Ministry of Higher Education and
Scientific Research
University of Technology
Computer Sciences Departement

Date: ١١ / 9 /2017
Time: Three hours
Lecturer: wisam Ali

second trial 2016-2017
Final Exam 2016-2017

Subject: NETWORK PROTOCOL
Class: SECOND
Branch: Network Management

Note: الاجابة على ستة اسئلة فقط

Q1/ which protocol is used when a host connects to a new network an ip address dynamically? How does the host contact with server that responsible for setting the ip address? *(10 Degree)*

Q2/A: Which technology is used in Bluetooth for avoiding interference?
B: Explain The key elements of a protocol ? **(10 Degree)**

Q3/A: Explain how Ethernet Works In Brief ?

B: Define the following term:
1. Data Transfer Process. 2. Anonymous FTP 3. Identification
4. Header 5. Managed devices. *(10 Degree)*

Q4/A: What is the Difference between TFTP and FTP Server?
B: How to enable file upload from anonymous users to FTP Server?
(10 Degree)

Q5/ A: What is the difference between High-Speed Downlink Packet Access (HSDPA) and WiMAX technology?
B: What is orthogonal frequency division multiplexing (OFDM)?
(10 Degree)

Q6/ **A: When will clients support 802.11ac?**
B: *Describe the meaning of the protocol?* **(10 Degree)**

Q7/ A: Why is Bluetooth called a cable replacement technology?
B: What are the seven layers of ISO-OSI Model? **(10 Degree)**

GOOD LUCK

which protocol is used when a host connects to a new network an ip address dynamically? How does the host contact with server that responsible for setting the ip address

Dynamic Host Configuration Protocol (DHCP) is a communications Protocol enabling network administrators manage centrally and to automate the assignment of IP addresses in a network.
In an IP network, each device connecting to the Internet needs a unique IP address. DHCP lets a network administrator supervise and distribute IP addresses from a central point and automatically sends a new IP address when a computer is plugged into a different place in the network.

DHCP uses the concept of a "lease" or amount of time that a given IP address will be valid for a computer. The lease time can vary depending on how long a user is likely to require the Internet connection at a particular location. It's especially useful in education and other environments where users change frequently. Using very short leases, DHCP can dynamically reconfigure networks in which there are more computers than there are available IP addresses.
DHCP supports static addresses for computers containing Web servers that need a permanent IP address.

[redacted] for example

1. A user turns on a computer with a DHCP client.
2. The client computer [redacted] **(called a DISCOVER or DHCPDISCOVER),** looking for a DHCP server to answer.
3. The router directs the **DISCOVER** packet to the correct DHCP server.
4. The server receives the **DISCOVER** packet. Based on availability and usage policies set on the server, the server determines an appropriate address (if any) to give to the client. The server then temporarily reserves that address for the client and sends back to the client an **OFFER (or DHCPOFFER)** packet, with that address information. The server also configures the client's DNS servers, WINS servers, NTP servers, and sometimes other services as well.
5. The client sends **a REQUEST (or DHCPREQUEST)** packet, letting the server know that it intends to use the address.
6. The server sends **an ACK (or DHCPACK)** packet, confirming that the client has a been given a lease on the address for a server-specified period of time.

Which technology is used in Bluetooth for avoiding interference?

Frequency hopping is the technology used in Bluetooth.

Explain The key elements of a protocol ?

The key elements of a protocol are syntax, semantics, and timing.

1.Syntax:

The term syntax refers to the structure or format of the data, meaning the order in which they are presented. For example, a simple protocol might expect the first 8 bits of data to be the address of

the sender, the second 8 bits to be the address of the receiver, and the rest of the stream to be the message itself.

2.Semantics:

The word semantics refers to the meaning of each section of bits. How is a particular pattern to be interpreted, and what action is to be taken based on that interpretation? For example, does an address identify the route to be taken or the final destination of the message?

3.Timing:

The term timing refers to two characteristics: when data should be sent and how fast they can be sent. For example, if a sender produces data at 100 Mbps but the receiver can process data at only 1 Mbps, the transmission will overload the receiver and some data will be lost.

Explain how Ethernet Works In Brief ?

The Ethernet system works off of the CSMA/CD standard. CSMA/CD simply means that the computers all have access to the transmission medium, and can send and receive data whenever the network is idle. The benefit of Ethernet is that it has the ability to sense collisions on the network (Pidgeon, 2001a). A collision occurs when two or more machines (nodes) try to 5 send data at the same time.

When a node on an Ethernet network wishes to send information to another node, it first listens to the network to see if there is network traffic. If the station detects no traffic, it will begin sending the frames of data. These frames will be transmitted throughout the network and ALL nodes on the particular Ethernet segment will receive the frames. However, only the node for which it was intended will be able to view the contents of the frame.

If, however, more and more nodes become active on the network the probability of multiple nodes trying to send information at the same time increases. If two or more nodes send data at the same time a collision will occur. When this happens, the sending station will send out a jam sequence alerting all other nodes that there has been a collision and that any data received should be discarded (Spurgeon, 1995e). The node then waits a period of time and re-sends the frame.

The Carrier Sensing (CS) is the ability of the computers to listen to the network and determine if there is activity. Multiple Access (MA) refers to the fact that all nodes on the network have access to the transmission medium at all times, and finally, the Collision Detection (CD) process was explained above.

Short for ***Carrier Sense Multiple Access / Collision Detection***, a set of rules determining how network devices respond when two devices attempt to use a data channel simultaneously (called a*collision*). Standard Ethernet networks use CSMA/CD to physically monitor the traffic on the line at participating stations. If no transmission is taking place at the time, the particular station can transmit. If two stations attempt to transmit simultaneously, this causes a collision, which is detected by all participating stations. After a random time interval, the stations that collided attempt to transmit again. If another collision occurs, the time intervals from which the random waiting time is selected are increased step by step.

What is the Difference between TFTP and FTP Server?

TFTP is File Transfer Protocol which usages User Datagram Protocol (UDP) whereas FTP usages Transmission Control Protocol (TCP). TCP usages port number 20 for Data and 21 for control by default whereas TFTP usages port 69 by default.

How to enable file upload from anonymous users to FTP Server

Anonymous users can be allowed to upload files to FTP server by modifying parameter 'anon_upload_enable'. If Value of anon_upload_enable is set to Yes, Anonymous users are permitted to upload files. In order to have a working anonymous upload, we must have parameter 'write_enable' activated. The Default Value is NO, which means anonymous upload is disabled.

What is the difference between High-Speed Downlink Packet Access (HSDPA) and WiMAX technology?

WiMAX technology is an all-IP based architecture specifically designed and optimized for data traffic, whereas 3G has a voice-centric architecture that is being used to transport data. This allows much greater scalability for WiMAX, which consistently performs at an average 2.5 times the speed of HSDPA platforms (depending on equipment and operating conditions). HSDPA cannibalizes voice spectrum bandwidth to supply data services, which can affect call quality and availability.

What is orthogonal frequency division multiplexing (OFDM)?

OFDM is a digital encoding and modulation technology. It has been used successfully in wireline access applications, such as Digital Subscriber Line (DSL) modems and cable modems as well as WiFi. Products from WiMAX Forum member companies are using OFDM-based 802.16 systems to overcome the challenges of NLoS propagation. OFDM achieves high data rate and efficiency by using multiple overlapping carrier signals instead of just one. All future technologies for 4G will be based upon OFDM technology.

Orthogonal Frequency Division Multiple Access (OFDMA) is enhanced OFDM and used in Mobile WiMAX technology and the IEEE 802.16e-2005 standard, and it is the foundation for the next generations of mobile broadband to come. It is a multi-user version of Orthogonal Frequency- Division Multiplexing (OFDM). The difference between the two technologies is that OFDMA assigns subsets of sub-carriers to individual users allowing simultaneous low data rate transmission from several users.

When will clients support 802.11ac?

802.11ac clients are likely to start appearing in 2013, roughly around the same time as the APs. 802.11ac is backwards compatible and will support