TCP/IP

Total points 3

1. Which of the following is an example of a network layer (layer 3) protocol? **1 / 1 point**

- ○ Ethernet
- ○ UDP
- ○ TCP
- ◉ IP

Correct
Nice job! IP, or Internet Protocol, is the most common network layer protocol.

2. What's the difference between a client and a server? **1 / 1 point**

- ○ Clients operate on the data link layer, and servers operate on the network layer.
- ○ Clients and servers are different names for the same thing.
- ○ A server requests data, and a client responds to that request.
- ◉ A client requests data, and a server responds to that request.

Correct
Wohoo! You're correct.

3. Which of the following are examples of layers of our five-layer network model? Check all that apply. **1 / 1 point**

- [ ] The presentation layer
- [x] The transport layer

Correct
Great work!

- [x] The physical layer

Correct
Great work!

- [x] The application layer

Correct
Great work!

1. How many octets are there in a MAC address? **1 / 1 point**

- ○ 5
- ◉ 6
- ○ 8
- ○ 4

Correct
Great work! A MAC address is a 48-bit number consisting of 6 octets.

2. What address is used for Ethernet broadcasts? **1 / 1 point**

- ◉ FF:FF:FF:FF:FF:FF
- ○ FF:00:FF:00:FF:00
- ○ 11:11:11:11:11:11
- ○ 00:00:00:00:00:00

Correct
Excellent! The address FF:FF:FF:FF:FF:FF is used for Ethernet broadcast traffic.

3. What is a cyclical redundancy check? **1 / 1 point**

- ○ A technique that allows for multiple logical LANs to operate on the same equipment
- ○ A way for two computers to synchronize their clocks
- ○ The actual data being transported by an Ethernet frame
- ◉ A mathematical calculation used to ensure that all data arrived intact

Correct
Yep! A cyclical redundancy check ensures that there was no data corruption.

The Five-Layer Networking Model

Keyboard Usage

Using the networking layers you have ordered, drag and drop each example next to its corresponding layer. They fit together like puzzle pieces.

Available Items

Move All

Network Layers

Web browser	Application Layer
Client/Server	Transport Layer
Router	Network Layer
Switch	Data Link Layer
Ethernet cable	Physical Layer

Check

Networking Basics

Latest Submission Grade 75%

1. Question

1 / 1 point

When data can flow across a cable in both directions, this is known as ____ communication.

- ethernet
- simplex
- cross talk
- duplex

Expand

Correct

Wohoo! Duplex communication occurs when data flows in both directions.

2. Question

1 / 1 point

The number system that has 16 numerals is known as ____.

- binary
- octal
- hexadecimal
- decimal

Expand

Correct

Nice job! Other number systems include decimal, with 10 numerals, and binary, which only has two.

3. Question

1 / 1 point

The technique that allows you to have multiple logical LANs operating on the same physical equipment is known as a ____.

- collision domain
- VLAN
- data link layer
- protocol

Expand

Correct
Nice job! A VLAN is a way to use a single set of physical equipment in more than one way.

4. Question

1 / 1 point

A device that connects lots of devices and remembers which ones are connected to each interface is known as a ____.

- hub
- switch
- router
- server

Expand

Correct
Great work! By remembering which devices are connected to each interface, a switch reduces collision domains.

5. Question

1 / 1 point

TCP stands for _____.

- Transmission Control Protocol
- Tapioca Coconut Pudding
- Translational Carrier Pathway
- Topical Control Pathogen

Expand

Correct
Correct! Transmission Control Protocol is one of the more common transport layer protocols.

6. Question

1 / 1 point

What layer in the Transmission Control Protocol/Internet Protocol (TCP/IP) model does IP use?

- (•) Network
- ( ) Data link
- ( ) Physical
- ( ) Transport

Expand

Correct
You got it! The network layer is also sometimes called the internet layer. The most common protocol used at this layer is Internet Protocol (IP).

7. Question

1 / 1 point

Which two protocols work at the transport layer and ensures that data gets to the right applications running on those nodes?

- [x] Transmission Control Protocol (TCP)

Correct
Woohoo! TCP works at the transport layer and is responsible for ensuring that data gets to the right applications. TCP provides reliable delivery.

- [ ] Internet Protocol (IP)
- [x] User Datagram Protocol (UDP)

Correct
You got it! UDP works at the transport layer and is responsible for ensuring data gets to the right applications. UDP does not provide reliable delivery.

- [ ] Dynamic Host Configuration Protocol (DHCP)

Expand

Correct
Great, you got all the right answers.

8. Question

1 / 1 point

The Ethernet protocol functions at which layer of the Transmission Control Protocol/Internet Protocol (TCP/IP) model?

- ○ Application
- ○ Physical
- ○ Transport
- ◉ Data link

Expand

Correct
You nailed it! A lot of protocols exist at the data link layer, but the most common is Ethernet.

9. Question

1 / 1 point

What will allow you to form point-to-point networking connections?

- ○ Router
- ○ Switch
- ○ Hub
- ◉ Cables

Expand

Correct
Well done! Cables allow you to form point-to-point networking connections.

10. Question

1 / 1 point

You open a web page and log into your email. The traffic travels over many routers. What protocol will the routers use to determine the most optimal path to forward the traffic?

- ○ Internet Protocol (IP)
- ○ User Datagram Protocol (UDP)
- ◉ Border Gateway Protocol (BGP)
- ○ Transmission Control Protocol (TCP)

Expand

Correct
Nice job! Border Gateway Protocol (BGP) lets routers learn about the most optimal paths to forward traffic.

11. Question

0 / 1 point

You get in your car after work and turn on the radio. What type of communication does the radio use?

- ○ Simplex
- ○ Twisted
- ○ Half duplex
- ◉ Full duplex

Expand

Incorrect
Not quite. Please review the videos in the "Introduction to Networking" module for a refresher.

12. Question

1 / 1 point

A Local Area Network (LAN) uses Category 6 cabling. An issue with a connection results in a network link degradation and only one device can communicate at a time. What is the connection operating at?

- ○ Partial
- ○ Full Duplex
- ○ Simplex
- ◉ Half Duplex

Expand

Correct
You nailed it! A full duplex connection that has a connection issue will report itself to be operating as half duplex.

12. Question

1 / 1 point

Select the device that will have the most network ports.

- ◉ Switch
- ○ Server
- ○ Desktop
- ○ Laptop

Expand

Correct
You got it! A switch will have the most network ports, because its purpose is to connect many devices.

13. Question

1 / 1 point

Which layer abstracts away the need for any other layers to care about what hardware is in use?

- Transport
- Physical
- Network
- Data link

Expand

Correct

Well done! One of the primary purposes of the data link layer is to essentially abstract away the need for any other layers to care about the physical layer and what hardware is in use.

13. Question

1 / 1 point

A communications closet has a device that contains 48 ports. The device's sole function is to provide the ports. What type of device is in the closet?

- Router
- Hub
- Switch
- Patch panel

Expand

Correct

Great work! A patch panel is a device containing many network ports, but it does no other work.

14. Question

0 / 1 point

You need to identify the manufacturer of a network interface. Where will you look for this information?

- ○ The fourth octet of a Media Access Control (MAC) address
- ○ The last octet of a Media Access Control (MAC) address
- ○ The first three octets of a Media Access Control (MAC) address
- ◉ The first octet of a Media Access Control (MAC) address

Expand

Incorrect
Not quite. Please review the videos in the "Introduction to Networking" module for a refresher.

14. Question

1 / 1 point

What does the letter B represent in a Media Access Control (MAC) address?

- ◉ 11
- ○ 15
- ○ 10
- ○ 9

Expand

Correct
Well done! Since we don't have numerals to represent any individual digit larger than 9, hexadecimal numbers employ the letters A, B, C, D, E and F to represent the numbers 10, 11, 12, 13, 14 and 15.

15. Question

1 / 1 point

What section in an ethernet frame will you find a Virtual Local Area Network (VLAN) header?

- ○ Frame Check Sequence
- ○ Payload
- ◉ EtherType field
- ○ Preamble

Expand

Correct
Woohoo! You may find a VLAN header in the EtherType field. This will indicate that the frame is called a VLAN frame.

16. Question

1 / 1 point

Which section in an ethernet frame contains the data from higher layers, such as Internet Protocol (IP) and the transport and application layers?

- ○ Preamble
- ○ EtherType
- ○ Frame Check Sequence
- ◉ Payload

Expand

Correct

Well done! The payload contains all of the data from higher layers, such as the IP, transport, and application layers, that's actually being transmitted.

Networking Devices

Total points 3

1. Which of the following statements accurately describe the differences between a hub and a switch? Check all that apply. **1 / 1 point**

- [x] A switch remembers which devices are connected on each interface, while a hub does not.

  Correct
  You got it!

- [x] A hub is a physical layer device, and a switch is a data link layer device.

  Correct
  You got it!

- [ ] Hubs are more sophisticated versions of switches.

- [x] A hub causes larger collision domains.

  Correct
  You got it!

2. What does LAN stand for? **1 / 1 point**

- ( ) Locally available network
- ( ) Little area network
- ( ) Large area network
- (•) Local area network

Correct
That's right! LAN stands for Local Area Network.

3. What's a router? **1 / 1 point**

- ○ A network device used specially for fiber cables
- ○ A more advanced version of a switch
- ○ A physical layer device that prevents crosstalk
- ◉ A device that knows how to forward data between independent networks

Correct
Awesome work! A router connects independent networks by forwarding data between them.

The Physical Layer

Total points 2

1. What is the type of modulation used by twisted pair cable computer networks known as? **1 / 1 point**

- ○ Line crimping
- ○ Simplex communication
- ◉ Line coding
- ○ RJ45

Correct
You nailed it! Line coding is the modulation of an electrical charge so that each side of a connection knows what is a one and what is a zero.

2. What's the difference between full and half duplex? **1 / 1 point**

- ○ Full duplex is slower than half duplex.
- ◉ Full duplex allows communications in two directions at the same time; half duplex means that only one side can communicate at a time.
- ○ Full duplex is a form of simplex communications.
- ○ Half duplex occurs when hubs are in use; full duplex occurs when switches are in use.

Correct
Nice job! A half duplex connection allows communication in both directions, but only one side can communicate at a time.