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Study Guide 2 & Questions

Chapter 13

1. The government (FCC) regulates the frequencies in the electromagnetic spectrum that can be used for wireless communication.

- True
- False

Answer: **True**

2. Which of the following are wireless network technologies?

- Bluetooth
- Wi-Max used for mobile broadband
- Wi-Fi routers at home
- LTE cellular data network

Answer: **All of them**

3. What is the term for using multiple frequencies to send data increasing performance and tolerating interference for wireless?
    - Broadband
    - Wide Area Network
    - Spread Spectrum
    - Frequency Stacking

Answer: **Spread Spectrum**

4. There are two classes of WiMAX, Mobile (802.16e) and Fixed (802.16d):
    - ❖ Fixed WiMAX allows for hand-offs between access points and is used for Wireless broadband access to laptops and cell phones.
    - ❖ Mobile WiMAX doesn't allow for hand-offs and is used for wireless broadband connections to buildings and houses.
        - True
        - False

Answer: **False**

5. Which of the following are key features of WiMAX? (check all that apply)
    A. Can cover areas up to 10Km
    B. Can provide transmission speeds of up to 70Mbps full-duplex at closer range

C. Allows for both Line-of-Sight (LOS) and Non-line-of-sight (NLOS) access.
D. Uses unlicensed frequencies

Answer: **A, B, C**

Chapter 29 (Adel):

- There are many ways cyber attacks are conducted by hackers, some include:
    - Phishing - Hacker impersonates a well-trusted person or company in order to get user to click on suspicious link that is malicious
    - Scams - Various forms of trickery intended to deceive users into investing money or aiding in a crime
    - Denial of Service - Blocking particular internet websites to prevent or hinder business within them
    - Loss of Control - Hacker gains control of user's computer and commits a crime with it
    - Loss of Data - Hacker steals business information
- There are also various crimes that are committed which include:
    - Wiretapping - making copy of packets while they traverse a network to gain information
    - Replay - sending packets from a previous session
    - Address Spoofing - using a misspelling of a well-known name website or server
    - Port Scanning - Attempting to connect to each possible protocol port on a host to find vulnerabilities
- There are ways companies can protect themselves from these attacks such as having strong security policies and additional training for team members along with various other methods.
- Hashing is a great way that companies are using to protect themselves which involves data integrity that is usually encrypted.
- Encryption is a method being adopted into today's society when it comes to security because it is the safest way to store sensitive information and passwords:
    - Private Key Encryption
    - Public Key Encryption

Chapter 16 (Jordan)

- Circuit Switching - refers to a communication mechanism that establishes a path between a sender and receiver with guaranteed isolation from paths used by other pairs of senders and receivers.
    - Circuit switching is usually associated with analog telephone technology
- Three general properties define a circuit switched paradigm
    - Point-to-point communication

    - Separate steps for circuit creation, use, and termination
    - Performance equivalent to an isolated physical path
- Packet Switching - alternative to circuit switching, packet switching system uses statistical multiplexing in which communication from multiple sources competes for the use of shared media
- Packet switching requires a sender to divide each message into small blocks of data that are known as packets
- Three general properties define a packet switched paradigm
    - Arbitrary, asynchronous communication
    - No set-up required before communication begins
    - Performance varies due to statistical multiplexing among packets
- Local Area Network - least expensive; spans a single room or a single building
- Metropolitan Area Network - Medium expense; spans a major city or a metroplex
- Wide Area Network - Most expensive; spans sites in multiple cities
- Lan Topologies
    - Bus - The term bus topology was coined to characterize networks, like the original Ethernet, that consist of a single cable to which computers attach
    - Ring - A network that uses a ring topology arranges for computers to be connected in a closed loop
    - Star - A network uses a star topology if all computers attach to a central point
    - Mesh - A network that uses a mesh topology provides a direct connection between each pair of computers.

Chapter 17 (Michael)

- repeater - an analog device used to propagate LAN signals over long distances. A repeater does not understand packets or bits
    - The repeater amplifies and sends all incoming signals to the other side
- bridge - a mechanism that connects two LANs and transfers packets between them
    - computers cannot tell whether they are on a single segment or a bridged LAN
- filtering - a bridge examines the destination address in a frame, and does not forward the frame onto the other LAN segment unless necessary
- adaptive/learning bridges - bridges that learn the locations of computers automatically
    - uses the source MAC address in a packet to record the location of the sender, and uses the destination MAC address to determine whether to forward the frame.
- Distributed Spanning Tree (DST) - the algorithm views bridges as nodes in a graph, and imposes a tree on the graph
- Ethernet switch - an electronic device that resembles a hub
- Virtual Local Area Network switch (VLAN switch) - a switch that has added virtualization