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BSCS

Paper

Data communication And

Networking

Submitted to

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4th

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QNo1 Suppose you want to go for a trip to spend some of days in another place. Then you follow some process or steps process is given below

Booking of tickets and resorts,
 packing a luggage, go to
 airport, Entry in airport
 checking a bags boardings
 take off, landing off boarding
 claimining, go to resort.

QNo2 Advantages: ① All functionalities are provided in one layer.

② Bandwidth for more layers were reserved through this one layer that will reduce to one.

Disadvantages: ① Handling a error will be reside in a big layer.

② if application layer open at a single point so there we be security issue as network tree issue.

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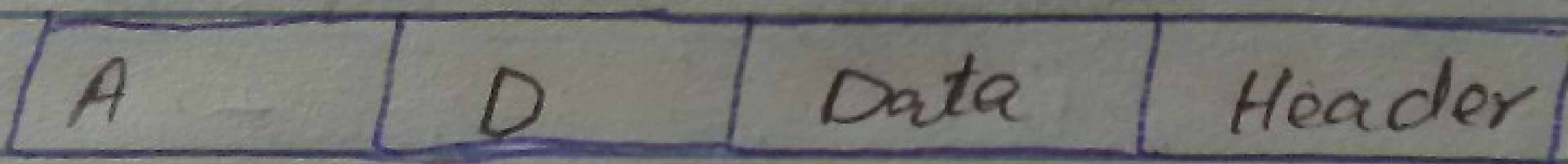
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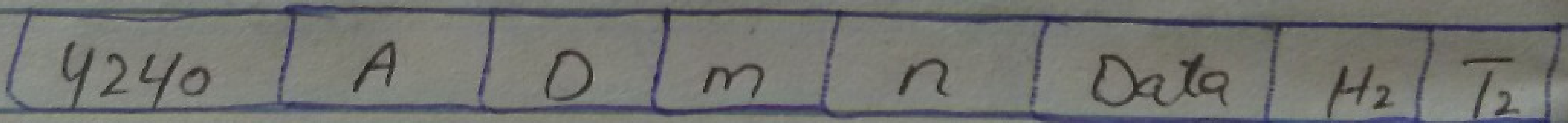
Q No 3 Computer A
contents of segment at
transport layer.



contents of packet at Network
layer.



contents of Frame of Data Link Layer



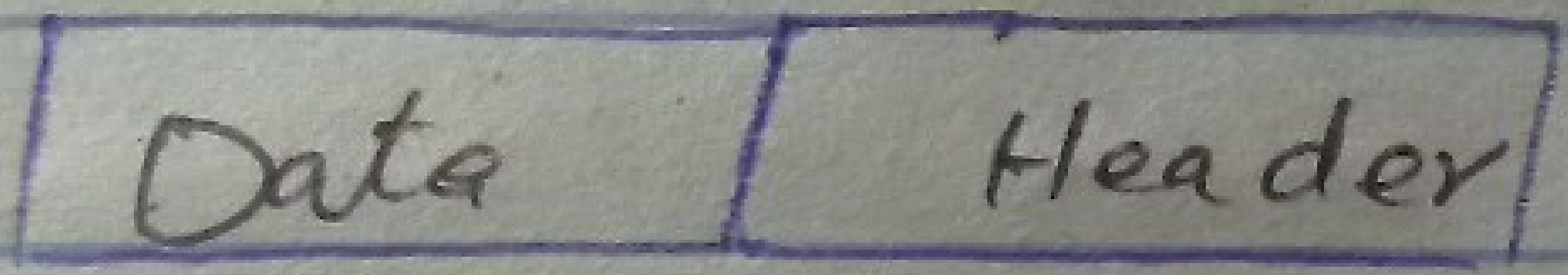
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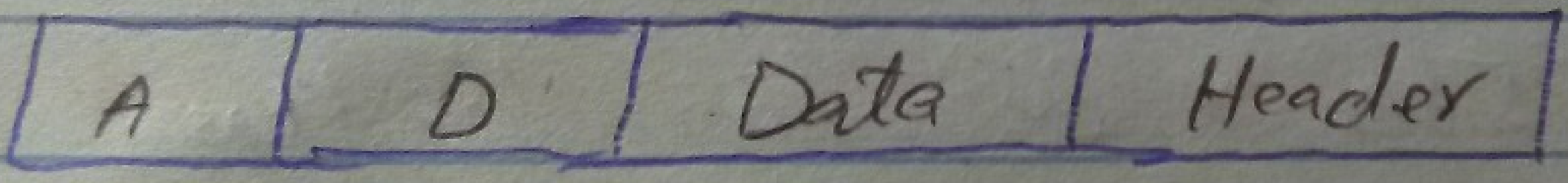
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Computer D

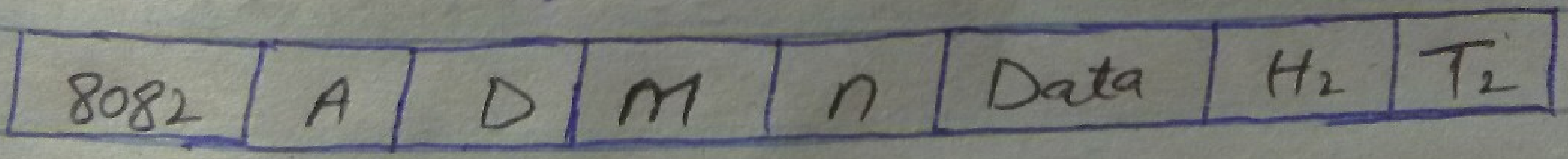
contents of a segment at transport layer



Content of packet at Network layer



contents of frame at Data Link layer



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Q No 4

Formula of theoretical capacity is

$$C = b \times (\text{SNR}_{\text{db}}) / 3$$

putting all value

(i) $b = 15 \text{ kHz}$ $\text{SNR}_{\text{db}} = 30$

$$C = (15 \text{ kHz} \times 30) / 3 = 150 \text{ Kbps}$$

ii) $b = 100 \text{ kHz}$ $\text{SNR}_{\text{db}} = 2$

$$C = (100 \text{ kHz} \times 2) / 3 = 66.67 \text{ Kbps}$$

iii) $b = 0.5 \text{ MHz}$ $\text{SNR}_{\text{db}} = 100$

$$C = (0.5 \text{ MHz} \times 100) / 3 = 1.67 \text{ Mbps}$$

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Q No 5 Solution:

Using Nyquist equation
we know that

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

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

$$\log_2 M = 8$$

Now put in equation

$$4800 = 2B \times (8)$$

$$4800 = 16B$$

$$B = 4800 / 16 = 300 \text{ Hz}$$

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

Q No 6 Solution

Numbers of bit is = 8

Bit Duration = 8 ns mean 10^9

$$1 \times 10^9 \text{ bps} = 1 \text{ Gbps}$$

The unit of N_s is GHz

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Qno 7

We know that
Capacity = $B * \log_2 (1 + \text{SNR})$

given Data as:

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

Putting value in formula:

$$C = B * \log_2 (1 + \text{SNR})$$

$$\log_2 (1 + \text{SNR}) = C/B$$

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

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

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

$$101.8 = 1 + \text{SNR}$$

$$\text{SNR} = 101.8 - 1$$

$$\boxed{\text{SNR} = 100.8}$$

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amplitude

