CSE320

Assignment

No.

1

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Ans. 1

Based on the given conversation, I think the Application Layer of the OSI model is where the communication is being carried out.

In this conversation 2 friends are discussing the exchange of parcels, which indicates to the fact that they are interecting with an application on service related to parcel delivery. They are discussing the specific of the delivery, number of parcel and readyness to receive them. And, we know that the application layer is responsible for handling high-level protocols, application services, and user interfaces.

So, we can say that, the communication is being carried out in the Application layes of the OSI Model.

Ans.2

When I'm using the Internet, Online Banking among these 3 options is more sensitive to delay.

① Facebook Live

In facebook Live, an user can go live in real time, its a real time video streaming service. Where delay can affect the viewing experience or can caute some disturbance or interrupt attention. Facebook Live is designed to handle some latency and buffering to ensure a smoother playback. It may adjust the video quality or buffer the stream to compensate for network delays. This makes it less sensitive

② File Transfer Application

While transferring a file, such as uploading or downloading files from online, if delay happens. it may takes more time to download/upload. While a bigger delay happens, it can impact

greatly on transferring time, but some file transferring application have mechanism to handle that to manage the transfer process efficiently.

(iii) Online Banking

Online banking applications need for real-time connection between the user's device and the banking server and safe transactions. These activities frequently entail financial actions, such as money transactions, payments on checking balance. Any delay here might harm the applications, responsiveness and the user experience. So, in Online Banking applications low latency is often prioritized to provide fast feedback and ensure secure and timely transaction processing.

Therefore, after observing these points, consider the critical nature of real-time transactions and the need for responsiveness, online banking applications are generally more sensitive to delay compared to Facebook live or file transfer application.

Ans. 3

The number of cable links required for a mesh, ring, bus and star topology, the calculation is given below.

① Mesh Topology

each and every device is connected to other devices through "Point to Point Link"

$$\longrightarrow \frac{n(n-1)}{2} \text{ Links}$$

⑪ Ring Topology

2 devices on either side, "n devices in a network"

$$\longrightarrow n \text{ links}$$

Ⅲ **Bus Topology**

→ n-1 links.

Ⅳ **Star Topology**

→ n links.

Ans. 4

Data can be represented in various formats depending on the type and structure of the information. Here are 2 different data types and standard :-

ⅰ **Textual Data**

Includes alphanumeric characters, symbols and words.

ⅱ **Numeric Data**

Includes numbers and mathematical values.

Ans. 5

End device $\longrightarrow$ Desktop, Printer

Transmission Media $\longrightarrow$ Ethernet cable

Intermediary devices $\longrightarrow$ Switch, Router

Ans. 6

Routers are used to connect two networks, It works on layer 3 (Network layer). It acts as interface of the network. (LAN)

Switches work on layer 2 (Data link layer). It is used to connect devices in the Network (LAN).

Since there are 3 router interfacing 3 different network; So there are 3 LANs.

So, PC 1 will send data to switch 1 as it is the next hop to PC1.

Ans. 7

a. Route determination → Network Layer
(Layer 3)

b. Connection to transmission media
→ Physical layer
(Layer 1)

c. Providing service for the end user
→ Application layer
(Layer 7)

d. Creating user datagrams
→ Transport layer
(Layer 4)

e. Responsibility for handling frames between
adjacent nodes → Datalink layer
(Layer 2)

f. Converting the data from Bangla to Chinese

→ Not specifically associated

but translation or encoding tasks typially
performed by application - specific logic or
translation service, which may occours in
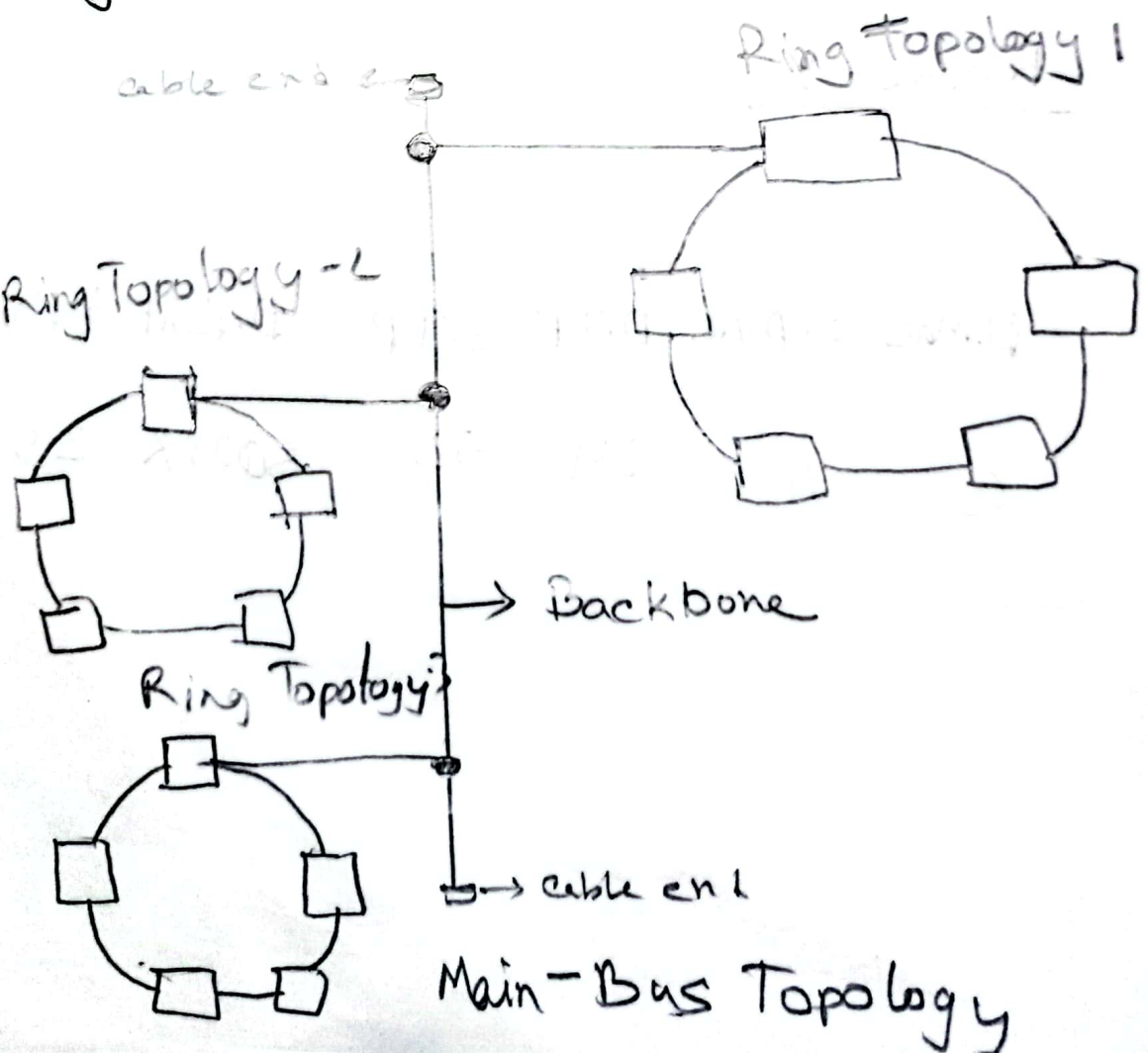application layer.

Ans. 8

** The highest layers of the OSI model.
the Presentation layer (Layer 6) and the
Application layer (Layer 7), are involved
in encrypting the data of a packet.
These layers handle the encryption and
decryption of data before it is transmitted
and after it is received.

IP address(es) does not change at

each hop. The IP address is responsible for identifying the source and destination device of a network.

Ans. 9

A hybrid topology with a bus backbone and three ring networks is shown below -

cable end

Ring Topology 1

Ring Topology - 2

Ring Topology 3

→ Backbone

→ cable end

Main - Bus Topology

Ans. 10

Frame - X

D. MAC	S. MAC	D. IP	S. IP	D. Pont	S. Pont	Data	Trailer
A	E	20	24	80	49175	HTTP-request	CRC

Frame - Y

D. Mac	S. MAC	D. IP	S. IP	D. Pont	S. Pont	Data	Traui len
a	H	24	92	50037	25	Email-Content	CRC