Group Assignment 1 - Group Lab Activity 1

TNE10006/TNE60006 S1 2025

Assignment Weight:
7.5%

Assignment Points:
75

Submission Due Date:
Week 7 Lab session.

Reference Material:

- Lab SU-5a – Per-Interface Inter-VLAN Routing Configuration
- Lab SU-5b – Configuring 802.1Q Trunk-Based Inter-VLAN Routing
- Lab SU-6a – Troubleshooting Inter-VLAN Routing
- Sample Mid-Sem Skills Assessment C

Instructions:

1. Form a group of 3-4 people amongst the students present in the lab session.
2. Discuss and answer the questions in Group Assignment 1 with your group members.
3. Organise for your group to meet as needed to complete all the questions.
4. Each group will submit one completed Group Assignment 1.
5. Submit Group Assignment 1, in the Canvas shell, under the Group Lab Activity 1.
6. Late penalties will apply for submission after the due date.

Group Assignment 1 Sections:

Section 1: Labs SU-5a and SU-5b Reflection (10 marks)

Section 2: Lab SU-6a Inter-VLAN Routing Troubleshooting (15 marks)

Section 3: Sample Mid-Semester Skills Assessment C – Topology Analysis (15 marks)

Section 4: Sample Mid-Semester Skills Assessment C – Configuration (20 marks)

Section 5: Sample Mid-Semester Skills Assessment C – Troubleshooting (15 marks)

Group Assignment 1 Members Information:

Student Name	**Student ID**
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Section 1: Labs SU-5a and SU-5b Reflection (10 marks)

Q1. Answer the following questions regarding IP settings on layer 2 switches.

a) On a layer 2 switch, what is the purpose of creating an interface VLAN and allocating an IP address to it?
(1 mark)

The purpose is let the switch be able to communicates with devices on the same VLAN or be remotely managed.

b) On a layer 2 switch, what is the purpose of configuring a default -gateway IP?
(1 mark)

This is to ensure the switch can forward packets outside of it's subnet.

c) Based on what you learned on labs SU-5a and SU-5b, which IP address should be configured as the default-gateway IP on a layer 2 switch?
(1 mark)

The IP should be the interface IP configured on the router (or subinterface IP if using ROS)

Q2. Answer the following questions regarding inter-VLAN routing configuration.

a) Explain the benefits of using the **router-on-a-stick** inter-VLAN routing approach instead of configuring per-interface inter-VLAN routing.
(2 marks)

ROS significantly reduce the physical ports needed in a router to do inter-VLAN routing, and also is able to reduce the physical complexity of the topology by only connecting a single physical trunk link between the router and the switch. Both of this aims to reduce costs and simplifies configurations to set one up.

b) Are there any disadvantages to using **router-on-a-stick** inter-VLAN routing as compared to per-interface routing?
(1 mark)

ROS usually doesn't scale well with high numbers of subinterfaces because all traffic would rely on a single physical link, therefore introducing bottlenecks, which impacts performance.

c) When configuring a **router-on-a-stick** topology, the link between the switch and the router must carry traffic for multiple VLANs.

How is this achieved on the router?
(1 mark)

Multiple subinterfaces are created and configured with the appropriate VLANs.

How is this achieved on the switch?
(1 mark)

A trunk interface is configured to the switchport connected to the router.

d) Other than directly connected (C) networks, did you observe other type of networks in the routing table of **R1**? If so, specify the type of networks you observed and what do they represent.
(1 mark)

There is a network dedicated to the Loopback interface of R1. It represents a logical interface rather than a physical interface, which is usally connected to a physical port.

e) What was the purpose of configuring a Loopback interface on **R1**?
(1 mark)

Configuring a Loopback interface is used to provide an always-up interface of a router for management or testing purposes. The loopback interface never goes down unless the router itself fails.

Section 2: Lab SU-6a Inter-VLAN Routing Troubleshooting (15 marks)

Q1. Refer to **Lab SU-6a - Part 2 Troubleshoot Inter-VLAN Routing Configuration** and answer the following questions.

a) Were there any networks missing from the routing table on **R1**? If so, list the missing network(s) specifying network address and subnet mask.
(1.5 marks)

The network that handles the subinterface of vlan 10 is missing, and has been misconfigured to be another IP address. The missing network address is 192.168.10.1 and subnet mask is 255.255.255.0

b) After all relevant **R1** interfaces were enabled, were there any networks still missing from the routing table? If so, list the missing network(s) specifying network address and subnet mask.
(1 mark)

After enabling interfaces, the network that handles the subinterface of vlan 10 is still missing, and this is due to the override of another false IP address. The missing network address is 192.168.10.1 and subnet mask is 255.255.255.0

c) After all relevant **R1** interfaces were enabled, did you observe any incorrect networks on the routing table? If so, list the network(s) specifying network address and subnet mask.
(1 mark)

Yes, there are 2 incorrect networks configurations. The first is the network of 192.168.11.1, subnet mask of 255.255.255.0. The second one is the network of 192.168.1.1, subnet mask of 255.255.255.0

Q2. Refer to **Lab SU-6a - Part 3 Verify VLAN Configuration and Port Assignments and Trunking** and answer the following questions.

a) Were there any missing or unnamed VLANs on the VLAN database of **S3**? If so, list them.
(0.5 mark)

There was 1 missing VLAN in S3. The VLAN is VLAN 20 - Engineering.

b) Were all access ports on **S3** assigned to the correct VLANs? If not, list the missing or incorrect port assignments.
(0.5 mark)

The only access port in S3 is not assigned. Missing access port is g1/0/7, which should have been assigned to VLAN 10.

c) Were there any missing or unnamed VLANs on the VLAN database of **S4**? If so, list them.
(0.5 mark)

There was 1 unnamed VLAN in S4. The VLAN is VLAN 10 - R&D.

d) Were all access ports on **S4** assigned to the correct VLANs? If not, list the missing or incorrect port assignments.
(0.5 mark)

The only access port in S3 has been incorrectly assigned. Assigned access port is g1/0/24, and should have been assigned to VLAN 20, rather than VLAN 10.

e) Based on **Lab SU-6a** topology diagram, which port(s) on **S3** should operate in switchport mode trunk?
(1 marks)

Both the g1/0/11 (Connected to R1) and g1/0/5 (Connected to S4) should operate in switchport mode trunk.

f) Based on **Lab SU-6a** topology diagram, which port(s) on **S4** should operate in switchport mode trunk?
(0.5 mark)

The g1/0/5 (Connected to S3) should operate in switchport mode trunk.

Q3. Use the table to list the configuration errors you found in **Lab SU-6a**. For each error, specify the device(s) you found it on, a short description of the error, troubleshooting command(s) that helped you find it, and the configuration command(s) you used to fix it.
(8 marks)

Device(s)	Error Description	Troubleshooting Command(s)	Re-configuration Command(s)
Example: *S3*	*Missing VLAN 100*	*S3#show vlan brief*	*S3(config)#vlan 100* *S3(config-vlan)#name example*
R1	Wrong IP address for subint .10	R1#sh ip route	R1(config)#int g0/0/1.10 R1(config-subif)#ip add 192.168.10.1 255.255.255.0
R1	Wrong encapsulated VLAN for subint .1	R1#sh int g0/0/1.1	R1(config)#int g0/0/1.1 R1(config-subif)#encap dot1Q 1
S3	Missing VLAN 20	S3#sh vlan brief	S3(config)#vlan 20 S3(config-vlan)name Engineering
S3	Access port is not assigned	S3#sh vlan brief	S3(config)#int g1/0/7 S3(config-if)#sw mode acc S3(config-if)#sw acc vlan 10
S3	Trunking is not enabled	S3#sh int trunk	S3(config)#int g1/0/5 S3(config-if)#sw mode trunk
S3,S4	Management Interface is not up	S3#show ip int brief S4#show ip int brief	S3(config)#int vlan 1 S3(config-if)#no shutdown (Simmilar commands for S4)
S4	Wrong VLAN Name	S4#sh vlan brief	S4(config)#vlan 10 S4(config-vlan)#name R&D
S4	Access port's assignment is wrong	S4#sh vlan brief	S4(config)#int g1/0/24 S4(config-if)#sw acc vlan 20

Note: the re-configuration commands must display device name and configuration mode.

Section 3: Sample Mid-Sem Skills Assessment C – Topology Analysis (15 marks)

When tasked to build a network end to end, you should first analyse the topology diagram, addressing tables, and other relevant specifications to understand basic network configuration requirements. In this section, you must refer to the information on **Sample Mid-Sem Skills Assessment C** and discuss configuration requirements with your group. The questions below will help guide the topology analysis discussion.

Note: the topology analysis group discussion should be carried out before configuring the network.

Q1. Refer to **Sample Mid-Sem Skills Assessment C** and answer the following questions regarding VLANs, VLAN membership and 802.1q trunking requirements.

a) How many VLANs must be configured on **Lakers**? If any, list the required VLANs specifying VLAN ID and name.
(1 mark)

2 VLANs must be configured. It is VLAN 55 - Coaches and VLAN 350 - Management.

b) How many VLANs must be configured on **Bulls**? If any, list the required VLANs specifying VLAN ID and name.
(1 mark)

2 VLANs must be configured. It is VLAN 55 - Coaches and VLAN 350 - Management.

c) How many access ports must be configured on **Lakers**? If any, list the required access ports specifying port ID and VLAN membership.
(1 mark)

No access ports must be configured.

d) How many access ports must be configured on **Bulls**? If any, list the required access ports specifying port ID and VLAN membership.
(1 mark)

4 access ports must be configured. These are g1/0/7 - 10, which are /7, /8, /9 and /10, all assigned to VLAN 55 - Coaches.

e) How many 802.1q trunks must be configured on **Lakers**? If any, list the required trunks specifying port ID and switchport mode.
(2 marks)

2 802.1q trunks must be configured. The first one is from g1/0/11 (to NBA router) and the second one is from g1/0/5 (to Bulls switch). Both are using switchport mode trunk.

f) How many 802.1q trunks must be configured on **Bulls**? If any, list the required trunks specifying port ID and switchport mode.
(1 mark)

1 802.1q trunk must be configured. It is from g1/0/5 (to Lakers switch) or else an inconsistent port error will appear.

Q2. Refer to **Sample Mid-Sem Skills Assessment C** and answer the following questions regarding inter-VLAN routing requirements.

a) How many sub-interfaces, if any, must be configured on **NBA**?
(1 mark)

There must be 2 subinterfaces, one for VLAN 55 and the other for VLAN 350.

b) Use the table to list all interfaces and sub-interfaces that must be configured on **NBA**. For each, specify interface ID, IP address, subnet mask, and 802.1q ID when applicable.
(3 marks)

Interface ID	**IP address**	**Subnet Mask**	**802.1q ID**
Example: *Loopback 10*	*115.23.10.100*	*255.255.255.240*	*Not applicable*
g0/0/1.55	153.8.223.253	255.255.240.0	55
g0/0/1.350	200.10.5.13	255.255.255.248	350
Loopback0	202.150.254.29	255.255.255.240	Not applicable

Note: you might not need to use all rows.

Q3. Refer to **Sample Mid-Sem Skills Assessment C** and answer the following questions regarding switch IP management requirements.

a) How many VLAN interfaces must be configured on **Lakers**? If any, list all required VLAN interfaces specifying interface ID, IP address and subnet mask.
(1 mark)

Only 1 VLAN interface must be configured. The VLAN interface is VLAN 350 - Management, IP address of 200.10.5.9, subnet mask of 255.255.255.248

b) How many VLAN interfaces must be configured on **Bulls**? If any, list all required VLAN interfaces specifying interface ID, IP address and subnet mask.
(1 mark)

Only 1 VLAN interface must be configured. The VLAN interface is VLAN 350 - Management, IP address of 200.10.5.10, subnet mask of 255.255.255.248

c) Must a default-gateway be configured on **Lakers**? If so, specify the default-gateway IP.
(0.5 mark)

Yes it does. The default-gateway IP should be 200.10.5.13

d) Must a default-gateway be configured on **Bulls**? If so, specify the default-gateway IP.
(0.5 mark)

Yes it does. The default-gateway IP should be 200.10.5.13

Q4. Refer to **Sample Mid-Sem Skills Assessment C** and answer the following questions regarding end-host IP configuration.

a) What IPv4 settings can be configured on PC-A?
(1 mark)

IP address: 153.8.209.254
Subnet Mask: 255.255.240.0
Default Gateway: 158.3.223.253

Section 4: Sample Mid-Sem Skills Assessment C – Configuration (20 marks)

Once you have a good understanding of the topology and configuration requirements, you can move on to build the network. For this, you must use Cisco CLI configuration commands on the switches and routers, as well as verification commands to validate the settings. In this section, you will be asked to specify the commands you used to complete **Sample Mid-Sem Skills Assessment C**.

Note: your answers must show CLI commands that include parameters specific to Sample Mid-Sem Skills Assessment C (i.e. generic command sets will not be considered correct answers).

Q1. Refer to **Sample Mid-Sem Skills Assessment C** and answer the following questions regarding global and remote management configuration.

a) Use the table to list the command(s) used to configure global settings and remote management on each device.
(4 marks)

Setting	**NBA**	**Lakers**	**Bulls**
Device Hostname	hostname NBA	hostname Lakers	hostname Bulls
Banner MOTD	banner motd #this is NBA router#	banner motd #this is Lakers switch#	banner motd #this is Bulls switch#
Disable Domain Lookup	no ip domain-lookup	no ip domain-lookup	no ip domain-lookup
Synchronous Logging	line con 0 log sync	line con 0 log sync	line con 0 log sync
Disable Unused Ports	Not Required	Not Required	Not Required
SSH Management	ip domain-name ccna.lab crypto key gen rsa gen mod 1024 username midsem privilege 15 password skills line vty 0 4 transport input ssh login local	Not Required	Not Required

Note: if a setting is not required on a device, leave the cell blank or type "Not Required".

b) What command(s) can be used to verify that all unused ports have been disabled, and that all used ports are enabled?
(0.5 mark)

show ip interface brief

c) What command(s) can be used on **Lakers** or **Bulls** to test SSH remote access to **NBA**?
(0.5 mark)

ssh -l midsem 200.10.5.13

Q2. Refer to **Sample Mid-Sem Skills Assessment C** and answer the following questions regarding VLANs, VLAN membership and 802.1q trunking configuration.

a) Use the table to list the commands used on **Lakers** and **Bulls** to configure VLANs and VLAN membership when applicable.
(2 marks)

Switch Name	**VLANs Configuration**	**VLAN Membership Configuration**
Example: S3	*S3(config)#vlan 100* *S3(config-vlan)#name example1* *S3(config)#vlan 200* *S3(config-vlan)#name example2*	*Not applicable*
Lakers	Lakers(config)#vlan 55 Lakers(config-vlan)#name Coaches Lakers(config)#vlan 350 Lakers(config-vlan)#name Management	Not applicable
Bulls	Bulls(config)#vlan 55 Bulls(config-vlan)#name Coaches Bulls(config)#vlan 350 Bulls(config-vlan)#name Management	Bulls(config)#int G1/0/7 - 10 Bulls(config-if)#sw mode access Bulls(config-if)#sw access vlan 55

Note: if VLANs or VLAN membership configuration is not required on a device, leave the cell blank or type "Not Required".

b) What command(s) can be used to verify VLANs and VLAN membership configuration on **Lakers** and **Bulls**?
(0.5 mark)

show vlan brief

c) Use the table to list the commands used on **Lakers** and **Bulls** to configure 802.1q trunk interfaces.
(2 marks)

Switch Name	**Trunk Interface(s) Configuration**
Lakers	Lakers(config)#int g1/0/5 Lakers(config-if)#sw mode trunk Lakers(config)#int g1/0/11 Lakers(config-if)#sw mode trunk
Bulls	Bulls(config)#int g1/0/5 Bulls(config-if)#sw mode trunk

d) What command(s) can be used to verify 802.1q trunking configuration on **Lakers** and **Bulls**?
(0.5 mark)

show int trunk

Q3. Refer to **Sample Mid-Sem Skills Assessment C** and answer the following questions regarding inter-VLAN routing configuration.

a) Use the table to list the commands used on **NBA** to configure interfaces, sub-interfaces and loopback interfaces.
(5 marks)

Interface ID	**Interface Configuration**
Example: *Loopback 100*	*R1(config)#interface loopback 100* *R1(config-if)description THIS IS AN EXAMPLE* *R1(config-if) ip address 115.23.10.10 255.255.128.0*
g0/0/1.55	NBA(config)#int g0/0/1.55 NBA(config-if)#encap dot1Q 55 NBA(config-if)#ip address 153.8.223.253 255.255.240.0
g0/0/1.350	NBA(config)#int g0/0/1.350 NBA(config-if)#encap dot1Q 350 NBA(config-if)#ip address 200.10.5.13 255.255.255.248
Loopback0	NBA(config)#int lo0 NBA(config-if)#ip address 202.150.254.29 255.255.255.240

Note: you might not need to use all rows.

b) What command(s) can be used to verify Inter-VLAN routing configuration on **NBA**?
(1 mark)

show ip route

Q4. Refer to **Sample Mid-Sem Skills Assessment C** and answer the following questions regarding switch management IP settings configuration.

a) Use the table to list the commands used on **Lakers** and **Bulls** to configure management IP settings.
(2 marks)

Switch Name	**Management IP Configuration**
Lakers	Lakers(config)#int vlan 350 Lakers(config)#ip address 200.10.5.9 255.255.255.248
Bulls	Bulls(config)#int vlan 350 Bulls(config)#ip address 200.10.5.10 255.255.255.248

b) What command(s) can be used to verify management IP settings on **Lakers** and **Bulls**?
(0.5 mark)

show ip int brief

Q5. Refer to **Sample Mid-Sem Skills Assessment C** and answer the following questions regarding switchport port-security configuration.

a) Use the table to list the command(s) used on **Lakers** and **Bulls** to configure switchport port-security.
(1 mark)

Switch Name	**Port-Security Configuration**
Lakers	Not Required
Bulls	Bulls(config)#int range g1/0/7 - 10 Bulls(config-if-range)#sw port-security Bulls(config-if-range)#sw port-security max 3 Bulls(config-if-range)#sw port-security mac-address sticky

Note: if port-security is not required on a device, leave the cell blank or type "Not Required".

b) What command(s) can be used to verify switchport port-security settings on **Lakers** and **Bulls**?
(0.5 mark)

show port-security

Section 5: Sample Mid-Sem Skills Assessment C – Troubleshooting (15 marks)

After building a network, you should validate that the network is fully functional and that it meets all specifications. For this, you can use Cisco CLI **show** commands to validate the settings on switches and routers, as well as **ping** commands to test connectivity from each device to all other devices (including a test PC). This process is known as **troubleshooting** and will allow you to detect and fix configuration errors. In this section, you will find **show** outputs and **ping** results based on **Sample Mid-Sem Skills Assessment C**. Discuss this troubleshooting information with your group to detect configuration errors and specify the commands that must be used to fix them.

Q1. Refer to **Sample Mid-Sem Skills Assessment C** and answer the following questions regarding physical topology troubleshooting.

a) Based on the **show ip interface brief** outputs, are all interfaces in the correct status? If not, use the table to list the error(s). For each error, specify the configuration command(s) that must be used to fix it.
(1 mark)

Note: for this question, assume all required cables between the devices are in place.

```
NBA#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0/0   unassigned      YES unset  administratively down down
GigabitEthernet0/0/1   unassigned      YES unset  administratively down down
Serial0/1/0            unassigned      YES unset  administratively down down
Serial0/1/1            unassigned      YES unset  administratively down down
GigabitEthernet0       unassigned      YES unset  administratively down down
```

```
Lakers#show ip interface brief
Any interface listed with OK? value "NO" does not have a valid configuration

Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      YES unset  administratively down down
Vlan55                 153.8.208.1     YES manual down                  down
Vlan350                200.10.5.9      YES manual up                    up
GigabitEthernet0/0     unassigned      NO  unset  down                  down
GigabitEthernet1/0/1   unassigned      YES unset  down                  down
GigabitEthernet1/0/2   unassigned      YES unset  down                  down
GigabitEthernet1/0/3   unassigned      YES unset  down                  down
GigabitEthernet1/0/4   unassigned      YES unset  down                  down
GigabitEthernet1/0/5   unassigned      YES unset  up                    up
GigabitEthernet1/0/6   unassigned      YES unset  down                  down
GigabitEthernet1/0/7   unassigned      YES unset  down                  down
GigabitEthernet1/0/8   unassigned      YES unset  down                  down
GigabitEthernet1/0/9   unassigned      YES unset  down                  down
GigabitEthernet1/0/10  unassigned      YES unset  down                  down
GigabitEthernet1/0/11  unassigned      YES unset  down                  down
GigabitEthernet1/0/12  unassigned      YES unset  down                  down
--More--
```

```
Bulls#show ip interface brief
Any interface listed with OK? value "NO" does not have a valid configuration

Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      YES unset  administratively down down
Vlan350                200.10.5.10      YES manual up                    up
GigabitEthernet0/0     unassigned      NO  unset  down                  down
GigabitEthernet1/0/1   unassigned      YES unset  down                  down
GigabitEthernet1/0/2   unassigned      YES unset  down                  down
GigabitEthernet1/0/3   unassigned      YES unset  down                  down
GigabitEthernet1/0/4   unassigned      YES unset  down                  down
GigabitEthernet1/0/5   unassigned      YES unset  up                    up
GigabitEthernet1/0/6   unassigned      YES unset  down                  down
GigabitEthernet1/0/7   unassigned      YES unset  up                    up
GigabitEthernet1/0/8   unassigned      YES unset  down                  down
GigabitEthernet1/0/9   unassigned      YES unset  down                  down
GigabitEthernet1/0/10  unassigned      YES unset  down                  down
GigabitEthernet1/0/11  unassigned      YES unset  down                  down
GigabitEthernet1/0/12  unassigned      YES unset  down                  down
--More--
```

Error Description	**Re-configuration Command(s)**
NBA's g0/0/1 port is down.	NBA(config)#int g0/0/1 NBA(config-if)#no shutdown
Lakers's g1/0/11 port is down.	Lakers(config)#int g1/0/11 Lakers(config-if)#no shutdown

Note: you might not need to use all rows.

Q2. Refer to **Sample Mid-Sem Skills Assessment C** and answer the following questions regarding VLANs and VLAN membership troubleshooting.

a) Based on the **show vlan brief** output, is the VLANs and VLAN membership configuration correct on **Lakers**? If not, use the table to list the error(s). For each error, specify the configuration command(s) that must be used to fix it.
(1 mark)

```
Lakers#show vlan brief

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Gi1/0/1, Gi1/0/2, Gi1/0/3
                                                 Gi1/0/4, Gi1/0/6, Gi1/0/7
                                                 Gi1/0/8, Gi1/0/9, Gi1/0/10
                                                 Gi1/0/11, Gi1/0/12, Gi1/0/13
                                                 Gi1/0/14, Gi1/0/15, Gi1/0/16
                                                 Gi1/0/17, Gi1/0/18, Gi1/0/19
                                                 Gi1/0/20, Gi1/0/21, Gi1/0/22
                                                 Gi1/0/23, Gi1/0/24, Gi1/1/1
                                                 Gi1/1/2, Gi1/1/3, Gi1/1/4
350  Management                        active
1002 fddi-default                      act/unsup
1003 token-ring-default                act/unsup
1004 fddinet-default                   act/unsup
1005 trnet-default                     act/unsup
```

Error Description	**Re-configuration Command(s)**
VLAN 55 is missing.	Lakers(config)#vlan 55 Lakers(config-vlan)#name Coaches

Note: you might not need to use all rows.

Note: the re-configuration commands must display device name and configuration mode.

b) Based on the **show vlan brief** output, is the VLANs and VLAN membership configuration correct on **Bulls**? If not, use the table to list the error(s). For each error, specify the configuration command(s) that must be used to fix it.
(2 marks)

```
Bulls#show vlan brief

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Gi1/0/1, Gi1/0/2, Gi1/0/3
                                                Gi1/0/4, Gi1/0/6, Gi1/0/8
                                                Gi1/0/9, Gi1/0/10, Gi1/0/11
                                                Gi1/0/12, Gi1/0/13, Gi1/0/14
                                                Gi1/0/15, Gi1/0/16, Gi1/0/17
                                                Gi1/0/18, Gi1/0/19, Gi1/0/20
                                                Gi1/0/21, Gi1/0/22, Gi1/0/23
                                                Gi1/0/24, Gi1/1/1, Gi1/1/2
                                                Gi1/1/3, Gi1/1/4
55   Coaches                          active    Gi1/0/7
350  Management                       active
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
```

Error Description	**Re-configuration Command(s)**
VLAN 55 is not assigned to enough ports.	Bulls(config)#int range g1/0/7 - 10 Bulls(config-if-range)#sw mode access Bulls(config-if-range)#sw access vlan 55

Note: you might not need to use all rows.

Note: the re-configuration commands must display device name and configuration mode.

Q3. Refer to **Sample Mid-Sem Skills Assessment C** and answer the following questions regarding 802.1q trunking troubleshooting.

a) Based on the **show interfaces trunk** output, is 802.1q trunking configured following best practices on **Bulls**? If not, use the table to list the error(s). For each error, specify the configuration command(s) that must be used to fix it.
(2 marks)

```
Bulls#show interfaces trunk

Port        Mode             Encapsulation  Status        Native vlan
Gi1/0/5     desirable        802.1q         trunking      1

Port        Vlans allowed on trunk
Gi1/0/5     1-4094

Port        Vlans allowed and active in management domain
Gi1/0/5     1,55,350

Port        Vlans in spanning tree forwarding state and not pruned
Gi1/0/5     1,55,350
```

Error Description	**Re-configuration Command(s)**
Trunk mode is not static.	Bulls(config)#int g1/0/5 Bulls(config-if)#sw mode trunk

Note: you might not need to use all rows.

Note: the re-configuration commands must display device name and configuration mode.

b) Based on the **show interfaces trunk** output, is 802.1q trunking correctly configured on **Lakers**? If not, use the table to list the error(s). For each error, specify the configuration command(s) that must be used to fix it.
(2 marks)

Note: assume all required interfaces, on all devices, are enabled and in the up/up status.

```
Lakers#show interfaces trunk

Port        Mode             Encapsulation  Status        Native vlan
Gi1/0/5     on               802.1q         trunking      1

Port        Vlans allowed on trunk
Gi1/0/5     1-4094

Port        Vlans allowed and active in management domain
Gi1/0/5     1,55,350

Port        Vlans in spanning tree forwarding state and not pruned
Gi1/0/5     1,55,350
```

Error Description	**Re-configuration Command(s)**
Missing trunk link to the NBA router.	Lakers(config)#int g1/0/11 Lakers(config-if)#sw mode trunk

Note: you might not need to use all rows.

Note: the re-configuration commands must display device name and configuration mode.

Q4. Refer to **Sample Mid-Sem Skills Assessment C** and answer the following questions regarding inter-VLAN routing troubleshooting.

a) Based on the **show ip route** and **sh running-config** outputs, are all router interfaces, sub-interfaces and loopback interfaces configured correctly? If not, use the table to list the error(s). For each error, specify the configuration command(s) that must be used to fix it. (3 marks)

```
NBA#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR

Gateway of last resort is not set

      163.8.0.0/16 is variably subnetted, 2 subnets, 2 masks
C        163.8.208.0/20 is directly connected, GigabitEthernet0/0/1.55
L        163.8.223.253/32 is directly connected, GigabitEthernet0/0/1.55
      200.10.5.0/24 is variably subnetted, 2 subnets, 2 masks
C        200.10.5.8/29 is directly connected, GigabitEthernet0/0/1.350
L        200.10.5.13/32 is directly connected, GigabitEthernet0/0/1.350
      202.150.254.0/24 is variably subnetted, 2 subnets, 2 masks
C        202.150.254.16/28 is directly connected, Loopback0
L        202.150.254.29/32 is directly connected, Loopback0
```

```
NBA#sh running-config | section interface
interface Loopback0
 ip address 202.150.254.29 255.255.255.240
interface GigabitEthernet0/0/0
 no ip address
 shutdown
 negotiation auto
interface GigabitEthernet0/0/1
 no ip address
 negotiation auto
interface GigabitEthernet0/0/1.55
 encapsulation dot1Q 55
 ip address 163.8.223.253 255.255.240.0
interface GigabitEthernet0/0/1.350
 encapsulation dot1Q 351
 ip address 200.10.5.13 255.255.255.248
--More--
```

Error Description	Re-configuration Command(s)
Wrong IP address assigned for g0/0/1.55 subint.	NBA(config)#int g0/0/1.55 NBA(config-subif)#ip address 153.5.223.253 255.255.240.0

Note: you might not need to use all rows.

Note: the re-configuration commands must display device name and configuration mode.

Q5. Refer to **Sample Mid-Sem Skills Assessment C** and answer the following questions regarding switch management IP settings troubleshooting.

a) Based on the **show ip interface brief** output, is the VLAN interfaces configuration correct on **Lakers**? If not, use the table to list the error(s). For each error, specify the configuration command(s) that must be used to fix it.
(1 mark)

```
Lakers#show ip interface brief
Any interface listed with OK? value "NO" does not have a valid configuration

Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      YES unset  administratively down down
Vlan55                 153.8.208.1     YES manual down                  down
Vlan350                200.10.5.9      YES manual up                    up
GigabitEthernet0/0     unassigned      NO  unset  down                  down
GigabitEthernet1/0/1   unassigned      YES unset  down                  down
GigabitEthernet1/0/2   unassigned      YES unset  down                  down
GigabitEthernet1/0/3   unassigned      YES unset  down                  down
GigabitEthernet1/0/4   unassigned      YES unset  down                  down
GigabitEthernet1/0/5   unassigned      YES unset  up                    up
GigabitEthernet1/0/6   unassigned      YES unset  down                  down
GigabitEthernet1/0/7   unassigned      YES unset  down                  down
GigabitEthernet1/0/8   unassigned      YES unset  down                  down
GigabitEthernet1/0/9   unassigned      YES unset  down                  down
GigabitEthernet1/0/10  unassigned      YES unset  down                  down
GigabitEthernet1/0/11  unassigned      YES unset  down                  down
GigabitEthernet1/0/12  unassigned      YES unset  down                  down
--More--
```

Error Description	Re-configuration Command(s)
Interface VLAN 55 is not needed.	Lakers(config)#no int vlan 55

Note: you might not need to use all rows.

Note: the re-configuration commands must display device name and configuration mode.

Q6. When running **ping** tests from **Bulls**, this switch can ping **Lakers** and the Management IP configured on **NBA**. However, **Bulls** cannot ping any other IP on **NBA** nor the IP of **PC-A.**

a) What is the most likely configuration error causing the connectivity issue described?
(2 marks)

This could likely be an error to the VLAN 55 configuration, due to the fact that the pings cannot reach devices in VLAN 55 (PC-A), or communicate with other subint (g0/0/1.55, loopback0). The VLAN 55 could be missing or deleted.

b) What commands must be used on **Bulls** to fix this error?
(1 mark)

Bulls(config)#vlan 55
Bulls(config-vlan)#name Coaches

This will create VLAN 55 and hopefully patches the error.