Name: **ID:**   **Sec:**

1. "XYZ Corporation", a medium-sized company with offices distributed across multiple floors, is planning to upgrade its network infrastructure. Given the company's anticipation of future expansion, ABC Corporation is looking for a scalable network infrastructure. How can a hybrid topology address the specific need of accommodating additional devices and departments within ABC Corporation as the company grows? [2.5]

2. Seven devices are connected using mesh topology. If each physical link allows communication in both directions (full duplex mode), how many physical links are needed in total? [2.5]
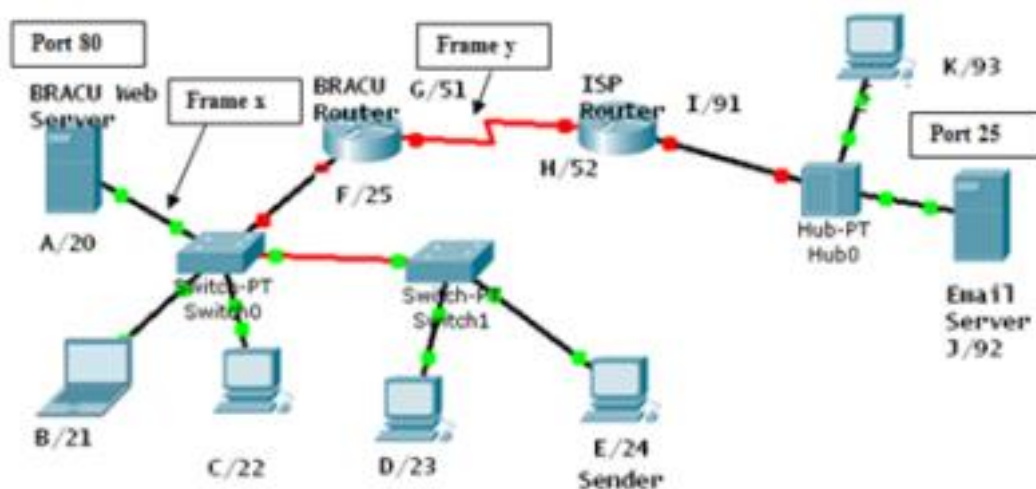
3. Match the following to one or more layers of the OSI protocol suite and mention two protocols related to that layer. [2.5]
- Process to process error control
- Adding checkpoints or synchronization points
- Route determination

4. Identify each of the below scenarios to an appropriate network type (PAN, LAN, WAN, MAN) [2.5]

- You are sending pictures using WhatsApp from your mobile to your friend who is sitting beside you in BRACU Cafeteria
- You and your friend are communicating via email using BRACU PC and both of you are in different floors of BRACU campus
- You are communicating with your friend who lives in USA
- PCs in Ayesha Abed Library can communicate with PCs at BRAC Center (Both are in different networks)
- A number of fire stations located in a city are connected, so office staff can easily communicate with one another

5. 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 51310 and the other for accessing the web server with port number 60139. Frame x and y both are intended for the sender E. (**IP addresses are denoted using alphabets and MAC addresses are denoted using numbers**) [5]

Frame x

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

Frame y

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