2022

(May/June)

COMPUTER SCIENCE

(Elective/Honours)

(Data Communication and Computer Networks)

(CS–401T)

Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **five** questions, selecting **one** from each Unit

UNIT—I

1. *(a)* Write notes on the linear, bus, ring, star and hybrid topologies, clearly bringing out the difference among them. 2×5=10

(b) The following character encoding is used in a data link protocol :
A : 01000111; B : 11100011;
FLAG : 01111110; ESC : 11100000

Show the bit sequence transmitted (in binary) for the four-character frame A B ESC FLAG, when each of the following framing methods is used :

(i) Character count

(ii) Flag bytes with byte stuffing

2½+2½=5

(c) What are the issues that are raised by pipelining? 3

2. (a) With the help of suitable diagrams, bring out the differences between the message switching and packet switching. 4

(b) How does a simplex Stop-and-Wait protocol differ from an unrestricted simplex protocol? 4

(c) Consider sliding window protocols which must deal with transmission errors in presence of pipelining. With the use of diagrams, explain the differences between a protocol incorporating Go-Back-N and a protocol incorporating Selective-Repeat. 5+5=10

UNIT—II

3. (a) Discuss link state routing algorithm. 6

(b) Differentiate between token bucket and leaky bucket algorithms. 4

(c) What are the different strategies to control congestion in virtual circuit subnets? 5

4. (a) What is congestion? Why does it occur? How does congestion control differ from flow control? 2+2+2=6

(b) Explain routing for mobile hosts. 5

(c) Explain the terms 'load shedding' and 'jitter control'. 2+2=4

UNIT—III

5. (a) Explain the flow control and buffering elements of transport protocols. 3+3=6

(b) Write a short note on the remote procedural call. 5

(c) Explain the TCP transmission policy. 3

6. *(a)* Explain the wireless TCP and UDP. 6

(b) Explain with diagram the TCP connection management modeling. 6

(c) What is meant by transport service primitives? 2

UNIT—IV

7. *(a)* Explain the architecture and services of electronic mail. 7

(b) What is DNS? In presence of name servers, explain how an address can be resolved using these name servers. Illustrate your answer with a suitable diagram. 2+5=7

8. *(a)* Write short notes on : 4+4=8

(i) SMTP

(ii) FTP

(b) Explain persistent and non-persistent HTTP connections. 6

UNIT—V

9. *(a)* With the help of suitable examples, explain the Uniform Resource Locator (URL) formats. 7

(b) Write a note on web server operation. 7

10. *(a)* Differentiate between Web server and Web browser. 7

(b) What is the W3C? Write a short note on the W3C recommendations. 7

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