Assignment - 1
Semester: Spring 2023
Submission: 18 June, 2023 (in Class)
Total Marks: 20
Total Questions: 5
[CO1]

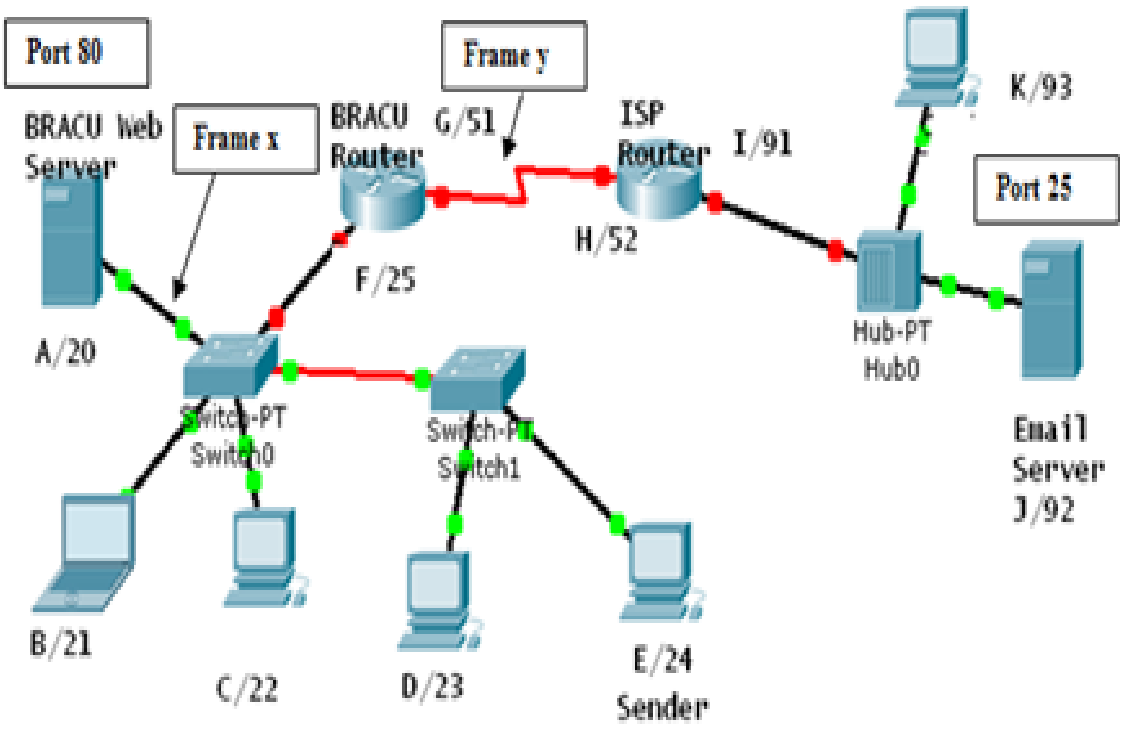
1. **Identify** the name of the TCP/IP model layers based on the following functionalities.
   a) The layer responsible for node to node error control.
   b) This layer translates messages from one language to another.
   c) The layer processes information which helps us identify a network.
   d) The layer responsible for restarting browsers which was idle for a long time.
   e) The layer identifies different application processes. [5]

2. **List** two differences between IP and MAC Address. Suppose, Martin needs to log into his bank account several times a day. Due to the sensitive information related to bank accounts, the data needs to be secured. Select **which** of the OSI model layer(s) might be responsible for this? [4]

3. Consider 9 devices in a network, **what** is the total number of cable links and port required for a mesh, ring, and star topology? **Show** the calculation. [3]

4. **Illustrate** diagrammatically a hybrid topology with a bus backbone and three-star networks consisting of 4 nodes at each hub. In the topology drawn, **identify** at least one possible problem or failure that could bring the whole network down and justify your answer. [2]

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 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) [6]



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

**********END**********