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11. NETWORK EXAMPLES AND PROTOCOLS

CHOOSE THE BEST ANSWER

1. Internet
2. Extranet
3. i,ii,iii,iv
4. Mobile network
5. Wireless fidelity
6. Intranet
7. Radio frequency identification
8. Transport layer
9. HTTPS
10. SMTP
11. DNS
12. i,ii

Answer the following questions:

1. Define Intranet.

It is a private network within an enterprise to share company data and computing resources between the employees. It may consist of many interlinked LAN.

2. What is the uses of mobile networks?

Support data/voice, network connectivity using via radio transmission solution or wireless.

Increased bandwidth leads to much faster data transfer speed.

3. List out the benefits of WIFI.

- It provides mobility
- It provides internet
- Flexibility
- Low cost, high benefits.



4. How many types of RFID system available and what are they?

There are types of RFID system available, they are passive and active RFID

5. Expand HTTP, HTTPS, and FTP.

HTTP- hypertext transfer protocol

HTTPS- hypertext transfer protocol secure

FTP- File transfer protocol.

Explain in Brief Answer

1. Compare Internet, Intranet and Extranet.

Type	Definition	Example
Internet	a global network, public TCP/IP network used by over a billion people all over the world	Sending email to a friend
Intranet	a TCP/IP network with access restricted to members of an organization	Accessing your record in the employee personnel file
Extranet	TCP/IP network with restricted access to members	Checking availability of inventory from an outside supplier

2. List out the components of a RFID enabled system.

- RFID component on the tags has two parts:
- A microchip which stores and processes the information, and the antenna to receive and transmit a signal.
- The Tag replies the information from its memory bank.
- The reader will transmit to read the result to RFID computer program.
- Two types of RFID tags were Active RFID and Passive RFID systems.



3. Write short notes on HTTP, HTTPS, FTP.

HTTP – A protocol used between a web client and a web server protects non *secure* data transmissions. The core protocol of the World Wide Web.

HTTPS - A protocol used between a web client and a web server permits *secure* data transmissions.

FTP - Used between computers for sending and receiving data. Enables a client to send and receive complete files from a server.

4. What are the layers available in TCP/IP reference model?

- Network Access Layer** – concerned with building packets.
- Internet Layer** - describes how packets are to be delivered.
- Transport Layer** - ensure the proper transmission of data.
- Application Layer** – application network processes. These processes include File Transfer Protocol (FTP), Hypertext Transfer Protocol (HTTP), and Simple Mail Transfer Protocol (SMTP).

5. Expand ARP, ICMP, SMTP, and DNS.

ARP – Address Resolution Protocol

ICMP – Internet Control Message Protocol

SMTP – Simple Mail Transfer Protocol

DNS – Domain Name System

Explain in detail

1. Explain about Internet, Intranet and Extranet.

Internet

- The **Internet**, “the Net,” is a worldwide system of computer networks.
- A global network, public TCP/IP network used by over a billion people all over the world.
- A network of networks where the users at any one computer can, if they have permission, get information from any other computer.



- The Internet is a network of global connections – comprising private, public, business, academic and government networks – linked by guided, wireless and fiber-optic technologies.
- Example - Sending email to a friend

Intranet

- It is a private network within an enterprise to share company data and computing resources between the employees.
- A TCP/IP network with access restricted to members of an organization
- It may consist of many interlinked local area networks.
- It includes connections through one or more gateway (connects two networks using different protocols together known as protocol convertor) computers to outside Internet.

Extranet

- It is a private network that uses Internet technology and the public telecommunication system to securely share business's information with suppliers, vendors, partners, customers, or other businesses.
- TCP/IP network with restricted access to members

2. Discuss about OSI model with its layers.

OSI Layers:

1. Physical Layer: This is the 1st layer, it defines the electrical and physical specifications for devices.

2. Data Link Layer: It is the 2nd layer and it guarantees that the data transmitted are free of errors. This layer has simple protocols like “802.3 for Ethernet” and “802.11 for Wi-Fi”.

3. Network Layer: It is the 3rd layer determining the path of the data packets. At this layer, routing of data packets is found using **IP Addressing**.

4. Transport Layer: It is the 4th layer that guarantees the transportation/sending of data is successful. It includes the error checking operation.

5. Session Layer: It is the 5th layer, identifies the established system session between different network entities. It controls dialogues between



computers .For instance, while accessing a system remotely, session is created between your computer and the remote system.

6. Presentation Layer: It is the 6th layer that does the translation of data to the next layer (Prepare the data to the Application Layer). Encryption and decryption protocols occur in this layer such as, Secure Socket Layer (SSL).

7. Application Layer: It is the 7th layer, which acts as the user interface platform comprising of software within the system.

3. Difference between TCP/IP and OSI Reference Model.

OSI

- Open system interconnection.
- It has seven layers
- It is a model which is used for computing system
- Developed by ISO
- OSI follows a vertical approach
- OSI is protocol independent

TCP/IP

- Transmission control protocol
- It has four layer
- It is a client server model used for transmission of data over the internet.
- Developed by Department of Defense
- Follows a horizontal approach
- TCP/IP is protocol dependent

4. Explain about the development, merits and demerits in mobile networks.

Development of mobile networks

The generation of mobile networks are as follows.

- 1G – 1981- NMT launch
- 2G – 1991 – GSM launch
- 3G- 2003- UK 3G launch
- 4G – 2007



▪ 5G – 2019

Merits of Mobile networks

- It provides both voice/data services.
- It connects both fixed and wireless users.
- It is easy to maintain.
- It is easy to upgrade

Demerits of Mobile networks

- Cost
- Vulnerable to security risks
- Additional training is needed to use new technology
- Cybercrime.

5. Explain any five application of internet, intranet, and extranet.

Application of Internet.	Application of Intranet	Application of Extranet
<ul style="list-style-type: none"> ● Download programs and files ● Social media ● E-Mail ● E-Banking ● Audio and Video Conferencing ● E-Commerce ● File Sharing ● E- Governance ● Information browsing ● Search the web addresses for access through search engine ● Chatting and etc 	<ul style="list-style-type: none"> ● Sharing of company policies/rules and regulations ● Access employee database ● Distribution of circulars/ Office Orders ● Access product and customer data ● Sharing of information of common interest ● Launching of personal/ departmental home pages ● Submission of reports ● Corporate telephone directories. 	<ul style="list-style-type: none"> ● Customer communications ● Online education/ training ● Account status enquiry ● Inventory enquiry ● Online discussion ● Supply – chain managements ● Order status enquiry ● Warranty registration ● Claims ● Distributor promotions

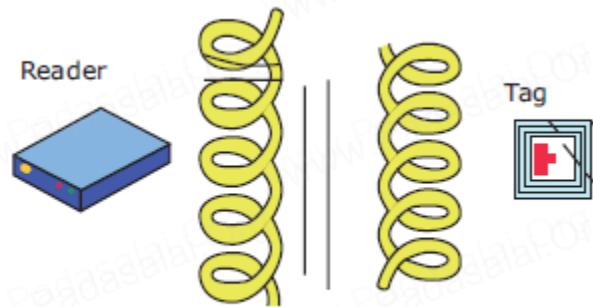


6. Explain passive and active RFID systems.

Working of Passive RFID System

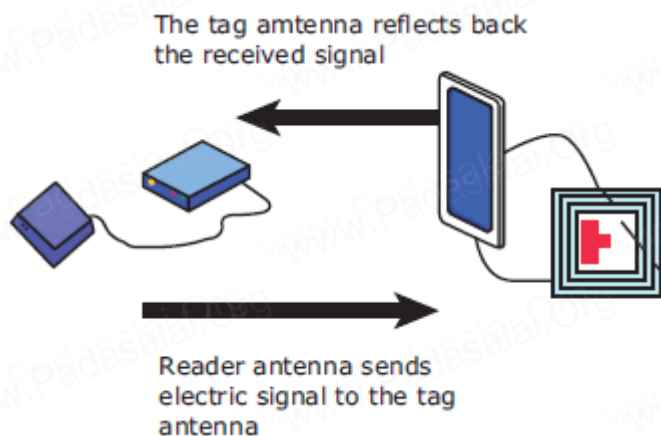
A Passive RFID system using Induction coupling method:

The RFID tag gets power from the reader through the inductive coupling method. See Figure



Reader coil inductively coupled to tag coil

A Passive RFID system using EM wave propagation method: The reader antenna transmits the electromagnetic waves that are received by the antenna. See Figure

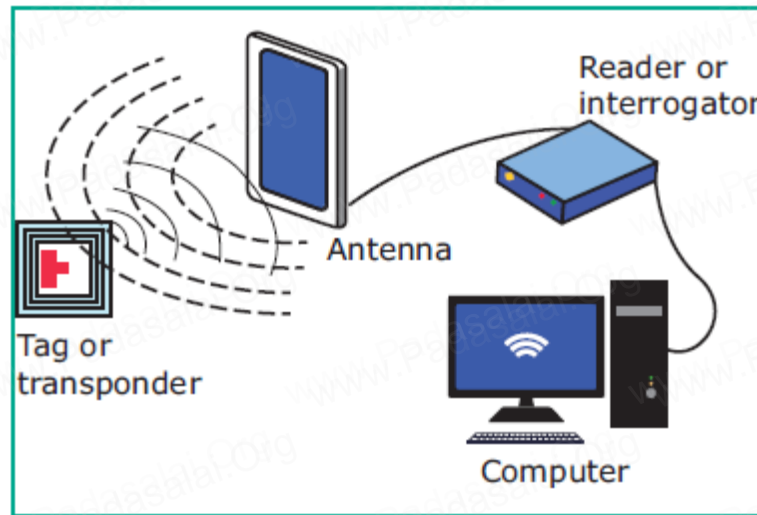


Working Of Active RFID System

The reader sends signal to the tag using an antenna. See Figure



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7. Explain TCP/IP protocols.

The Different Layers of TCP/IP

There are four total layers of TCP/IP protocol, each of which is listed below with a brief description.

Network Access Layer – concerned with building packets.

Internet Layer - describes how packets are to be delivered.

Transport Layer - ensure the proper transmission of data.

Application Layer – application network processes. These processes include File Transfer Protocol (FTP), Hypertext Transfer Protocol (HTTP), and Simple Mail Transfer Protocol (SMTP).



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8. Explain network layers, and transport layers.

Network Layer

It is the layer where data is addressed, packaged, and routed among networks. The important Internet protocols that operate at the Network layer are:

Internet Protocol (IP): Routable protocol which uses IP addresses to deliver packets. It is an unreliable protocol, does not guarantee delivery of information.

Address Resolution Protocol (ARP): Resolves IP addresses to MAC (Medium Access Control) addresses. (A MAC address is a hardware identification number that uniquely identifies each device on a network.) i.e., to map IP network addresses to the hardware addresses.

Internet Control Message Protocol (ICMP): Used by network devices to send error messages and operational information. Example: A host or router might not be reached or a requested service is not presented.

Internet Group Management Protocol (IGMP): It is a communication protocol used by hosts and routers to send Multicast (group Communication) messages to multiple IP addresses at once.

Transport Layer

The sessions are recognized and data packets are swapped between hosts in this layer. Two main protocols established at this layer are:

Transmission Control Protocol (TCP): Provides reliable connection oriented transmission between two hosts. It ensures delivery Explain the uses of internet. of packets between the hosts.



User Datagram Protocol (UDP): Provides connectionless, unreliable, one-to-one or one-to-many delivery.

9. Explain the Generation of mobile networks.

The generations of mobile networks are as follows.

- **First Generation (1G) 1981- NMT launch**
During the initial periods the mobile systems were based on analog transmission. NMT stands for Nordic Mobile Telephone communication.

They had a very low traffic density of one call per radio channel, and a very poor voice quality, and they used unsure and unencrypted transmission, which leads to the spoofing of its identities.
- **Second Generation (2G) 1991-GSM Launch**
Later the second generation of mobile systems were placed on digital transmission with GSM. **GSM stands for (Global System for Mobile communication)**
GSM mobile systems grown digital transmission using SIM.
The transmission used as TDMA. TDMA stands for (**Time Division Multiple Access**) and CDMA One stands for (**Code Division Multiple Access**) method to increase the amount of information transported on the network.
- **Second to Third Generation Bridge (2.5)2000 – GPRS launch**
GPRS was introduced here, it seen as an excess period of mobile networking development, between 2G and 3G. GPRS stands for (**General Packet Radio Service**)
- **Third Generation (3G) 2003- UK 3G launch**
This generation of mobile systems merges different mobile technology standards, and uses higher frequency bands for transmission and Code Division Multiple Access to delivery data rates of up to 2Mbit/s supports multimedia services (MMS: voice, video and data). European standard is UMTS (**Universal Mobile Telecommunication Systems**).



- Fourth Generation (4 G) 2007

4G is at the research stage. 4G was based on an adhoc networking model where there was no need for a fixed infrastructure operation. Adhoc networking requires global mobility features (e.g. Mobile IP)

- Fifth Generation (5G) 2019+

5G is the stage succeeds the 4G (LTE/ WiMAX), 3G(umts) and 2G(GSM) systems. 5G targets to performance the high data rate, reduced latency, energy saving, cost reduction, higher system, capacity, and massive device connectivity.

10. Explain the uses of Internet.

You write it in own... but write advantages and disadvantages.

