CTIS 261: Fundamentals of Computer Networks

Semester: Fall 2024-2025

Exercise Questions 1

Q1. What is a network? What is a converged network?

Q2. Compare circuit switching with packet switching.

Q3. Explain why is it important to implement QoS mechanism as part of network architecture?

Q4. Differentiate between internet, intranet and extranet. What is the Internet?

Q5. Explain briefly the concept behind cloud computing and its benefits.

Q6. List different internet connectivity options for both home users and corporates.

Q7. What do you understand by BYOD?

Q8. What do you understand by internet of things?

Q9. What is powerline networking?

Q10. Briefly explain the following network security threats

1) Viruses
2) Worms
3) Trojan horses
4) Denial of service attacks
5) Identity theft

Q11. List 4 end devices, 5 intermediary device and 3 types of networking media.

Q12. What are major functions performed or enabled by Cisco routers and switches?

Q13. Briefly discuss all ways to access a Cisco IOS Device.

Q14. Briefly mention about a hierarchical structure for the modes used by command line interface (CLI) of Cisco IOS.

Q15. How can one access the privileged EXEC mode from User EXEC mode?

Q16. How can one access User EXEC mode from the privileged EXEC mode?

Q17. How can one access Global Configuration Mode from the privileged EXEC mode?

Q18. How can one access the privileged EXEC mode from Global Configuration Mode?

Q19. How can one access interface Fastethernet 0/0 configuration mode from the global configuration mode?

Q20. How would you configure the IP address and subnet mask for the switch on CLI of Cisco IOS?

Q21. How would you limit access to the privileged EXEC mode?

Q22. How would you limit device access using the console connection (Hint: consider **Console password**)?

Q23. How would you limit device access over Telnet (Hint: consider **VTY password**)?

Q24. Which command is used to save the running configuration to startup configuration file?

Q25. If undesired changes are saved to the startup configuration, it may be necessary to clear all the configurations. This requires erasing the startup configuration and restarting the device. How is the startup configuration deleted? How is the device restarted?

Q26. Compare and contrast the layers of the OSI model with the TCP/IP protocol stack.

Q27. Elaborate on the following terms

1) Encapsulation
2) Decapsulation
3) PDU
4) Protocol
5) Multiplexing
6) Segmentation
7) Routing

Q28. Explain how unicasting, broadcasting and multicasting are achieved in a LAN.

Q29. What is the difference between TCP/IP and TCP?

Q30. TCP/IP protocol suite includes many protocols. Explain the following protocols:

- DNS
- DHCP
- FTP
- Telnet

- HTTP
- HTTPS
- UDP
- TCP
- IP
- ICMP
- ARP

Q31. How can you map OSI model to TCP/IP model?

Q32. What are the benefits of using layered model?

Q33. What are PDUs called in each layer of OSI model?

Q34. What is the purpose of using network addresses?

Q35. What are benefits of open standards?

Q36. Explain the terms bandwidth, throughput and goodput.

Q37. What are three basic forms of network media? Briefly mention which type of signal is used by each media.

Q38. What are three main types of copper media used in networking? Briefly compare each one with other remaining type of media.

Q39. What is the purpose of twisted cables pairs in UTP and STP cable types?

Q40. Explain half and full duplex communication methods.

Q41. What is signal attenuation?

Q42. The following are main cable types that are obtained by using specific wiring conventions:

- Ethernet Straight-through:
- Ethernet Crossover

- Rollover:

Explain them briefly.