

R18

Code No: 155AN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, March - 2024

COMPUTER NETWORKS

(Common to CSE, CSBS, CE(SE), CSE(DS), CSE(IOT), AI&ML, CSD)

Time: 3 Hours

Max. Marks: 75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART - A

(25 Marks)

- 1.a) List the characteristics of twisted pair cables. [2]
- b) What are the main types of wireless transmission technologies? [3]
- c) What is the channel allocation problem in the medium access sublayer? [2]
- d) What are collision-free protocols, and how do they ensure collision avoidance in networking? [3]
- e) List the main objectives of congestion control algorithms. [2]
- f) List the challenges and solutions associated with scalability in the network layer. [3]
- g) What is the impact of packet reordering and packet loss on TCP performance? [2]
- h) How does TCP handle flow control in data transmission? [3]
- i) What role does the domain name system play in Internet communication? [2]
- j) What is a simple network management protocol? [3]

PART - B

(50 Marks)

- 2.a) Describe the TCP/IP reference model and its layers.
- b) Explain the concept of guided transmission media and provide examples. [5+5]

OR

- 3.a) What are the key protocols associated with the TCP/IP model? Explain any two protocols.
- b) Discuss fiber optics as a guided transmission medium and its advantages over other media types. [5+5]

- 4.a) Describe the purpose of error detection and correction in the data link layer.
- b) Explain the operation of a one-bit sliding window protocol in the data link layer. [5+5]

OR

- 5.a) Explain the operation of a simplex stop-and-wait protocol designed for an error-free channel.
- b) Describe the characteristics and operation of wireless LANs in the data link layer. [5+5]

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- 6.a) Explain the concept of shortest path routing in the context of the network layer.
- b) Discuss the differences between IPv4 and IPv6 addressing schemes. [5+5]

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OR

- 7.a) What is hierarchical routing, and how does it improve routing efficiency in large-scale networks? Explain with an example.
- b) What are congestion control algorithms, and why are they necessary in network communication? Explain with an example. [5+5]

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- 8.a) Explain the key elements of transport protocols.
- b) Discuss the role of ports in TCP and UDP communication. [5+5]

OR

- 9.a) Compare and contrast connection-oriented and connectionless transport protocols.
- b) Explain the concept of multiplexing in transport layer protocols. [5+5]

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- 10.a) Discuss the process of domain name resolution in the DNS.
- b) Explain the concept of the World Wide Web and its significance. [5+5]

OR

- 11.a) Describe the function of DNS servers and their types.
- b) Explain the difference between HTTP and HTTPS. [5+5]

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