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Dept # BS(cs) 4th semester
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Q No 1:-

Ans:- One way to describe this system might to be describe the series of action you Take (or other Take for you) when you on an airline. you purchase your Ticket there your bags go to gate and eventuary get loaded into the plane The plane Takes off and it routed to its destination planland. you de-plane at the gate and clim your bags. The flight to the ticket (getting nothing for your effort) This seenoni is shown in figure

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Ticket (purchase)	Ticket (compensation)
Baggage (check)	Baggage (claim)
Crates (load)	Crate (unload)
Runway	Runway landing
Airplane routing	Airplane routing
	Airplane routing

Actually we can see some analogies here with Computer networking. you are being shipped from source To destination by the airline a packet is shipped from source host To destination host To internet in a horizontal manner.

The above figure can be shown as.

Ticket (purchase)	Ticket Competition	Ticket
Baggage (check)	Baggage (check)	Baggage
Crates (load)	Crates (unload)	Crate
Runway	Runway Routing	Take off
Airplane routing	Airplane routing	Airplane routing.
	Airplane routing.	

(3)

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Q 2:

Ans: Advantages:

1) By Combining these layers the functionality is performed by a single layer and overhead is reduced

2) it reflect the real-life separation of approach from the Top-down world sector of the OSI model.

Dis Doluantages:

1) There will be security issue as the Network security and application security will open of a single point which may expose our network open to our network

2) More function need to be performed by single layer.

(3) Can make reasoning about the architecture of network System less effective.

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Q3:

Ans: Computer A:

Content of segment at Transport layer

| Data | Header |

Content of packet at network layer

| A | D | Data | Header |

Content of frame at Data link layer

| 1240 | A | D | m | n | Data | H2 | T2 |

Computer D:

Content of segment at Transport layer

| Data | Header |

Content of packet at Network layer

| A | D | Data | Header |

Content of frame at Data link layer.

| 8082 | A | D | m | n | Data | H2 | T2 |

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Q4:-

Ans:-

(a) $SNR\ (dB) = 10 * \log_{10}(SNR)$

$SNR = 10^{(SNR(dB)/10)}$.

$SNR = 10^{(30/10)}$

$SNR = 10^3 = 1000$

As we know that

Capacity = band with $* \log_2 (1 + SNR)$

$= 15Hz * \log_2 (1 + SNR)$

$= 15Hz * \log (1001)$

Capacity $= 15Hz + 9.97$

Capacity $= 149.55$ Kbps.

(b) $SNR(db) = 10 * \log_{10}(SNR)$

$SNR = 10^{(2/10)}$

$SNR = 10^{0.2} = 1.6$

As we know that

Capacity = bandwidth $* \log_2 (1 + SNR)$

Capacity $= 100$ KHz $* \log_2 (2.6)$

$= 106$ KHz $* 1.38$

Capacity $= 138$ Kbps.

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(c)

$$SNR\ (calb) = 10 * \log_{10}(SNR)$$

$$SNR = 10^{(10/10)}$$

$$SNR = 10^{1} = 10$$

$$Capacity = 0.5MHz * \log_2(1+10)$$

$$= 0.5\ MHz * \log_2(11)$$

$$= 0.5\ MHz * 3.46$$

$$Capacity = 1.73\ Mbps.$$

Q5

Ans: Using Nyquist equation

$$C = 2 * B * \log_2 M.$$

we have $C = 4800$ bps

$\log_2 M = 8$, Because a signal element encodes a 4-bit words.

Therefore, $C = 4800$, $B = 8$,

$$16B = 4800$$

and we have $B = 300$ Hz.

Q6 = Another number of bits = 8 bits, and bit

Answer (6) duration = 8 bit / 8 ns

Bit rate = 8 bit / 8 ns

Bit rate = 1 bit / ns

Bit rate = $1 * 10^9$ bit / sec

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Bit rate = 1 Cbps.

Q 7:

Ans:- Capacity = band with * $\log_2(1+SNR)$

Capacity: 40Mbps and bandwidth = 6MHz.

putting in above equation.

40 Mbps = 6 MHz * $\log_2(1+SNR)$

$40 * 10^6$ Mbps = $6 * 10^6$ Hz * $\log_2(1+SNR)$

$\log_2(1+SNR) = 40/6$

$\log_2(1+SNR) = 6.67$

$1+SNR = 2^{6.67}$

$1+SNR = 102$

SNR = $102 - 1$ = SNR = 101.

Q No 8:

Answer:- Frequency = 20 To 40 KHz.

bandwidth = 40 KHz - 20 KHz.

Bandwidth = 20 KHz.

Amplitude = 10v for the lower and the highest signals.

30v for the 30 KHz.

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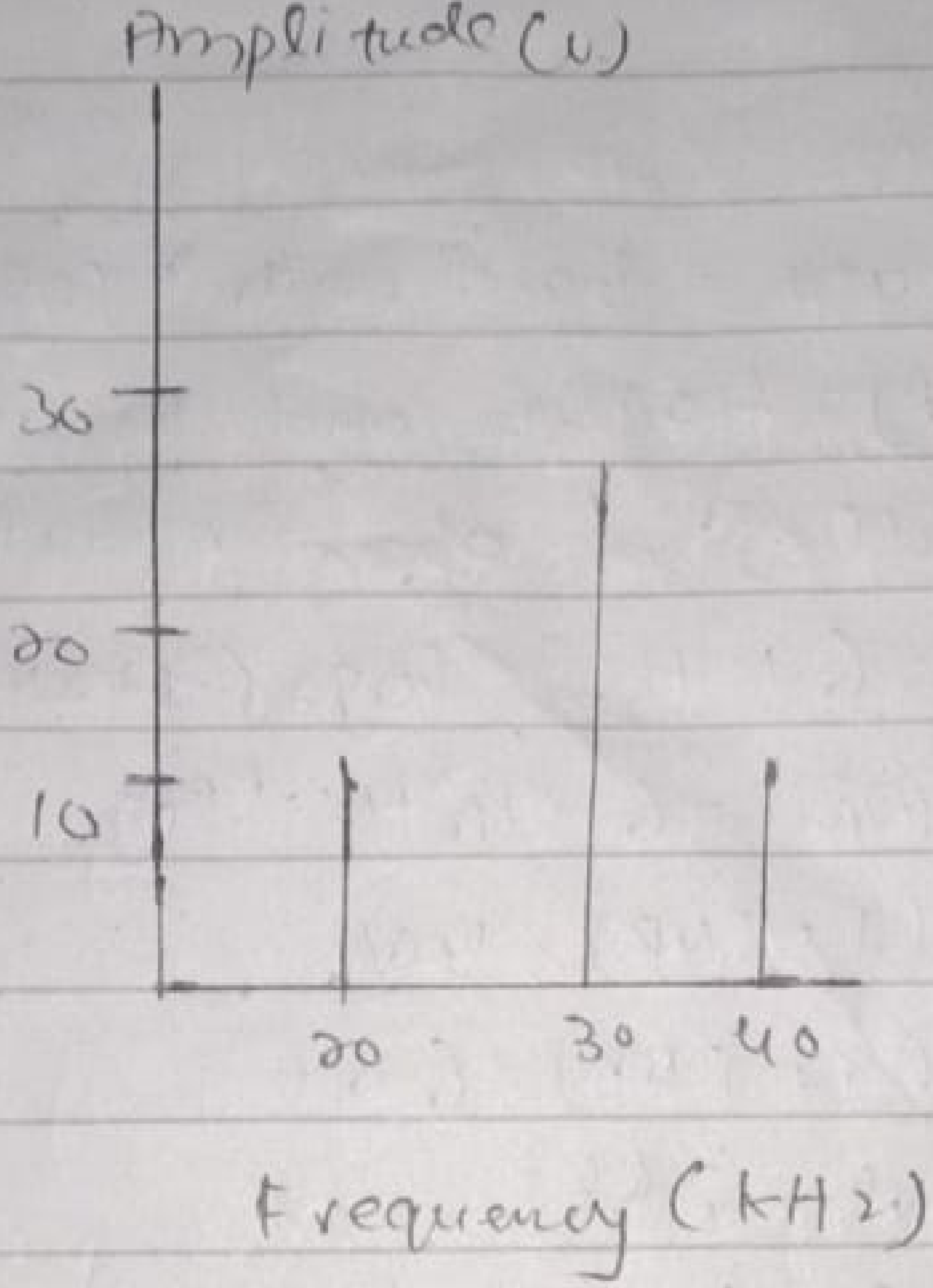

The end.