

(1)

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Q no: 1:

(Answer)

This system might describe the series of action when you want to travel through airplane. you purchase your ticket, check your bags, go to the gate and eventually get loaded onto the plane. The plane take off and is routed to its destination. After your plane lands you come out of the plane.

Ticket Purchase	ticket (complaints)
Baggage (check)	Baggage (claim)
Scan body	Scanning
gates (land)	gates (unloaded)
Run way (take off)	run way (landing)

Airplane routing

(2)

Q NO: 2

(Answers)

Advantages:

- a) Single layer to study as all the functionalities is provided at his powers.
- b) Higher bandwidth as number of layers is reduced.
- c) it reflects the real-life separation of application from TCP ~~downward~~ downward section of the OSI model

Disadvantage

- a) Can make reasoning about the architecture of network system less effective
 - b) There will be security issues as the network security and application security will open at a single point which may expose our network open to our threat.
-

(6)

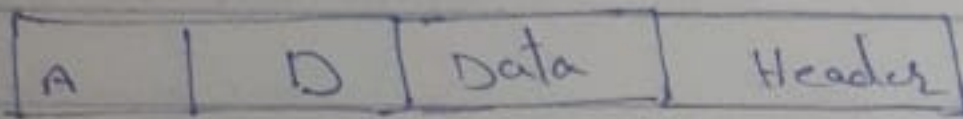
(Q. 3)

(Answer)

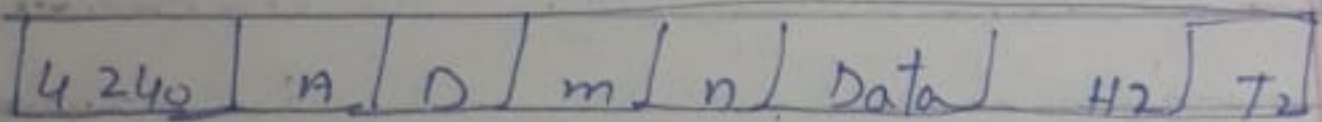
Computer A

Contents of segment at Transport layer
[Data, Header]

Contents of Packet at network layer

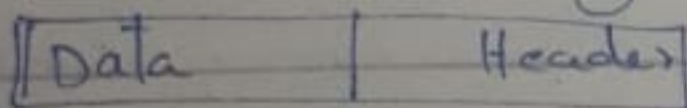


Contents of frame at data layer

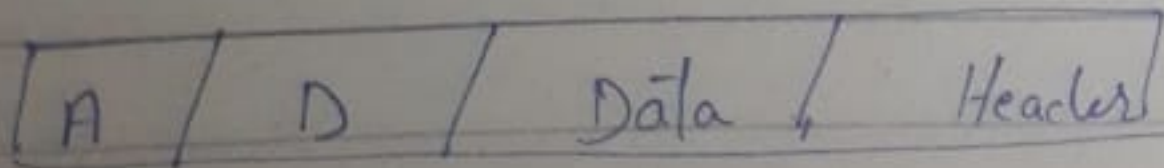


Computer D

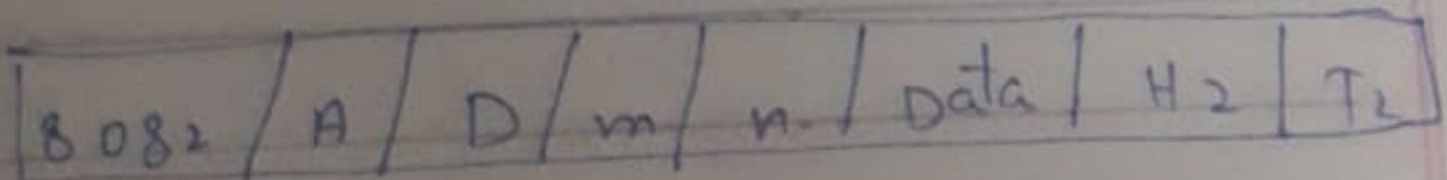
Contents of segment at Transport layer



Contents of Packet at network layer



Contents of frame at data
link layer



(3)

Q: No: 4.

- a) Bandwidth = 15 kHz SNR dB = 30
b) Bandwidth = 100 kHz SNR dB = 2
c) Bandwidth = 0.5 MHz SNR dB = 10

Solution

- a) $C = 15 \times \frac{30}{3} = 150 \text{ kbps}$
b) $C = 100 \times \frac{2}{3} = 66.66 \text{ kbps}$
c) $C = \cancel{100} 0.5 \times \frac{10}{3} = 1.67 \text{ Mbps}$



Q NO: 5

(Answer)

Solution.

Using Nyquist equation

$$C = 2B \times \log_2 M$$

$$C = 4800 \text{ bps}$$

$$\log_2 M = 8$$

Putting values

$$4800 = 2B$$

$$4800 = 16B$$

$$B = \frac{4800}{16}$$

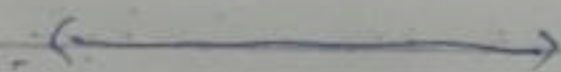
$$B = 300 \text{ Hz}$$

(4)

Q: no: 6

(Answer)

$$\begin{aligned}\text{No of bits} &= 8 \text{ bps} \\ \text{Bit duration} &= 8 \text{ ns} \\ \text{Bit Rate} &= 8/8 \\ &= 1 \times 10^1 \text{ Gbps} \\ &= 1 \text{ Gbps}\end{aligned}$$



(Q: no: 7)

(Answer)

As we know that

$$\begin{aligned}\text{Capacity} &= \text{bandwidth} \times \log_2(1 + \text{SNR}) \\ c &= 40 \text{ Mbps}, \quad B = 6 \text{ MHz}\end{aligned}$$

Putting value in equation

$$40 \times 10^6 \text{ bps} = 6 \times 10^6 \text{ Hz} \times \log_2(1 + \text{SNR})$$

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

$$\log_2(1 + \text{SNR}) = 6.67$$

$$1 + \text{SNR} = 2^{6.67}$$

$$\text{SNR} = 101.83$$

$$\text{SNR} = 100.83$$

5

(Q: NO: 8)

(Answer)

