detail. Compute the shortest path from C to all other. Update the forwarding table of node C.



Or

- (b) Discuss in detail about open-source shortest path routing with neat diagrams.

15. (a) Explain the need for error detection with typical examples. Explain methods used for error detection and error correction.

Or

- (b) Illustrate and discuss the algorithm for sender site and receiver site stop and wait protocol.

PART C — (1 × 15 = 15 marks)

16. (a) A student attaches a laptop to campus network and request/receives a web page from www.google.com. Compose your view on the sequence of operations carried out with the help of different protocols used in application, transport, network and link layers.

Or

- (b) Illustrate the working of CSMA/CD and CSMA/CA protocol with an example.
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