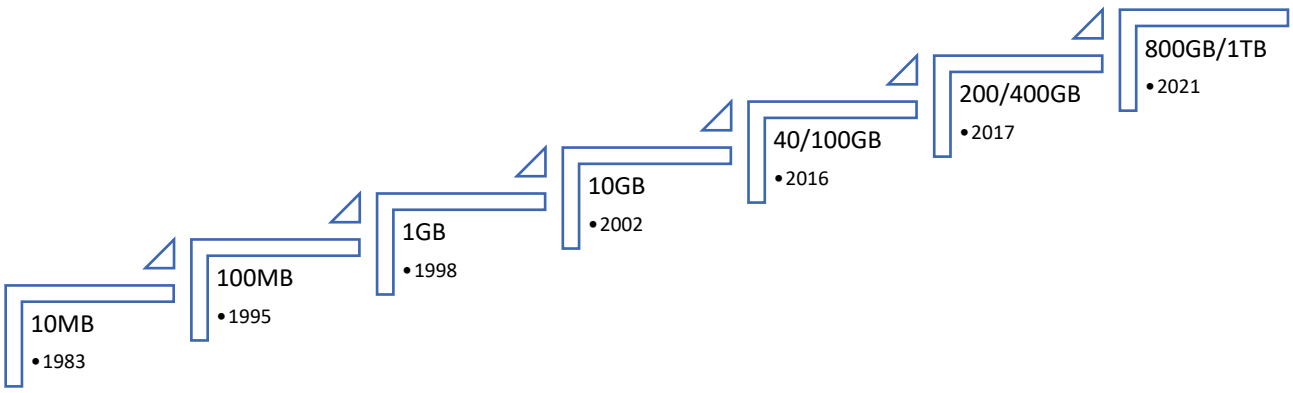
Network Servers and Infrastructure

Assignment 3

Q1: State the Ethernet generations



Q2: Draw the *Ethernet frame* and define its fields

7 bytes	1byte	6byte	6bytes	2 byte	min:46 bytes max:1500 bytes	4 bytes
Preamble	**SFD**	**Destination address**	**Source address**	**Len**	**Data and padding**	**CRC**

min frame : 64 byte max frame:1518

Preamble: This is a pattern of alternative 0's and 1's which indicates starting of the frame and allow sender and receiver to establish bit synchronization

SFD: This is a 1-Byte field which is always set to 10101011

Destination address: MAC address of machine for which data is destined.

Source Address: MAC address of source machine

Type: indicates the length of entire Ethernet frame

Data: This is the place where actual data is inserted, also known as Payload

CRC: This field contains a 32-bits hash code of data

Q3: Define the type of the following destination addresses:

a. **45:30:10:21:10:1A (multicast) because second bit is odd**
b. **4C:20:1B:2E:08:EE (unicast) because second bit C (12) is even**
c. **FF:FF:FF:FF:FF:FF (brodcast) because all the bits are F's**

Q4: Define the flowing terms:

10Base2 [medium + medium Length]

10Base5 [medium + medium Length]

10Base-T [medium + medium Length]

10Base-F [medium + medium Length]

	MEDIUM	MEDIUM LENGTH
10BASE2	Thin coaxial	185m
10BASE5	Thick coaxial	500m
10BASE-T	2 UTP	100m
10BASE-F	2 Fiber	2000

Collision domain

A section of a network connected by a shared medium or through repeaters where data packets can collide with one another when being sent.

Collision

Superposition of two signals

100Base-TX [medium + medium Length]

	MEDIUM	MEDIUM LENGTH
100BASE-TX	STP	100m

100Base-FX [medium + medium Length]

	MEDIUM	MEDIUM LENGTH
100BASE-FX	Fiber	185m

Q5: How the address below is sent out online?

47:20:1B:2E:08:EE

HEXDECIMAL	47	20	1B	2E	08	EE
BINERY	**01000111**	**00100000**	**00011011**	**00101110**	**00001000**	**11101110**
TRANSMITTED	**11100010**	**00000100**	**11011000**	**01110100**	**00010000**	**01110111**

Q6: Compare between LS and DV algorithms

Distance vector	Link State
RIP, IGRP, EIGRP	OSPF, ISIS
Small-Domains	Hierarchical: large- domains
Use bellman-ford algorithm	Use Dijkstra's algorithm
Use broadcast	Use unicast and multicast for update
Traffic is less	Traffic is more

Q7: Compare between Inter-As routing and Intra-AS routing using examples

	PERFORMANCE	POLICY	PROTOCOLS
INTRA-AS	focus on performance	There is no policy because single admin	RIP OSPF IGPR
INTER-AS	focus on policy rather than performance	NEED POLICY EX: ADMIN WANTS CONTROL OVER HOW ITS TRAFFIC ROUTED, WHO ROUTES THROUGH ITS NET	BGP (iBGP, eBGP)