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SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIFTH SEMESTER B.TECH DEGREE EXAMINATION (S), FEBRUARY 2023
COMPUTER SCIENCE AND ENGINEERING
(2020 SCHEME)

Course Code : 20CST303

Course Name: Computer Networks

Max. Marks : 100 **Duration: 3 Hours**

PART A

(Answer all questions. Each question carries 3 marks)

1. List the design issues of layered network software.
2. Define simplex, half-duplex, and full-duplex transmission modes. Give one example for each.
3. Demonstrate the implementation of Bit Stuffing in High-Level Data Link Control (HDLC).
4. Distinguish between switch and Router.
5. Demonstrate Optimality principle with an example.
6. Illustrate the Count –to- Infinity problem in routing.
7. List the message types in Open Shortest Path First (OSPF).
8. List the IP address ranges and subnet masks of class A, class B and class C.
9. Write a note on World Wide Web.
10. Explain the procedure for calculating the User Datagram Protocol (UDP) checksum?

PART B

(Answer one full question from each module, each question carries 14 marks)

MODULE I

11. a) With a neat diagram, explain Open Systems Interconnection (OSI) Reference Model. (9)

    b) Consider two networks providing reliable connection-oriented service. One of them offers a reliable byte stream and the other offers a reliable message stream. Are they identical? Justify your answer. (5)

OR

12. a) List the key features of Network Performance indicators Bandwidth, Throughput and Delay. (6)

    b) How computer networks are categorized based on transmission technology and scale? Explain the features of each networks (PAN, LAN,MAN,WAN). (8)

MODULE II

13. a) Demonstrate the working of Sliding window protocols Go-Back- N and Selective Repeat with suitable diagram and example (Both Packet loss and Ack loss need to address). (9)

b) How is Token management done in IEEE 802.5. (5)

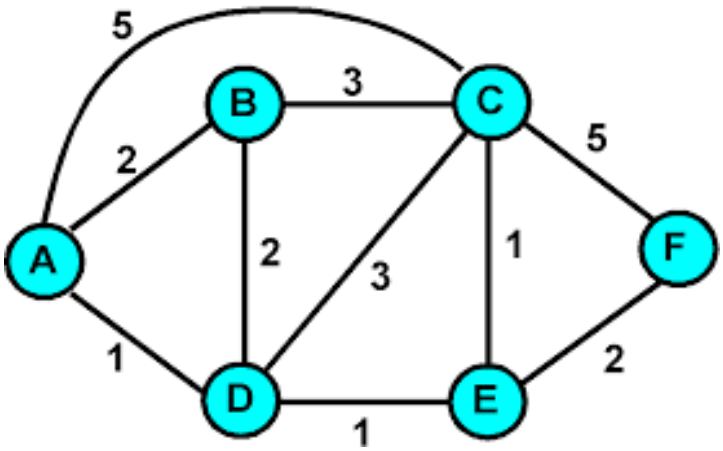
OR

14. a) List out any two Error Detection and Correction Mechanisms. (8)

b) Write a note on Wireless Lan (IEEE 802.11) in detail. (6)

MODULE III

15. a) Illustrate the Dijkstra's Shortest path routing algorithm in the network shown below with Starting node as A. (8)



b) Discuss about any two datagram congestion control techniques. (6)

OR

16. a) Differentiate between Static Routing and Dynamic Routing. Explain Link State Routing in detail. (10)

b) Explain any two methods to ensure QoS in Network Layer. (4)

MODULE IV

17. a) List any three key features of IP protocol.Demonstrate IP Packet format with figure in detail. (9)

b) How do you subnet the Class C IP address 195.1.1.0 so as to have 10 subnets with a maximum of 12 hosts in each subnet. (5)

OR

18. a) Explain the working of Address Resolution Protocol (ARP) and Reverse Address Resolution Protocol (RARP). (8)

b) Discuss Dynamic Host Configuration Protocol (DHCP). (6)

MODULE V

19. a) Differentiate Between Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) in detail. (10)

b) List the components of Simple Network Management Protocol (SNMP)? (4)

OR

20. a) Demonstrate the implementation and working of DNS in detail. (7)

b) Give the importance of MIME. What are the different MIME types? (7)

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