

TECEP® Test Description for CMP-354-TE

NETWORK TECHNOLOGY

This exam assesses students' knowledge of the fundamental concepts of data communications and evaluates practical approaches for designing and implementing network environments of varying sizes. It includes an analysis of the physical and logical aspects of the network infrastructure and the various industry standards and models available. The exam also assesses students' knowledge of the common tools and techniques utilized to optimize the performance and secure the core network components and resources. The exam assesses students' ability to develop and build their analytical and problem-solving skills. Specific topics assessed include: network architectures; topologies; media and devices; protocols; and servers and security. (3 credits)

- **Test format:** 70 multiple choice questions (1 point each); 3 essays (10 points each).
 - **Passing score:** 70% (70/100points).Your grade will be reported as CR (credit) or NC (no credit).
 - **Time limit:** 2 hours.
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OUTCOMES ASSESSED ON THE TEST

- Describe the different types of networks and architectures.
- Explain the need for standards organizations and network models.
- Assess the characteristics of a physical and logical topology.
- Identify the functionality of various types of network media and devices.
- Discuss the role of low and high level data communication protocols.
- Evaluate the functions of various types of network servers and services.
- Apply the common types of management techniques and tools to monitor and troubleshoot the network.
- Analyze the concepts needed for cyber security and where it should be applied to minimize exposure on a network.
- Describe various types of mobility and cellular technologies and their uses.
- Illustrate the similarities and differences among public, private and hybrid cloud service models.



TOPICS ON THE TEST AND THEIR APPROXIMATE DISTRIBUTION

The table below indicates the main topics covered by this exam and the approximate percentage of the exam devoted to each main topic. Under the main topic heading is a list of related—but more specific—topics. It is important to review these topics to determine how much prior knowledge you have and/or how much additional study is necessary.

Topic	Percentage
Network Concepts <ul style="list-style-type: none">• Network components• Network device roles• Network models and software• LAN, MAN, WAN• Internet, intranet, extranet• Future trends of networking• Standards organizations• OSI model	15%
Protocols <ul style="list-style-type: none">• Fiber and copper media• Data link and network layer protocols• IEEE 802 standard• Network protocols• IP addresses• Host name resolution• TCP/IP utilities	15%
Network Infrastructure <ul style="list-style-type: none">• Network topologies• Physical and logical networks• Wireless network modes• Remote access and authentication• WAN connectivity techniques	15%
Mobility <ul style="list-style-type: none">• Mobile computing• Mobile data communications (GSM, CDMA, LTE)• Hotspots• WLAN• Wi-Fi	15%
Communication Services <ul style="list-style-type: none">• Types of servers	10%



<ul style="list-style-type: none"> • Peer-to-peer and client servers • Directory services • Network services • Network operating systems 	
Cloud Computing <ul style="list-style-type: none"> • Public Cloud • Private Cloud • Hybrid Cloud • Types of Services (IaaS, PaaS, SaaS) • Virtualization • Grid Computing 	15%
Monitoring and Protecting the Network <ul style="list-style-type: none"> • Network reliability • Fault tolerance and redundancy • Network performance • Cyber security • Network attacks and malicious software • Firewalls, antivirus software, data encryption 	15%

STUDY MATERIALS

Below is a list of recommended study materials to help prepare you for your exam. Most textbooks in this subject include the topics listed above and will prepare you for the test. If you choose another text, be sure to compare its table of contents against the topic list to make sure all topics are covered.

Title
Ciccarelli, P., et al. <i>Networking Basics</i> . Current edition. Hoboken, NJ: John Wiley & Sons.

In addition to the suggested textbook above, you should also review the videos below to help you prepare for the exam.

Videos
TCP / IP - An animated discussion
The History of Ethernet
Warriors of The .Net



Mysteries of the Internet
The OSI Model - CompTIA Network+
Internet Infrastructure Overview
Topologies
Online Safety: Firewalls
Cloud Computing: What is Cloud Computing?
What is Virtualization?
Wireless Telecommunications Course: Cellular to LTE, WiFi and Satellite
3G vs. 4G Wireless - What is the Difference?

SAMPLE QUESTIONS

The questions below are designed to help you study for your TECEP. Answering these questions does not guarantee a passing score on your exam.

Please note that the questions below **will not** appear on your exam.

Multiple-Choice

1. Which of the following is NOT a characteristic of a WAN?
 - a. They usually communicate at high speeds.
 - b. They can cover a very large geographic area.
 - c. They can be used to interconnect two or more MANs.
 - d. Access is limited.
2. _____ is an IEEE wireless networking standard.
 - a. 802.2
 - b. 802.3
 - c. 802.5
 - d. 802.11



3. Which of the following is the bottom layer of the OSI model?
- a. Application
 - b. Physical
 - c. Data link
 - d. Session
4. A _____ is basically a simple amplifier.
- a. repeater
 - b. bridge
 - c. router
 - d. switch
5. What Wi-Fi standard uses up to 54 Mbps in the 2.4 Ghz band?
- a. 802.11a
 - b. 802.11b
 - c. 802.11g
 - d. 802.11n
6. Which of the following uses existing copper telephone lines to carry digital signals?
- a. Ethernet
 - b. Token-ring
 - c. DSL
 - d. SONET
7. FDDI uses _____ technology.
- a. coaxial cable
 - b. fiber optic
 - c. twisted-pair cable
 - d. wireless
8. Which of the following is technically a multiport repeater for use with twisted-pair cable?
- a. NICs
 - b. Bridges
 - c. Hubs
 - d. Routers



9. The _____, also called the digital signaling technique, indicates how information is represented as voltage levels or electrical current charges.
- a. bipolar signaling
 - b. encoding method
 - c. double current signaling
 - d. data rate
10. Each host is assigned a unique 16-bit number in which of the following ranges?
- a. 0-255
 - b. 0-6,535
 - c. 0-65,535
 - d. Infinite range
11. _____ is a protocol and application that provides remote terminal emulation services in clear text.
- a. FTP
 - b. UDP
 - c. TFTP
 - d. Telnet
12. Client/server networks are more secure than
- a. firewalls
 - b. peer-to-peer networks
 - c. multiserver networks
 - d. member servers
13. _____ can have a serious adverse effect on a company's finances.
- a. Trap commands
 - b. Bottlenecks
 - c. Firefighting
 - d. Network downtime
14. A normal backup is also referred to as a(n)
- a. daily backup
 - b. full backup
 - c. differential backup
 - d. incremental backup



15. Wireshark is an example of a

- a. network protocol analyzer program
- b. remote management application
- c. security vulnerability management system
- d. configuration management tool

16. Unauthorized access is related to

- a. confidentiality and availability
- b. confidentiality and integrity
- c. availability and integrity
- d. availability and reliability

17. _____ is the process of decoding encrypted data.

- a. Transcription
- b. Elucidation
- c. Simplification
- d. Decryption

Sample Essay

Answers should be about 1 to 3 paragraphs long.

18. Describe the differences between IP version 4 (IPv4) and IP version 6 (IPv6), and explain how IPv6 corrects problems encountered by IPv4.



ANSWERS TO SAMPLE QUESTIONS

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|--------|---------|---------|
| 1. (a) | 7. (b) | 13. (d) |
| 2. (d) | 8. (c) | 14. (b) |
| 3. (b) | 9. (b) | 15. (a) |
| 4. (a) | 10. (c) | 16. (b) |
| 5. (c) | 11. (d) | 17. (d) |
| 6. (c) | 12. (b) | |

Essay questions are worth 10 points each and will be scored on the following basis.

Answer addresses all of the requirements specified in the essay	4 points
Answer provides technically accurate details	3 points
Answer provides a complete analysis/rationale	2 points
Answer is clearly expressed	1 point

