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Q 1

Answer:-

This system might be 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  
Baggage (check)  
Scan body  
Crate (load)  
Runway (takeoff)

ticket (complaints)  
baggage (claim)  
scanning  
gates (unloaded)  
runway (landing)

Airplane sailing



Q 2

Answer:-

ADVANTAGES

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

DISADVANTAGES:

- 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.

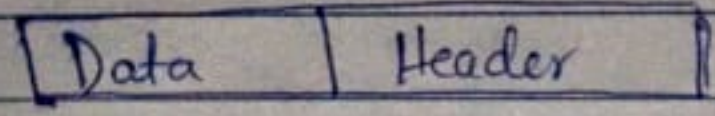


Q 3

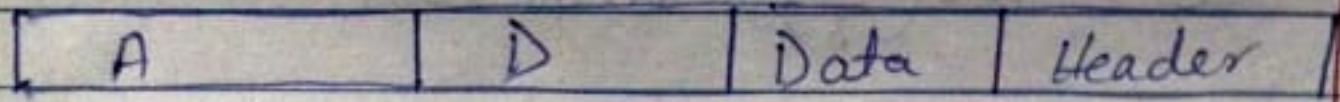
Answer:-

COMPUTER A :-

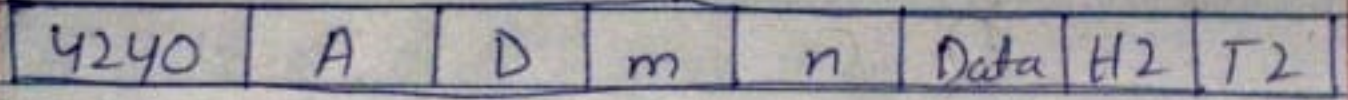
Contents of segment at Transport layer



Contents of Packet at network layer

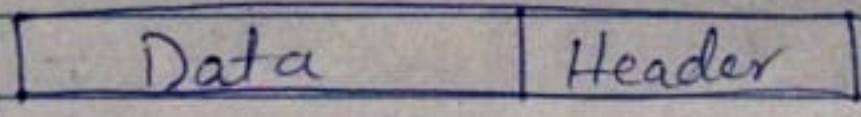


Contents of Frame at Data link layer

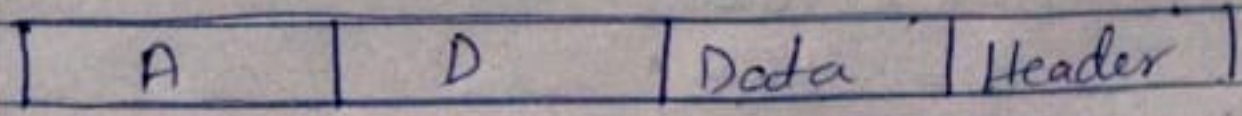


COMPUTER D :-

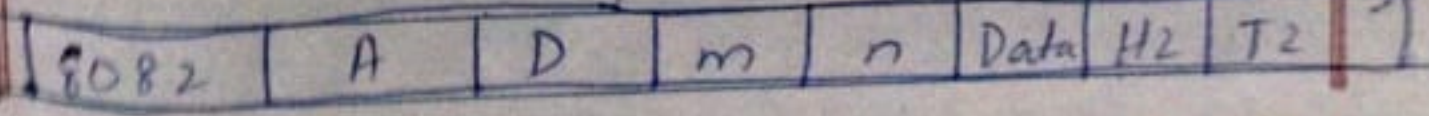
Contents of segment at Transport layer



Contents of Packet at network layer



Contents of Frame at Data link layer





Q 4

Answer:-

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

Solution:-

$$a) C = 15 \left( \frac{30}{3} \right) = 150 \text{ kbps}$$

$$b) C = 100 \left( \frac{2}{3} \right) = 66.66 \text{ kbps}$$

$$c) C = 0.5 \left( \frac{10}{3} \right) = 1.67 \text{ kbps}$$

Q 5

Answer:-

Using Nyquist's equation

$$C = 2B (\log_2 M)$$

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

$$\log_2 M = 8$$

Putting values

$$4800 = 2B(8)$$

$$4800 = 16B$$

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

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



Q 6

Answer:-

Solution

No of bits = 8 bps

Bit duration = 8 ns

Bit Rate =  $\frac{8}{8}$

$$= 1 (10^9) \text{ bps}$$

$$\approx 1 \text{ Gbps}$$

Q 7

Answer:-

We know that

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

$C = 40 \text{ Mbps}$  ,  $B = 6 \text{ MHz}$

Putting values In equation

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

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

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

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

$$\text{SNR} = 101.83 - 1$$

$$\text{SNR} = 100.83$$



Q 8

Answer:-

Amplitude

