

## CCNA 1 Chapter 10 Study Guide Answer Sheet

### Question 1

Which layer is routing a function of in the OSI model?

- a) 1
- b) 2
- c) 3
- d) 4
- e) 5
- f) 6
- g) 7

*Learn the functions of routing and how it is primarily done!!!*

### Question 2

What addressing systems are used in routing and which address is changed by the router when received on the interface?

**IP and MAC addresses are the addressing systems used in the routing of packets across a network. The router changes the MAC address when the frame is received at the interface**

*Learn how addressing relates to the router and how packets are addressed!!!*

### Question 3

Which of the following would describe the function of a protocol? (Choose 2)

- a) **The format that a message must conform to**
- b) The number of hops a packet may take
- c) The rules by which network administrators must cost out network components
- d) **The format that a message must conform to**
- e) The number of data items contained within a packet

*Learn the functions of protocols!!!*

#### Question 4

Which of the following layers of the OSI model offers reliable, connection-oriented data communication services?

- a) Session
- b) **Transport**
- c) Application
- d) Physical
- e) Network
- f) Data Link

*Learn how the OSI model is related to routers and routing!!!!*

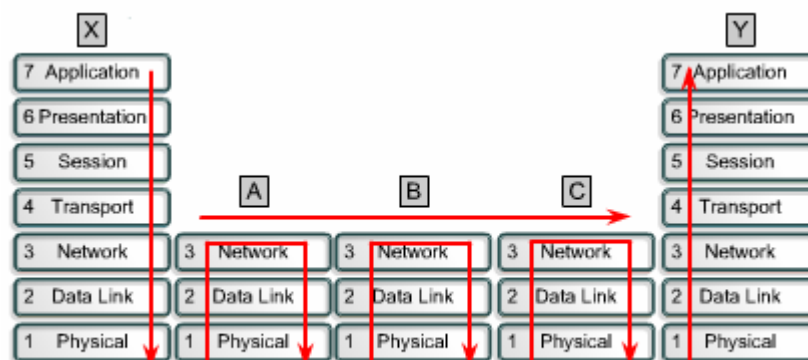
#### Question 5

Without some form of control a data packet could theoretically circle round a network endlessly, which of the following are technologies used to prevent this? (Choose 2)

- a) Loopback control protocol
- b) **Time-to-live**
- c) Packet Age Determination Protocol (PADP)
- d) **Hop Counts**
- e) Cyclic Redundancy Checks
- f) Anti-OPND Protocol (Old Packets Never Die)

*Learn how the lifetime of data packets are controlled on a network!!!*

#### Question 6



In the above diagram we can see a process going on as a packet travels from source to destination. Describe what is being shown on the diagram and why it is necessary.

The process shown is the encapsulation and de-encapsulation of data packets as they travel from host to destination on the network. This process occurs at source and destination but also at each router along the way. This is necessary as the address is checked to see if the frame is directly addressed to the router interface, or if it is a broadcast. In either of these two cases, the frame is accepted. Otherwise, the frame is discarded since it is destined for another device on the collision domain

## Question 7

‘A router compares available routing table information to select the best path’ – What is this indicative of? (Choose 1)

- a) A router is attempting to find a specific user on the network
- b) **Path determination at the Network Layer**
- c) IP protocol determination at the Data Link Layer
- d) Packet routing information for the next available switch
- e) IPX protocol logging

*Learn the metrics used to determine packet routes!!!!*

## Question 8

Which of the following are functions of a routing protocol? (Choose 3)

- a) **Exchange of topological information**
- b) When packets arrive at an interface, the router must use the routing table to determine where to send them
- c) **Provides processes for sharing route information**
- d) Defines the format and use of the fields within a packet
- e) **Allows routers to communicate with other routers to update and maintain the routing tables**

*Learn the differences between routed and routing protocols and which are which!!!!*

## Question 9

Name three metrics used with routing protocols and what they indicate

**Bandwidth** – The data capacity of a link. Normally, a 10-Mbps Ethernet link is preferable to a 64-kbps leased line. **Delay** – The length of time required to move a packet along each link from source to destination. Delay depends on the bandwidth of intermediate links, the amount of data that can be temporarily stored at each router, network congestion, and physical distance.

**Load** – The amount of activity on a network resource such as a router or a link.

**Reliability** – Usually a reference to the error rate of each network link.

**Hop count** – The number of routers that a packet must travel through before reaching its destination. Each router the data must pass through is equal to one hop. A path that has a hop count of four indicates that data traveling along that path would have to pass through four routers before reaching its final destination. If multiple paths are available to a destination, the path with the least number of hops is preferred.

**Ticks** – The delay on a data link using IBM PC clock ticks. One tick is approximately 1/18 second.

**Cost** – An arbitrary value, usually based on bandwidth, monetary expense, or other measurement, that is assigned by a network administrator

*Learn about the purpose of metrics in a network*

### Question 10

Which of the following are link-state routing protocols? (Choose 2)

- a) RIPv1
- b) IGRP
- c) OSPF
- d) IS-IS
- e) EIGRP
- f) RIPv2

*Learn about the functions of a link-state protocol!!!!*

### Question 11

Name three major benefits of subnetting a network.

Smaller Broadcast Domains  
Low-level security provided  
Increased address flexibility

*Learn why we would need to subnet in the first instance!!!*

### Question 12

Given a host with the IP address 28.110.32.16 and a default subnet mask, to which network does the host belong?

- a) 28.110.0.0
- b) 28.110.32.12
- c) 28.0.0.0
- d) 28.110.32.13
- e) 28.90.32.16

*Learn how to work out network address fields!!!*

### Question 13

Which statement/s is true regarding the process of subnetting?

- a) Network bits are reassigned as host bits
- b) Subnet bits are reassigned as network bits
- c) Host bits are reassigned as network bits
- d) Network bits are reassigned as subnet bits
- e) Host bits are reassigned as subnet bits

*Learn how subnetting actually divides given IP addresses!!!*

### Question 14

A University has been given a class C network licence and needs to create 12 useable subnets, each subnet capable of accommodating at least 12 hosts. Which of the following is the appropriate subnet mask?

- a) 255.255.255.0
- b) 255.255.240.240
- c) 255.255.255.240
- d) 255.240.255.255
- e) 255.255.255.192
- f) None of the above, it's not possible to have this many hosts on this many subnets on a class C network

*Learn to subnet, and the terms used!!!*

### Question 15

How many bits are available for Class A host IP addresses using the default subnet mask?

- a) 16
- b) 24
- c) 22
- d) 48
- e) 128

### Question 16

Given the class C IP address 192.168.64.0 / 28, what is the custom subnet mask?

- a) 255.255.255.0
- b) 255.255.255.255
- c) 255.255.225.140
- d) 255.255.240.0
- e) 255.255.255.240

*Learn how subnets are commonly represented!!*

### Question 17

How many useable subnets does applying the subnet mask 255.255.255.0 to a Class C network create?

- a) 16
- b) 24
- c) 12
- d) 18
- e) 0