

ANNEXURE - I



SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

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Part – A			Part – B						Total
Question No.	✓	Marks	Question No.	✓	Marks				Total
1.	✓		11. a		i	ii	iii		
2.	/		b	✓					
3.	✓		12. a	✓					
4.	✓		b						
5.	/		13. a	.					
6.	✓		b	✓					
7.	✓		14. a	✓					
8.	/		b						
9.	✓		15. a	✓					
10.	/		b						
Total			Part – C						Total
			16. a		i	ii	iii		Total
			b	✓					
Grand Total									

Grand Total (in words):

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PART-A1. Parameters to predict network performance:

- * Jitter.
- * Bandwidth
- * packet loss indicators
- * latency.
- * throughput.

2. HDLC:

High level data link control it is a bit oriented protocol.

HDLC is used for communication over point to point & multipoint links.

3. IEEE 802.11

is part of the IEEE 802 set of local area network (LAN) technical standards, & specifies the set of media access control (MAC) & physical layer (PHY) protocols for implementing wireless LAN (WLAN) computer communication.

4.

- * The forwarding table is conceptually just a list of (Network Num, NextHop) pairs.
- * The decision making table, a router normally uses for applying this action is called the forwarding table.

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- * There is also a default router that is used if none of the entries in the table matches the destination's network number.

5.

Routing:

The process by which nodes exchange topological information to build correct forwarding tables are said to be routing.

6.

uses of flag in TCP header:

It contains 6 control bits known as flags.

- * URG - Segment contains urgent data.
- * ACK - value of acknowledgement field is valid.
- * PUSH - sender has invoked the push operation.
- * RESET - receiver wants to abort the connection.
- * SYN - Synchronize sequence numbers during connection establishment.
- * FIN - terminates the TCP connection.

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	TCP	UDP
* TCP is an connection oriented protocol.		* UDP is a connection less protocol.
* TCP is slower & less efficient in performance as compared to UDP. Also TCP is heavy weight as compared to UDP.		* UDP is faster & more efficient than TCP.
* retransmission of data packets is possible in TCP in case packet get lost or need to resend.		* on other hand retransmission of packet is not possible in UDP.
8. <u>Levels of domain name space:</u>		
	<ul style="list-style-type: none"> * generic domains * country domains * inverse domain. 	
9. <u>Uses of SNMP protocol:</u>	<ul style="list-style-type: none"> * Real time status updates. * Automatic parameter monitoring. * vendorless monitoring * standardized device monitoring, eliminating the need for complex monitoring configurations. 	

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10. functions of SSH components:

i) SSH Transport protocol:

It allows to establish a secure connection between SSH client & SSH server.

ii) SSH Connection protocol:

It allows to run multiple channels over the secure connection established.

iii) SSH authentication protocol:

It allows to authenticate SSH client for the server.

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11.6) 3 Type of transmission modes:

There are 3 types of transmission modes
They are

- * Simplex

- * half duplex.

- * full duplex.

Simplex:

- * In simplex mode, the data can only flow in one direction, this type of communication is unidirectional.

- * In this mode, the sender can only send & the receiver can only receive.

- * It is mainly used in the business fields as in sales that do not require any corresponding reply.

Eg: mouse, keyboard, monitor.

Half duplex:

- * In Half duplex mode, the data can only flow in both the direction, but it cannot flow simultaneously.

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- * The sender & receiver can do both send & receive but it can't be done simultaneously.
- * It can be used for error detection when the sender does not send or the receiver does not receive the data properly.
- * eg: walkie-talkie.

Full duplex,

- * In full duplex mode, the data can flow both the direction simultaneously.
- * In this mode, the sender & the receiver can send & receive the data simultaneously.
- * This mode is used when communication in both direction is required simultaneously.

eg: cellphone.

ii) types of networks:i) Local area network (LAN).

- * LAN is a group of computers connected to each other in a small area such as building, office.
- * It is less costly as it requires inexpensive hardware such as hubs, network adaptors & ethernet cables.
- * LAN provides high security.

ii) metropolitan area network (MAN).

- * MAN is a network that covers a large geographic area by interconnecting a different LAN to form a larger network.
- * It has a higher range than LAN.
- * In MAN, various LAN are connected to each other through a telephone exchange line.

(iii) wide area network (WAN):

* It is extended over a large geographical area such as states or countries.

* The internet is one of the biggest WAN in the world.

* It is a combination of various MAN.

12. a) architecture of IEEE 802.11.

IEEE 802.11 is a set of media access control & physical layer specifications for implementing WLAN.

Architecture:

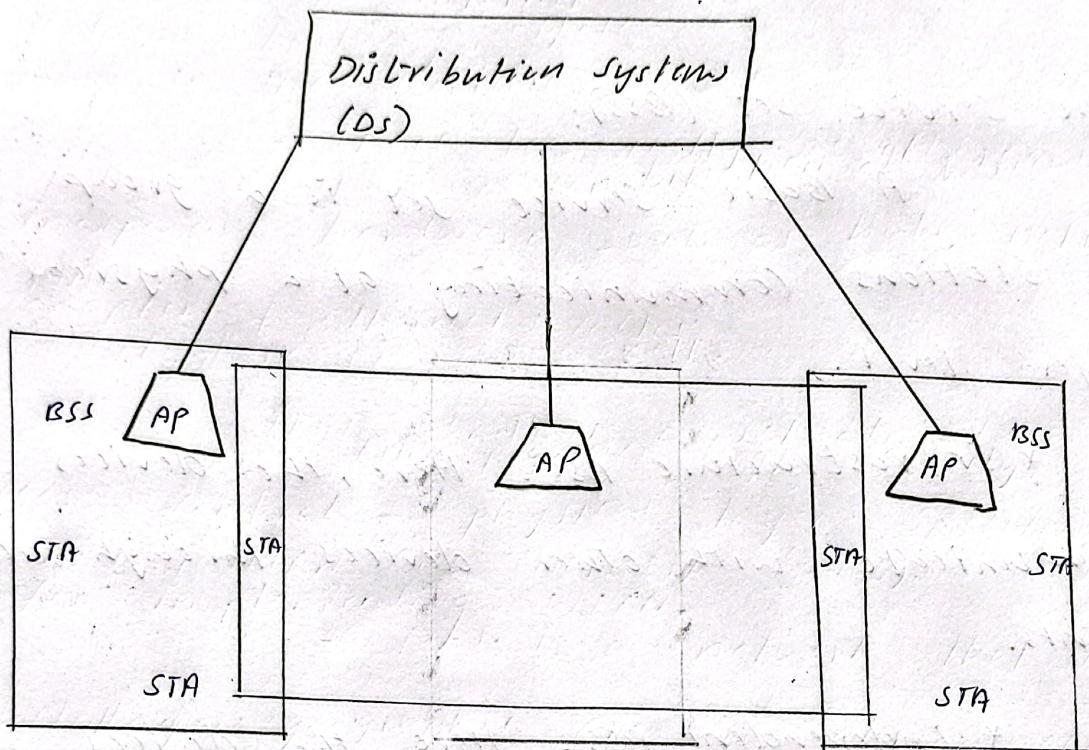
The architecture of IEEE 802.11. WLAN is designed to support a network when most decision making is distributed for mobile stations.

The architecture is flexible & can easily support both small, transient networks & large, semipermanent or permanent

networks

Two networks

The components of IEEE architecture:



STATIONS (STA):

It comprises of all devices & equipments that are connected to the wireless LAN.

A station can be of two types.

* Wireless Access Point (WAP), or simply access points (AP) are generally wireless routers that form the base stations or access.

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- * clients are workstations, computers, laptops, printers & smartphones etc..

Each station has a wireless network interface controller.

Basic Service Set (BSS):

A Basic Service set is a group of stations communicating at a physical layer level.

* Infrastructure BSS - Here, the devices communicate with other devices through access points.

* Independent BSS - Here, the devices communicate in a peer-to-peer basis in an ad hoc manner.

Extended Service set (ESS) -

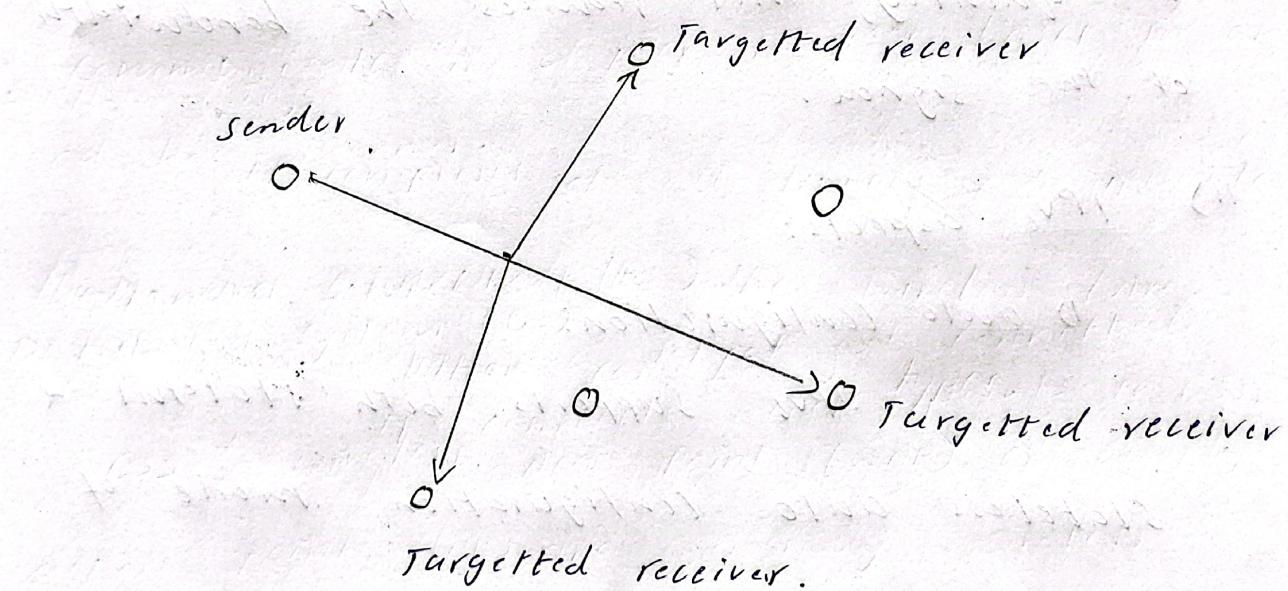
It is a set of all connected BSS.

Distributed system (DS) -

It connects access points in ESS.

Q) What is Internet multicasting?

Multi cast is a method of group communication where the sender sends data to multiple receivers or nodes present in the network simultaneously. Multicasting is a type of one-to-many & many-to-many communication as it allows senders or senders to send data packets to multiple receivers at once across LAN's or WAN's. This process helps in minimizing the data frame of the network.



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Multicasting works in similar to Broadcasting but in multicasting the information is sent to the targetted or specific members of the network. This task can be accomplished by transmitting individual copies to each user or node present in the network, but sending individual copies to each user is inefficient & might increase the network latency. To overcome these, multicasting allows a single transmission that can be split up among the multiple users, consequently, this reduces the bandwidth of the signal.

ii) IPv6 aspects:i) auto configuration:

IPv6 supports both stateful & stateless auto configuration mode of its host devices.

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ii) End to end connectivity:

Every system now has unique IP address & can traverse through the internet without using NAT or other translating components.

iii) IPSEC:

Initially it was decided that IPv6 must have IPSEC security, making it more secure than IPv4.

iv) mobility:

This feature enables host to roam around in different geographical area & remain connected with same IP address.

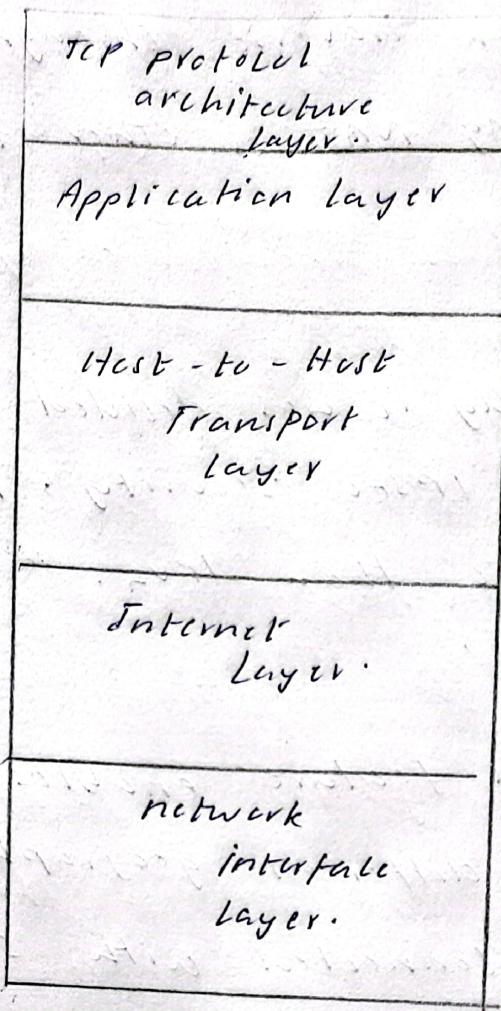
v) Faster forwarding / routing:

Simplified header puts all unnecessary information at the end of the header, header is adequate for a router to take routing decisions, thus making routing decisions as quickly.

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14. i) operations of Go-Back-N protocol:

a) TCP architectures:



It defines how devices should transmit data between them & enables communication over network & large distances.

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i) Network interface layer:

* This layer corresponds to the combination of Datalink layer + physical layer of the OSI model.

* It is described as residing in layer 1, being encapsulated by layer 2 protocols.

ii) Internet layer:

* This layer works like network layer in OSI layers.

* It defines the protocols which are responsible for logical transmission of data over networks.

* The main protocols of this layer are:

i) IP - It is responsible for delivering packets from the source host to destination host by looking IP addresses in packet headers.

i) ICMP - It is encapsulated within IP datagrams & responsible for providing hosts with information about network problems.

iii) Host - Host - Layer:

* This layer is analogous to the transport layer of the OSI model.

* It is responsible for end-to-end communication & error free-delivery of data.

* protocols used in this layers are:

i) Transmission control protocol (TCP):

* It is known to provide reliable & error-free communication between end systems.

* It performs sequencing & segmentation of data.

* It also has acknowledgement feature & controls the flow of data through flow control mechanisms.

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ii) User datagram protocol (UDP):

* It does not provide any such features.

* It is the go to protocol if your application does not require reliable transport as it is very cost-effective.

iv) Application layer:

* This layer performs the functions of top three layers of the OSI model.

* It is responsible for node-to-node communication & controls user-interface specifications.

is HTTP & HTTPS

* HTTP stands for hypertext transfer protocol.

* It is used by the world wide web to manage communications between web browsers & servers.

* HTTPS is the combination of HTTP with SSL. It is efficient when we use

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sign in, authenticate.

iii) SSH -

- * SSH stands for secure shell.

- * It is a terminal emulations software similar to telnet.

- * It sets up a secure session over a TCP/IP connection.

iii) NTP:

- * NTP stands for network time protocol.

- * It is used to synchronize the clocks on our computer to one standard time source.

- * It is very useful in situations like bank transactions.

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a) File transfer protocol:

- * FTP stands for file transfer protocol

- * FTP is a standard internet protocol provided by TCP/IP used for transmitting the files from one host to another.

- * It is mainly used for transferring the web page files from their creator to the computer that acts as a server for other computer on the internet.
- * It is also used for downloading the files to computer from other servers.

Objectives:

- * It provides the sharing of files.
- * It is used to encourage the use of remote computers.
- * It transfers the data more reliably & efficiently.

Types of connections in FTP:

is Control connection

- * The control connection uses very simple rules for communication.
- * Through control connection we can transfer a line of command or line of response at a time.

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- * The control connection remains connected during the entire interactive FTP sessions.

ii) Data Connection:

- * The data connection uses very complex rules as data types may vary.

- * The data connection is made between data transfer processes.

- * The data connection opens when a command comes for transferring the files & closes when the file is transferred.

Advantages of FTP:

- * Speed - FTP is one of the fastest way to transfer the file from one computer to another.

- * Efficient - It is more efficient as we do not need to complete all the operations to get the entire file.

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Disadvantages of FTP:

* It is not compatible with every system.

* passwords & file contents are sent in clear text that allows unwanted eavesdropping.

PART-C

16. b)

Class	Address Range
IP Class A	1.0.0.0 to 127.255.255.255
IP Class B	128.0.0.0 to 191.255.255.255
IP Class C	192.0.0.0 to 223.255.255.255
IP Class D	224.0.0.0 to 239.255.255.255
IP Class E	240.0.0.0 to 255.255.255.255

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i) 227.12.14.87.

- * This IP address belongs to class D.
- * Class D addresses are only used for multicasting applications.
- * Since the given IP address 227.12.14.87 lies between the range of class D (224.0.0.0 to 239.255.255.255), it is recognized as class D address.

ii) 193.14.58.22.

- * This IP address belongs to class C.
- * mostly local area network used class C IP address to connect with the network.
- * Since the given IP address 193.14.58.22 lies between the range of class C (192.0.0.0 to 223.0.0.0) It is recognized as class C. address.

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iii) 14.23.120.8:

* This IP address belongs to class A.

* In class A type of network the first 8 bits identify the network & remaining 24 bits for the host into that network.

* Since the given IP address 14.23.120.8 lies between the range of class A (1.0.0.0 to 127.255.255.255). It is recognized as class A.

iv) 252.5.15.111:

This IP address belongs to class E.

Starting four network address bits as 1. many network implementations discard these addresses as undefined.

since the given IP address 252.5.15.111 lies between the range of class E (240.0.0.0 to 255.255.255.255). It is recognized as class E address.

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v) 134.11.78.56:

* This IP address belongs to class B.

* In this IP address, the class decimal number that can between 128 to 191.

The number 127 is reserved for loopback.

which is used for internal testing on the local machine.

* Since the given IP address 134.11.78.56 lies between the range of class B (128.0.0.0 to 191.255.255.255). It is recognized as class B address.