

**Assignment - 1**  
**Semester : Spring 2023**  
**Deadline: 16 June, 2023**  
**Total Marks: 40**  
**Total Questions: 10**

**Q1.** Inspect the conversation between two friends:

Friend 1: Hey, I had some parcels for you. Are you at home?

Friend 2: Yes, I'm at home.

Friend 1: Okay, I'll send you the parcels then.

Friend 2: I'll receive your parcels.

Friend 1: Are you ready to receive the parcels?

Friend 2: Yes, I'm ready to receive the parcels.

Friend 1: I'll send you 10 parcels in one shipment.

Friend 2: Can you send 5 parcels though?

Friend 1: Sure. I'll send you 5 parcels.

Which layer of the OSI model do you think the communication is being carried out in and why?  
[4]

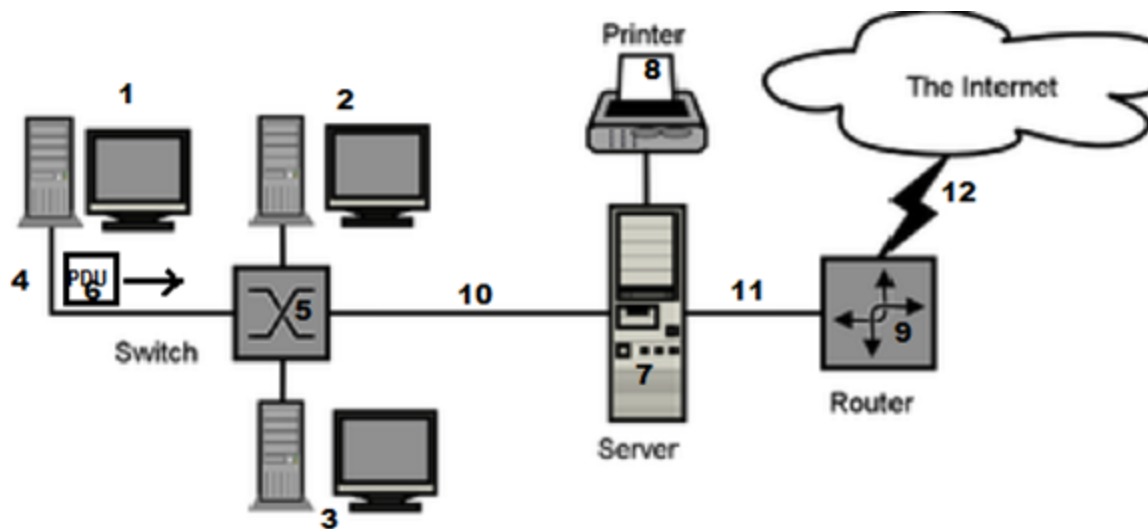
**Q2.** All of us know by now that performance is inversely related to delay. When you use the Internet, which of the following applications are more sensitive to delay. Write your answer and provide your own logic. [6]

- a. Facebook Live
- b. Transferring a File
- c. Online Banking

**Q3.** For  $n$  devices in a network, what is the number of cable links required for a mesh, ring, bus, and star topology? Show the calculation. [4]

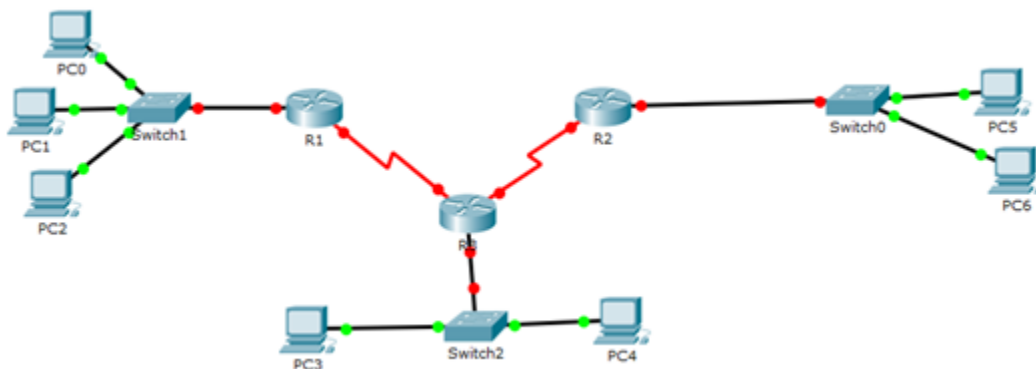
**Q4:** How do we represent data? Name two different data types and their standards. [2]

**Q5:** Refer to figure below, identify the elements of communication. [3]



**\*\* Hint:** 1----> end device, 11-----> transmission media

**Q6.** In the diagram below, R1, R2 and R3 are three routers. How many local area networks (LANs) do you think the topology has and why? If PC1 wants to send data to PC5 then what is the 1st hop that the data has to go from source PC1? [4]



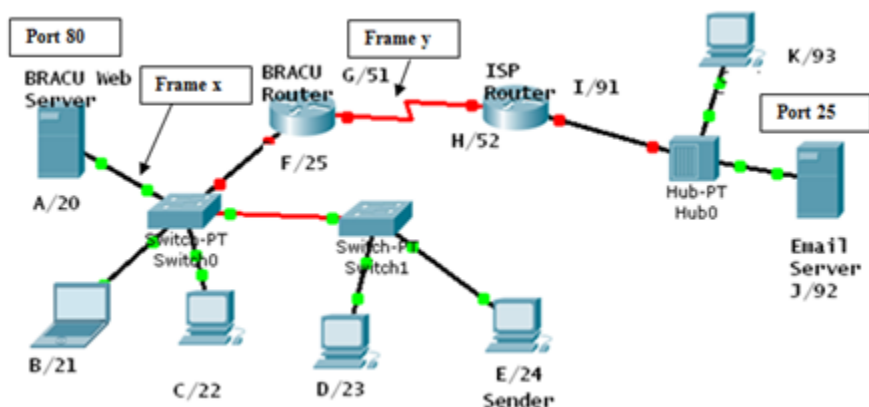
**Q7:** Match the following to one or more layers of the TCP/IP protocol suite: [6]

- route determination
- connection to transmission media
- providing services for the end user
- creating user datagrams
- responsibility for handling frames between adjacent nodes
- Converting the data from Bangla to Chinese

**Q8:** Which layer(s) are involved in encrypting the data of a packet? Which address(es) does not change at each hop? [4]

**Q9:** Draw a hybrid topology with a bus backbone and three ring networks. [2]

**Q10:** Complete the frames (x & y) given below with appropriate port, IP and MAC addresses. The sender Host E has two applications running; one for email with port number 49254 and the other for accessing the web server with port number 52167. The frame x is intended for the BRACU Web server and frame y is coming from the Email Server. (MAC addresses are alphabets and IP addresses are numbers) [5]



Frame X

D. Mac	S. MAC	D. IP	S. IP	D. Port	S. Port	Data	Trailer
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Frame Y

D. Mac	S. MAC	D. IP	S. IP	D. Port	S. Port	Data	Trailer
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\*\*\*\*\*END\*\*\*\*\*