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Section → BS(SE) (A)

Subject → Data Communication & network

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Q No ①

(A) Answer →

In telecommunication a product data unit is a single unit of information of computer network. In the layer of communication protocol stacks each layer implements protocols of the specific type of model of data exchange. e.g. The transmission of control to implement communication transfer mode. PDU of this protocol is called segment while the user datagram as protocol use datagrams as protocol units. A layer lower in the internet layer is called payload type.

The feature of services of network are implemented in distinct layer -

e.g. =

Physical layer, organizing the one and zero -

Q no 1 ?

(b) Advantages 2.

The advantages of combining the session, presentation and application layer into a single application layer is that (a) single layer to study as all the functionalities provided at this layer -

(b) Higher bandwidth as number of layer is reduced -

(c) It reflects the real life separation of application from the top-downward section of the OSI model -

Disadvantages 2.

(A) Can make reasoning about the architecture of network systems less effective -

(b) There will be security issues as the network security will open at a single point which may expose

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Our network open to threat -

(c) It makes trouble shooting hard as multiples errors may reside at a single layer -

Q no 2:

(a)

Ans →: There are seven layers of the OSI model.

① Application layer:

② Presentation layer:

③ Session layer:

④ Transport layer:

⑤ Network layer:

⑥ Data link layer:

⑦ Physical layer:

① Application layer →

It is implemented the network application may produce data, which has to be transferred over the network -

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② Presentation layer:

The data from the Application layer is extracted here and manipulated as per the required format to transmit over the network -

③ Session layer:

The layer is responsible for the establishment of connection, maintenance of sessions, authentication and also ensures security -

④ Transport layer:

This layer provides services to application layer. The layer is responsible for end-to-end delivery of the complete message -

⑤ Network layer:

Network layer works for the transmission of data from one host to another location in different network -

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⑥ Data link layer:

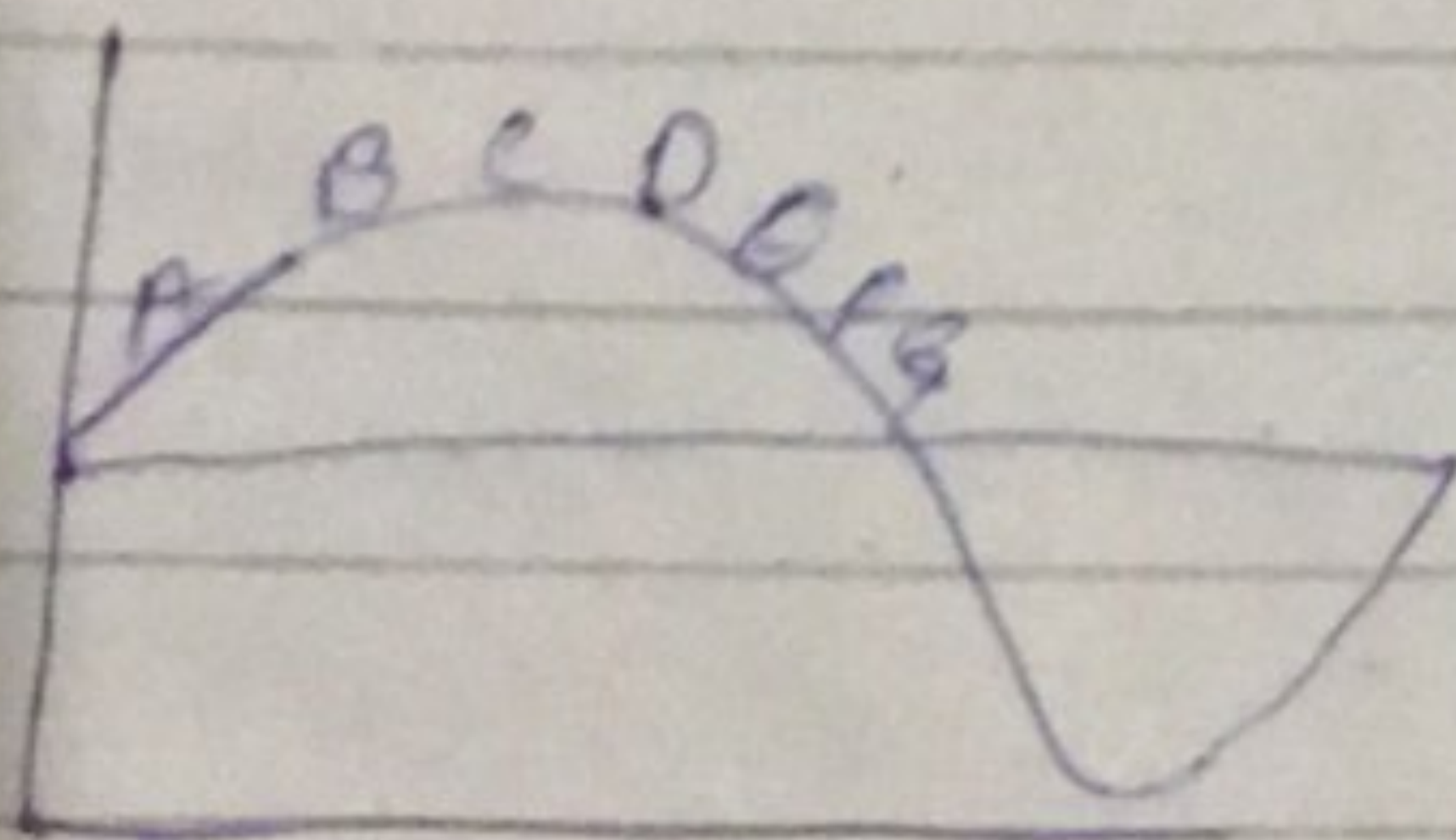
The data link layer is responsible for node to node delivery of the messages -

⑦ Physical layer:

The lowest layer of the OSI model. It is responsible for the actual physical connection b/w the devices. It contains information in the form of bits -

②
③ Ans →

Phase is a specific location in a sine wave. So in this scenario we connect plot phase of a sine wave in a time-phase plot as the wave is constantly changing -



As we can see that all the points are in different position thus we cannot explicitly plot the phase in time-phase plot.

Q No 3 →

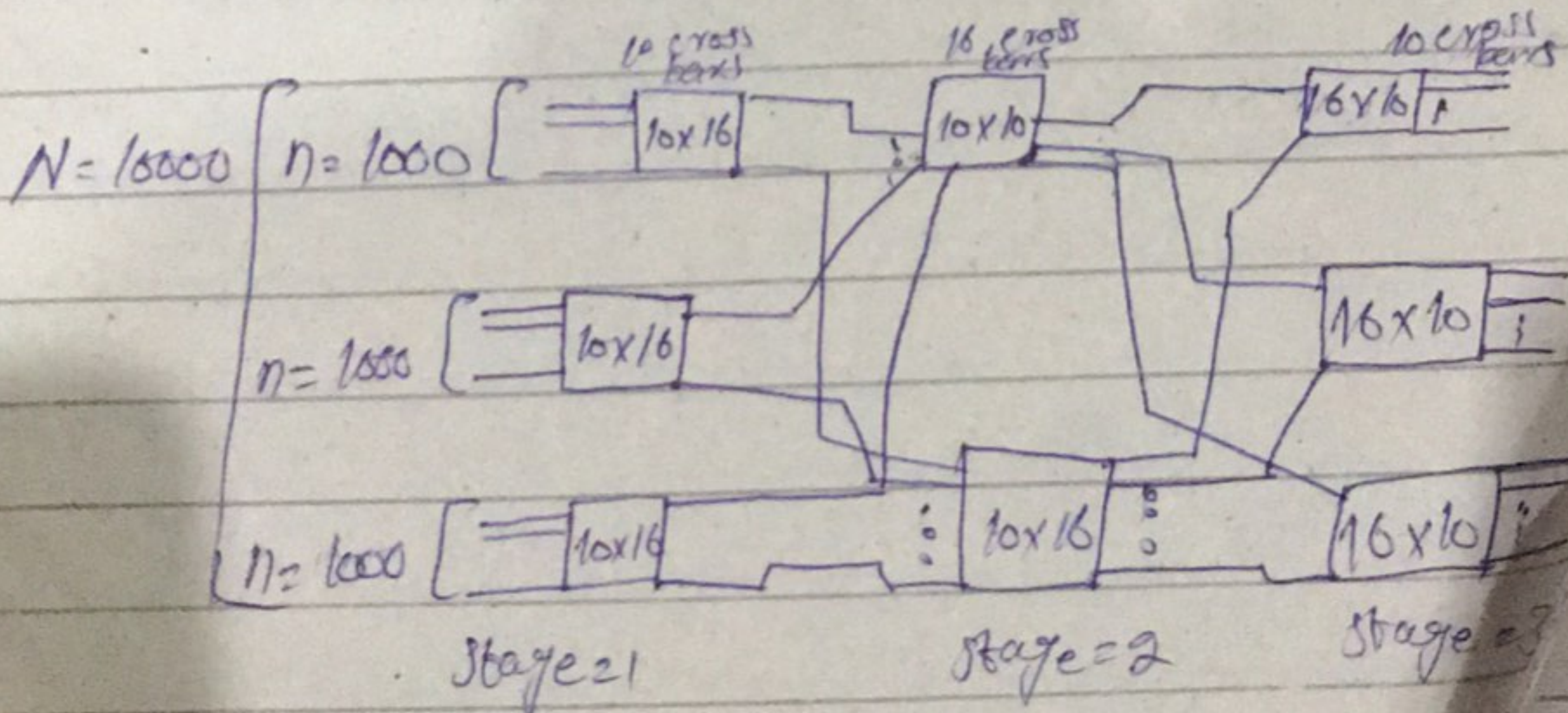
(B) Given Data:

(a) $N = 100000$

$n = 1000$

$k = 16$

In the first stage we have $N/n = 100000/1000 = 100$ cross bars, each of size is 10×16 in the second stage we have 4 cross bars of size 10×10 in third stage we have 10 cross bars, each of size 16×10 .



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(B) Total number of cross point -

$$= 10(10 \times 16) + 16(10 \times 16) + 10(16 \times 16)$$
$$= 1600 + 1600 + 1600$$
$$= 4800$$

(C) only 16 simultaneous connections are possible for each crossbars at the 1st stage this means that the total number of connections is $16 \times 10 = 160$ -

(d) if we use a cross bars (1000×1000) all input lines can have a connection at the same time which means less simultaneous connections -

(e) The blocking factor is

$$160/1000 = 16\%$$

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Q No 3 →

Part (A)

Answer:

For 10kbps channel:-

(a) duration of 1 bit = $\frac{1}{10\text{kbps}}$ = 10 ms -

For 100kbps channel:-

(a) duration of 1 bit = $\frac{1}{100\text{kbps}}$ = 100 μs -

For 1 Mbps channel:-

(a) Duration of 1 bit = $\frac{1}{1\text{Mbps}}$ = 1 μs -

For 10 Mbps Channel:-

(a) Duration of 1 bit = $\frac{1}{10\text{Mbps}}$ = 100 ns -

(b) Rate of link = 11.11 Mbps -

(c) The duration of each slot is the inverse of data rate = $\frac{1}{11.11\text{Mbps}}$ = 0.09 μs -

(d) Duration of frame is always same as the duration of unit before multiplexing -