Homework 2

Problem 2.1

Solution:

a)

(i) The cost of all network segments and all the bridges is the same, therefore the root bridge will be the one with the lowest ID, which in our case is B1.
Considering ll the other bridges, the shortest paths that are formed are:
* B2 → B1, therefore P2.2 is a root port.
* B4 → B1, therefore P4.2 is a root port.
* B8 → B1, therefore P8.2 is a root port.
* B3 → B2 → B1, therefore P3.2 is a root port.
* B5 → B3 → B2 → B1, therefore P5.1 is a root port.
* B6 → B2 → B1, therefore P6.1 is a root port.
* B7 → B4 → B1, therefore P7.1 is a root port.

(ii) Considering all the ports that are in the other side of a segment containing a root port, the designated ports are: P1.1, P1.2, P1.3, P2.1, P2.3, P3.3, P4.3. Meanwhile, for the segments or paths that are not chosen, the designated port is the one with the lowest ID. Specifically:
* Segment A: the designated port is P3.1 since ID of B3 is lower than the ID of B4.
* Segment G: the designated port is P5.2 since ID of B5 is lower than the ID of B6.
Using the same idea, we have:
* Segment I: the designated port is P5.3.
* Segment K: the designated port is P6.3.
* Segment L: the designated port is P2.4.

(iii) The blocked ports are the ones that are on the other side of the designated ports in the segments that were not choosen as part of any of the paths, which in our case are: P4.1, P6.2, P7.2, P8.1, P8.3.

b)

(i) If we remove B1 from the network, the remaining bridges will have the same cost again, and the bridge with the lowest ID would be B2, which is the new root bridge. Using the same idea as before, above are shown all the paths and the respective root ports:
* B3 → B2 : P3.2   * B6 → B2 : P6.1   * B8 → B2 : P8.1   * B4 → B3 → B2 : P4.1
* B5 → B3 → B2 : P5.1   * B7 → B4 → B3 → B2 : P7.1

(ii) Considering the ports that are on the other side of the paths mentioned above, the designated ports are: P2.1, P2.3, P2.4, P3.1, P3.3, P4.3. In the paths that are not taken, we have P5.2, P5.3, P6.3 as designated ports.

(iii) The blocked ports are: P6.2, P7.2, and P8.3.

Problem 2.2

Solution:

a) After looking at the capture file properties, it can be observed that there are 106280 packets and 19689056 bytes that have been captured. After looking at the endpoint statistics, it can be observed that there are 52873 broadcast packets, which gives 6926 broadcast bytes. If we make the calculations, the percentage of broadcast packets is nearly 49.75%, while the percentage of broadcast bytes is nearly 0.035%.

b) After filtering the packets for bridge PDUs, we find that the MAC address that is sending them is 00:0c:30:80:d5:55 and the destination address to which the they are sent is 01:80:c2:00:00:00. The PDUs are sent nearly every 2 seconds. The bridge identifier of the root bridge is 24576/5/50:57:a8:04:33:40.

c) The answer is yes, so there are other protocols in the trace that use LLC encapsulation, like ZIP, CDP, DTP, BROWSER, NBIPX, 'IPX TIP', 'IPX SAP'.