Spring 2014
Computer Networks
CMPE323

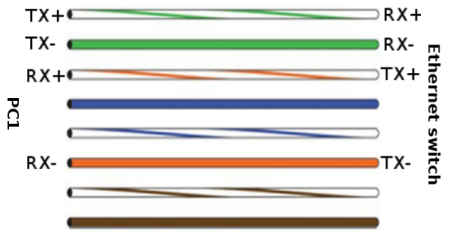
Quiz 1 (1^{st} Group)

Questions	Points
Q1	/25%
Q2	/25%
Q3	/25%
Q4	/25%
Total	/100%

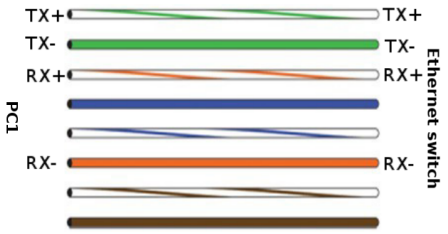
Student name: **Student ID:**

Question 1:

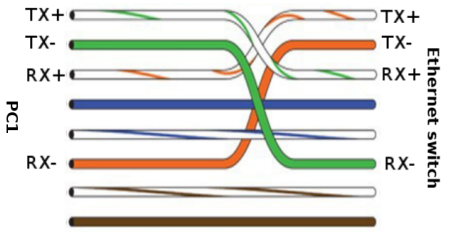
Suppose that we have two nodes, a *PC* and an *Ethernet switch*, that are directly connected to each other via their Ethernet network adapter, which ones of the following pin-arrangements will allow their connectivity given that *Auto-MDIX* is *enabled* (tick all that applies):



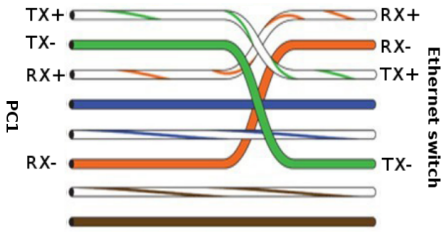
(a)



(b)



(c)



(d)

Question 2:

Considering the single Ethernet broadcast domain network that is presented in Figure 1, if the Ethernet switch received from its `fa0/2` interface a MAC frame as shown in Figure 1, what entry will the switch add to its MAC address table given that the table is empty? (In case you forgot the structure of MAC frames, a reference is presented in Figure 2.)

- MAC address:
- Port ID:

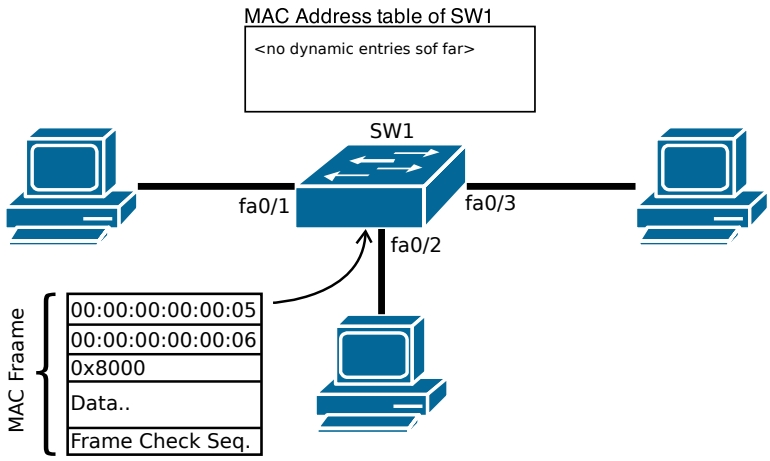


Figure 1: A single Ethernet broadcast domain connecting PC1, PC2 and PC3.

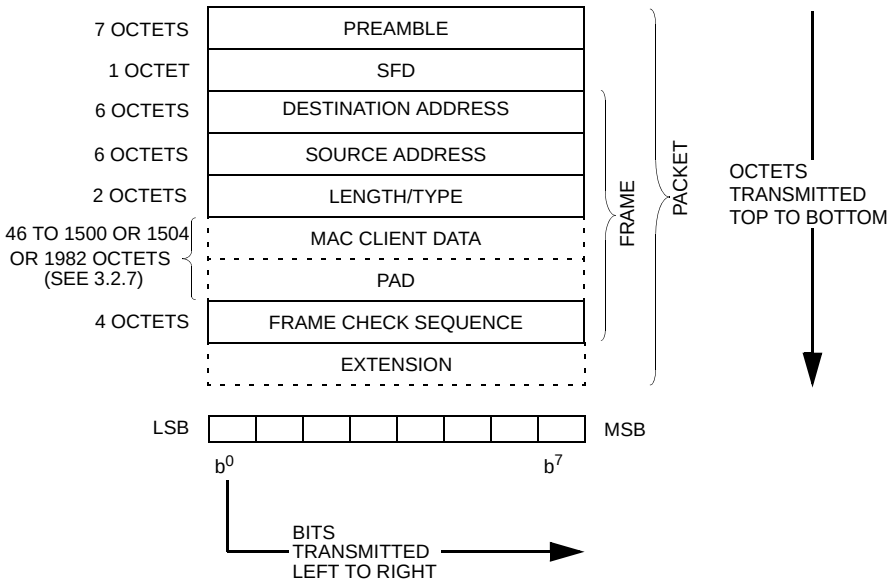


Figure 2: MAC packets and frames structure — Source IEEE Std. 802.3-2012.

Question 3:

Considering the broadcast domains as presented in Figure 3, if PC1 sends a broadcast MAC frame with the destination MAC address of `FF:FF:FF:FF:FF:FF`, what will be the VLAN ID (VID) in the IEEE 802.1Q tag of the same frame when crossing the truck connection?

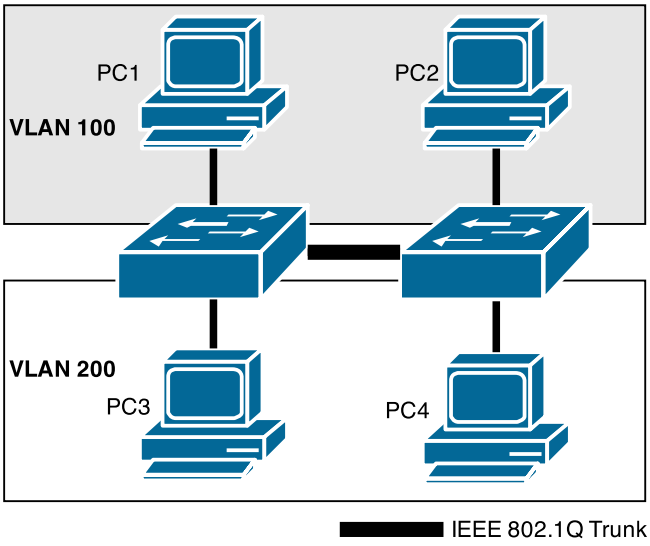


Figure 3: Two separate Ethernet broadcast domains connecting PC1, PC2, PC3 and PC4.

Question 4:

Assuming that all devices (PCs and routers) in the IP network as presented in Figure 4 are configured correctly with the exception that R3 is unable to reach the network `10.0.1.0/24`. What entry should be added in R3's routing table in order to solve this reachability issue?

- Network IP address:
- Network subnet mask[1]:
- Gateway[2] IP address:

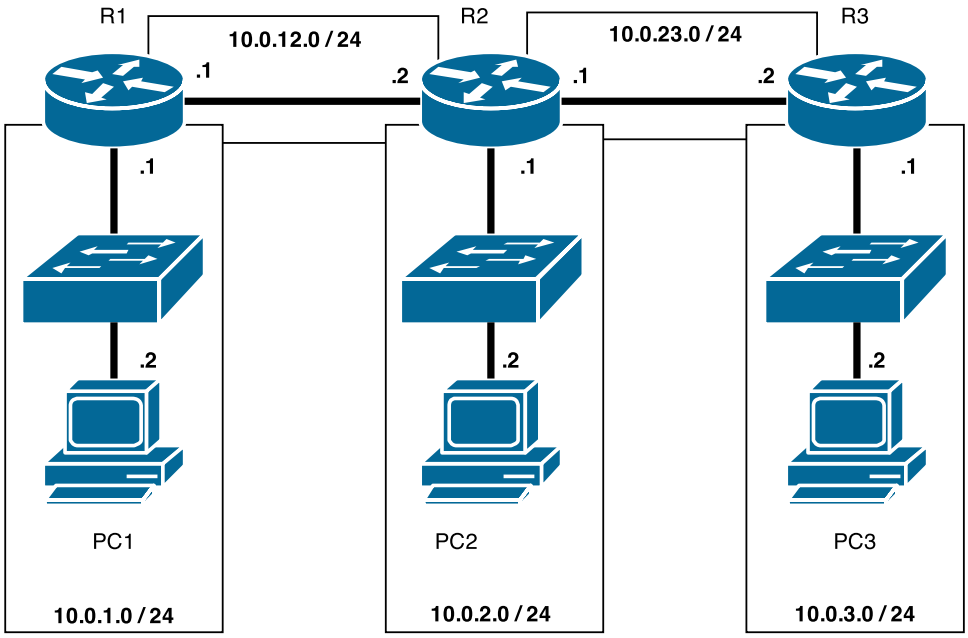


Figure 4: Various Ethernet broadcast domains being inter-connected via 3 IP routers.

[1] You can express it as bits (e.g. /24) or 4-octet addresses (e.g. 255.255.255.0).
[2] Also known as next-hop node.