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Subject

data communication
& network

Semester
INSTRUCTOR

4th (BSCS)
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QNO#1

ANS:- The 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 & eventually get loaded onto the plane. The plane take off & is. After your plane lands you come out of the plane.

Ticket purchase
Baggage (check)
Scan body
gates (load)
runway (takeoff)

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

Airplane routing

Q NO # 2

Advantages:

- A) Single layer to study as all the functionalities is provided at this layer.
- B) Higher bandwidth as number of layers is reduced.
- C) It reflects the real life separation of application from the tcp downward section of the OSI model.

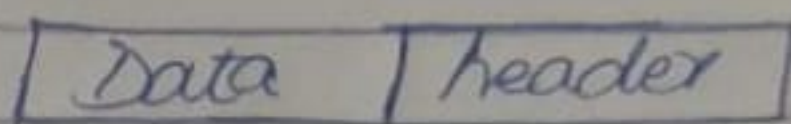
Disadvantages:

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

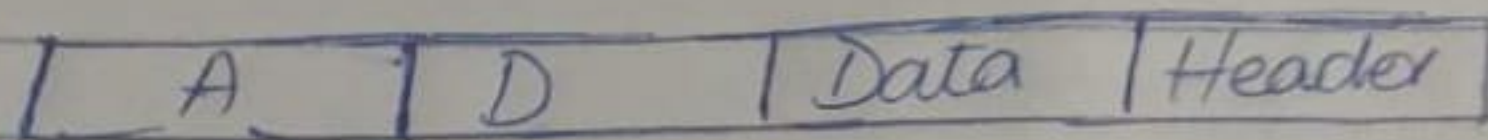
Q NO # 3

ANS:- Computer A:

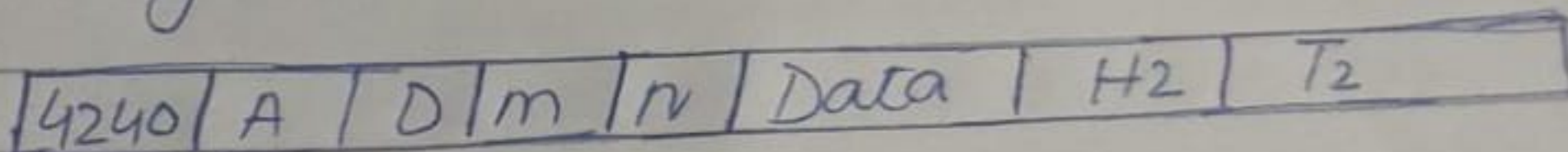
- * Contents of segment at transport layer



- * Contents of packets at network layer.

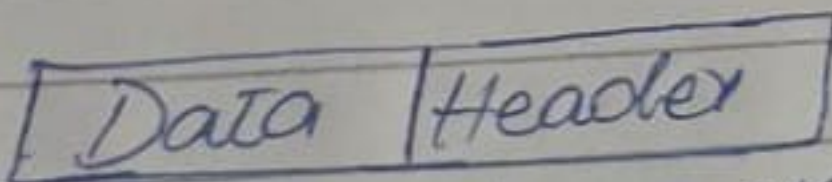


- * Contents of frame at data link layer

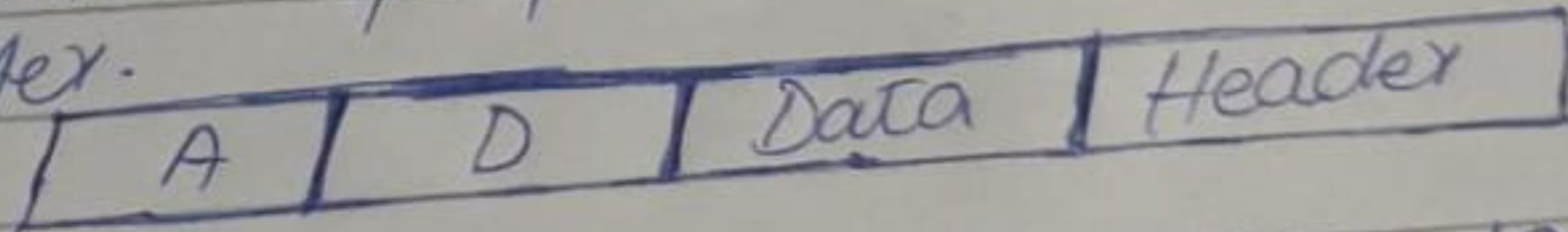


Computer D:-

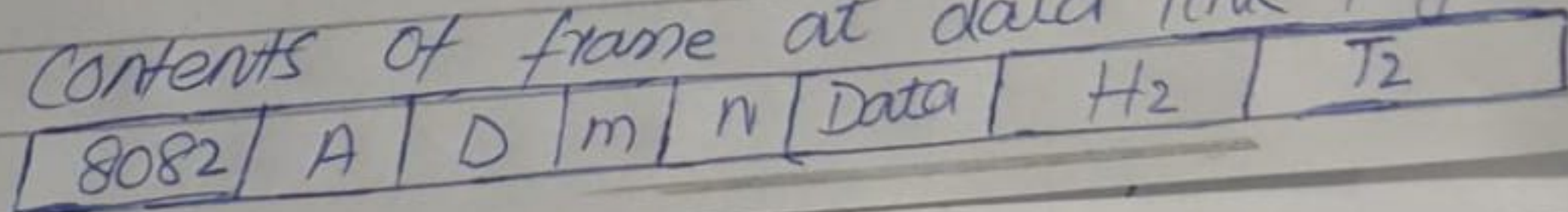
- * Contents of segments at transport layer



- * Contents of packets at network layer.



- * Contents of frame at data link layer.



Q NO #4

Solution:-

- (a) Bandwidth = 15 KHz SNRdB = 30
- (b) Bandwidth = 100 KHz SNRdB = 2
- (c) Bandwidth = 0.5 MHz SNRdB = 10

$$(a) C = 15 \times 30/3 = 150 \text{ kbps}$$

$$(b) C = 100 \times 2/3 = 66.66 \text{ kbps}$$

$$(c) C = 0.5 \times 10/3 = 1.67 \text{ Mbps}$$

Q NO #5

Solution:-

Using Nyquist's evaluation

$$C = 2B \log_2 M$$

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

$$\log_2 M = 8$$

putting values

$$4800 = 2B(8)$$

$$4800 = 16B$$

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

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

Q NO # 6

Solution:-

NO of bits = 8bps

Bit duration = 8ns

Bit rate = 8/8

= 1×10^9 bps = 1 Gbps

Q NO # 7

Solution

As we know that,

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

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

Putting values in equation

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

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

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

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

$\text{SNR} = 101.83 - 1$

$\text{SNR} = 100.83$

Q NO # 8

ANS:-

amplitude

