Register No.: ...................................    Name: ....................................................................

# SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**FIFTH SEMESTER B.TECH DEGREE EXAMINATION (R,S), DECEMBER 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. A network with a bandwidth of 10 Mbps can pass only an average of 12000 frames per minute with each frame carrying an average of 10,000 bits. What is the throughput of the network?
3. Distinguish between bridges and switches.
4. Using Sliding window protocol with window size=1, the sender tries to send 10 frames and every fourth frame will be lost. What is the total number of frames that should be sent by the sender after all retransmission.
5. Explain Optimality Principle.
6. Discuss on routing for mobile hosts.
7. Differentiate between ARP and RARP.
8. Explain ping and traceroute command.
9. List and explain any 3 application layer protocols and the corresponding port number.
10. Differentiate between TCP and UDP.

## PART B
### *(Answer one full question from each module, each question carries 14 marks)*

### MODULE I

11. With a neat diagram, explain Open System Interconnection Reference Model. Compare and critique OSI Model and TCP/IP Reference Model.    (14)

### OR

12. a) Compare Twisted Pair, Coaxial cable and Optical Fiber guided transmission media.    (7)

     b) Explain Simplex, Half-duplex and Full-duplex transmission modes. Give examples for each.    (7)

## MODULE II

13. a) Explain the working of High-level Data Link Control (HDLC) protocol.   (7)

    b) Discuss on the design issues of Data Link Layer.   (7)

### OR

14. Briefly explain Multiple Access Protocol. What are different methods of CSMA.   (14)

## MODULE III

15. Explain in detail how routing is performed using Link state algorithm. Illustrate with an example.   (14)

### OR

16 a) With a neat diagram, explain Leaky Bucket algorithm.   (7)

    b) Discuss on Distance Vector routing algorithm.   (7)

## MODULE IV

17. Describe in detail the different types of ICMP messages.   (14)

### OR

18. a) Explain Open Shortest Path First (OSPF) routing algorithm.   (7)

    b) Explain how routing is done using Border Gateway Protocol (BGP).   (7)

## MODULE V

19. a) How DNS service maps domain names to IP addresses?   (10)

    b) Write a note on World Wide Web.   (4)

### OR

20. a) How Congestion control is done using TCP?   (7)

    b) What is the role of Simple Network Management Protocol (SNMP)? Explain its components.   (7)

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