

“APPROVED”

**Head of department of “Data
communication networks and systems”**

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**Tashkent University of Information Technologies named after Muhammad al-
Khwarizmi**

**Faculty of “Telecommunication Technologies”
Department of “Data communication networks and systems”**

**Final Control quizzes for 4th year students of the fall semester of the
2024/2025 academic year on the subject
“Switching and Routing”**

1. Classification of data communication networks and requirements for them
2. General principles of building data communication networks.
3. Definition of the concepts of switching and routing.
4. Functions of protocols in data communication networks
5. Tasks and types of network topology
6. Definition of physical and logical topology.
7. What network components does an organization include?
8. Explain the switching methods
9. The principle of operation of channel switching
10. The principle of operation of packet switching
11. Purpose and essence of the packet switching method
12. Essence of the virtual packet switching mode
13. Essence of the datagram packet switching mode
14. The principle of message switching
15. TCP/IP network model.
16. OSI Network Model
17. Compare OSI and TCP/IP network models.
18. Main objectives of Open Systems Reference Model (OSI)
19. Types and description of protocols used in OSI model
20. Explain the processes of encapsulation and decapsulation in data communication networks.
21. Define the concepts of protocol and interface in the network.
22. Functions and standards of the physical layer.
23. Types of cables used in data communication networks
24. Functions and standards of the data link layer.
25. Explain the frame format and its structure.
26. Data link layer protocols and their purpose
27. Ethernet technology principle
28. Frame Relay technology principle
29. ATM technology principle

30. Functional model and types of switches
 31. How does the MAC table work in a switch
 32. Explain the description of a MAC address using examples.
 33. Sublayers of the data link layer and their functions
 34. List the functions of the LLC sublayer of the data link layer
 35. List the functions of the MAC sublayer of the data link layer
 36. Explain the principle of operation of the ARP protocol using an example.
 37. Explain the principle of operation of the ICMP protocol using an example
 38. Network layer protocols and their purpose
 39. Explain the principle of IPv4 addressing in a network using an example
 40. Classful addressing functions. Examples
 41. IPv4 packet format
 42. IPv4 protocol and its functions. IP header format
 43. IPv6 protocol and its capabilities. IPv6 header format
 44. Explain the principles of IPv6 addressing with an example.
 45. How is IPv6 address abbreviated? (explain with an example)
 46. Provide mechanisms for transition from IPv4 to IPv6
 47. Classification of routing protocols
 48. Protocols and functions of interior routing
 49. Explain dynamic routing protocols
 50. Explain static routing protocols.
 51. The concept of route metrics and the principles of their formation.
 52. The principle of operation of the RIP protocol. Advantages and disadvantages
 53. The principle of operation of the OSPF protocol. Advantages and disadvantages
 54. Explain the function of the EIGRP protocol, its algorithm and metric.
 55. Explain the function of the BGP protocol, its algorithm and metric.
 56. IPv6-based dynamic routing protocols.
 57. Compare dynamic routing protocols
 58. Classification and tasks of routing algorithms.
 59. Requirements for routing algorithms
 60. Routing algorithms and principles of operation
 61. Explain Dijkstra's algorithm with an example.
 62. Explain Floyd's algorithm with an example.
 63. Functional model and types of router.
 64. Operating principles of the routing table
 65. Description of functions and tasks of the transport layer.
 66. How UDP works
 67. How TCP works
 68. How SCTP works
 69. Description of transport layer protocols
 70. Main differences between TCP and UDP
 71. Application layer functions
 72. Description of remote device management protocols (TELNET/SSH)
 73. Quality of service (QoS) assessment criteria in the network
 74. Network quality of service (QoS) standards
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75. Description and tasks of IP/MPLS technology.
76. Description of protocols used in IP/MPLS technology
77. Description of packet format in MPLS technology
78. Advantages of MPLS technology
79. Characteristics and technologies for transmitting audio messages based on IP protocol
80. Architecture of IP telephony and its features.
81. Features and technologies of video message transmission based on IP protocol
82. Features of IPTV service provision
83. IPTV network protocols
84. Concept and tasks of network monitoring
85. Protocols used in network monitoring
86. Modern software tools used in network monitoring
87. The principle of operation of the Syslog protocol
88. The principle of operation of the SNMP protocol
89. The principle of operation of the NTP protocol
90. The principle of operation of the TFTP and FTP protocols
91. The principle of operation of the DNS and DHCP protocol
92. The principle of operation of the HSRP protocol
93. The concept of reliability of data transmission networks
94. Requirements for reliability indicators of data communication networks
95. Methods for increasing network reliability
96. Define Virtual Local Area Network (VLAN), explain frame format.
97. Functions of L2 and L3 switches
98. Cisco IOS system files
99. Memory types and file systems on network devices
100. Description of devices used in network

Responsible teacher



D.T.Khasanov