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✎ ✓

>

The Final Exam

==**DISCLAIMER**====== ======================================

NOT SUBMITTING YOUR ANSWER WILL RESULT YOU IN GETTING ZERO IN THAT PARTICULAR QUESTION.
WE WON'T BE CHECKING SAVED ANSWERS.
== ===

THERE ARE 4 QUESTIONS (with multiple sub-questions) IN A SET.
THERE'S ONLY ONE PAGE

Points to note:

1. If you are uploading files,

- - - - Both of your **file name** and **description box** should be: "**ID Question Name**" (e.g. 14101031 2 Arif Shakil).

- - - - It can be a **PDF or Image** files. The **limit is 15MB per file**.

- - - - - - - - You can use Cam-scanner/Microsoft Word/Online converters/etc. to convert your images to PDF.

- - - - Click on **"Choose Files"** first

- - - - Write something in the **Description box** that comes **below the "Choose Files**✎ on.

- - - Then, click on **"Upload Files"**

- - - Mention in the answering text-field "**I have attached files to answer this question**" if you have uploaded any files. A faculty **may miss** if you don't mention.

2. All text fields and file upload fields are optional.

3. 15 Minutes extra time has been given just for you to submit your answers and upload files.

Question 1 (a)

3.0/3.0 points (graded)
Given, an IP of **159.118.124.12/16**. Find the network address.
Answer format: x.x.x.x/y where x is octet decimal value and y is subnet mask

> 159.118.0.0/16   ✔

What's the **last host** IP of the above network address that you found out.
Answer format: x.x.x.x/y where x is octet decimal value and y is subnet mask
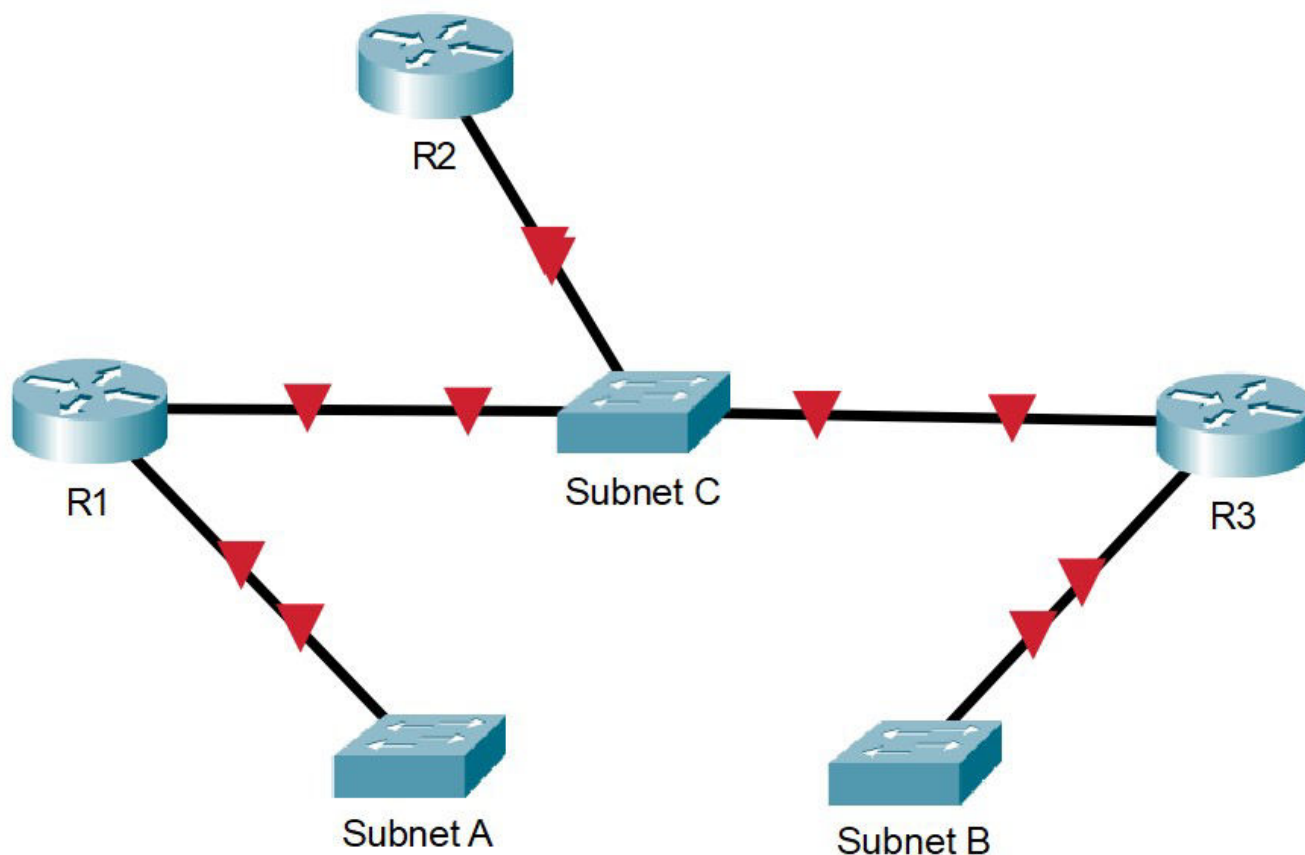
> 159.118.255.254/16   ✔

[Submit]   You have used 1 of 2 attempts

Question 1 (b)

6.0/6.0 points (graded)

Given, a network address of **216.44.0.0/17**. Using the above figure and VLSM, find the network address of the subnets A, B and C. Where **Subnet A has 2841 hosts, Subnet B has 591 hosts and Subnet C is the switched network interconnecting the routers**
Answer format: x.x.x.x/y where x is octet decimal value and y is subnet mask
Do not use space

Network Address of Subnet A

216.44.0.0/20 ✔

Network Address of Subnet B

216.44.16.0/22 ✔
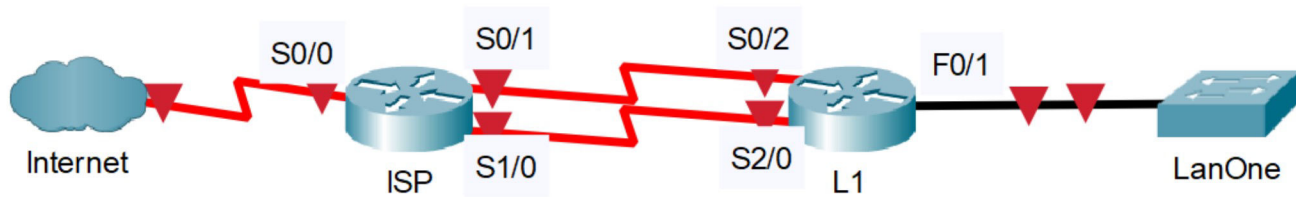
Network Address of Subnet C

216.44.20.0/29 ✔

Submit   You have used 1 of 2 attempts

Question 1 (c)

0.0/3.0 points (graded)

Given, the following information:
LanOne network address: **82.128.0.0/9**

Port	Address
S0/0	17.23.108.210
S0/1	166.18.137.92
S0/2	166.18.137.93
S1/0	14.129.9.110
S2/0	14.129.9.111
F0/1	31.57.160.240

The command to configure a static route is "ip route [network-address] [subnet-mask] [exit-interface] [ad]"

You are to configure a directly attached static route to LanOne. Write the appropriate [exit-interface] you would use in the above command.
*Write the exact port name/IP ONLY. i.e. 'S0/0' or '192.3.6.9'

F0/1   ✖ **Answer:** S0/1 **or** S1/0

What would be the [exit-interface] to configure a recursive floating static route for the route you set in (a)?
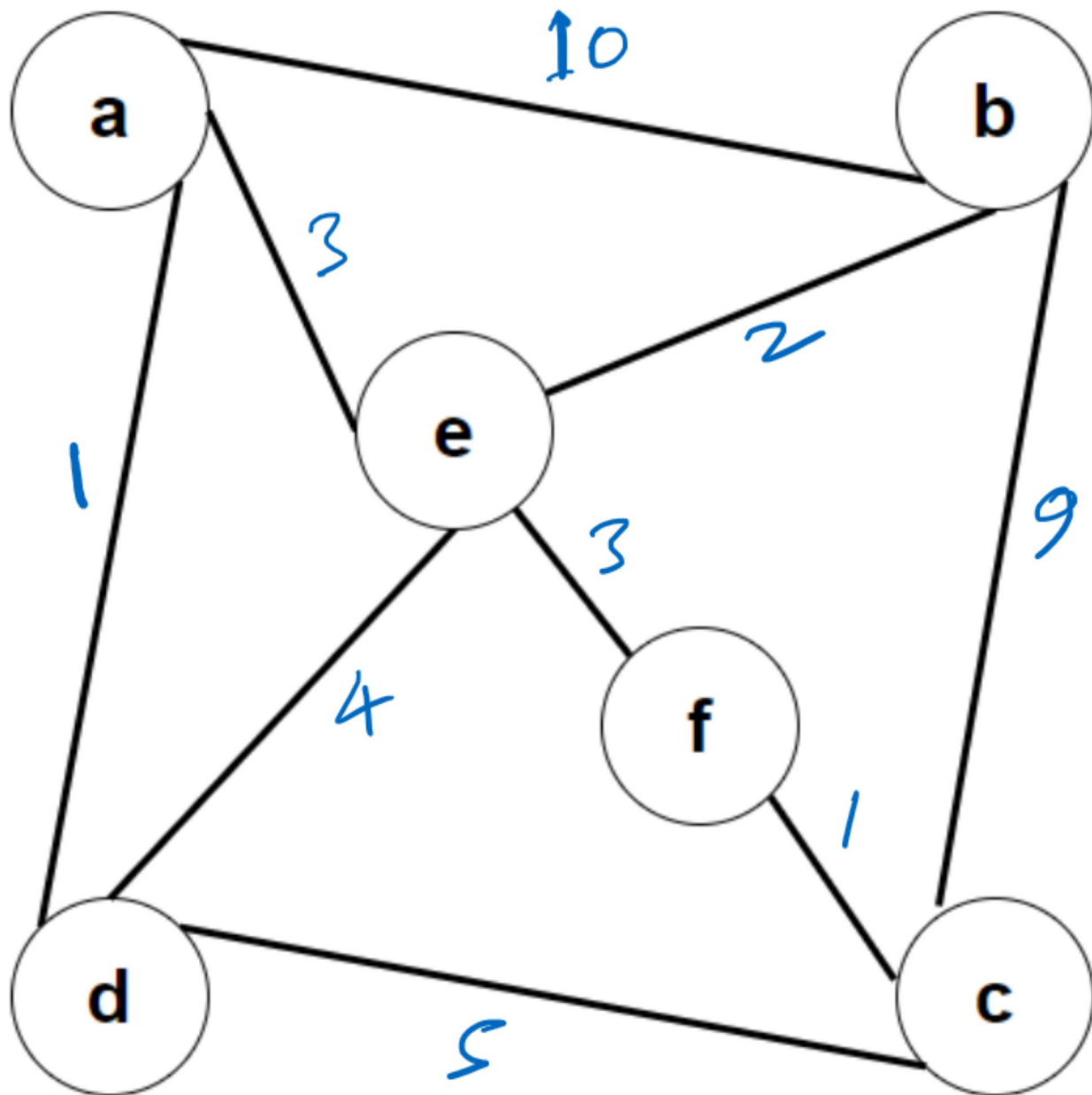*Write the exact port name/IP ONLY. i.e. 'S0/0' or '192.3.6.9'

F0/1   ❌ **Answer:** 14.129.9.111 **or** 166.18.137.93

Submit   You have used 1 of 1 attempt

ℹ️   Answers are displayed within the problem

	a	b	c	d	e	f
a	0	10	7	1	3	8
b	10	0	9	infinity	2	5
c	7	9	0	5	4	1
d	1	infinity	5	0	4	6
e	3	2	4	4	0	3
f	8	5	1	6	3	0

Find the shortest path and cost from **Router 'a'** to the first four routers you find the shortest path of. Use the scenario where all the routers are in sync with each other before updating their table.

[8 Marks]

Given, a IPv6 address in a binary string representation:
111111101000000000000000000000000000000000000000000000000000000001011100110111 0011011100110111001101110011011100110111001101110011011011001

Identify the type of address and state the usage of this address.

[4 marks]

ANSWER TO QUESTION 2

Status

You have completed this assignment. Review your grade and your assessment details.

▸ | Your Response due Oct 3, 2020 06:00 +06 (in 0 minutes) ✔ COMPLETE

Staff Grade ✔ COMPLETE

✏️

▸ Your Grade: 12 out of 12

The question for this section

> Answer to Question 2(a)

Your Response

```
a---d(1)
a---e(3)
a---e---b(5)
a--d--c(6)
```

The question for this section

> Answer to Question 2(b)

Your Response

> Its a link local unicast address which starts with FE80::/10 and its a private address in the network.
> The usage of this address are given bellow:
> 1. Its help to configure the address automatically.
> 2. Neighbour discovery can be done by this.
> 3. For router discovery we can use link local unicast address.

Your Upload

Assessments of Your Response

▾ **Question 3(a)**   8 / 8   POINTS

- STAFF GRADE - 8 POINTS

8 Points ❶

4 / 4 POINTS

▼ Question 2(b)

- STAFF GRADE - 4 POINTS
  ## 4 points ⓘ

(a) In both examples of the "taking turns" method, there is a disadvantage of a single point of failure. Explain in brief for both the process, how is it so? [4]

R7

192.168.1.1/24
00:00:0c:ab:cd:a1

192.168.50.1/24
00:00:0c:ab:cd:a2

C1

C3

SW2

SW4

192.168.1.11/16
00:00:0c:ab:cd:c1

C2

192.168.50.50/24
00:00:0c:ab:cd:c3

192.168.1.12/24
00:00:0c:ab:cd:c2
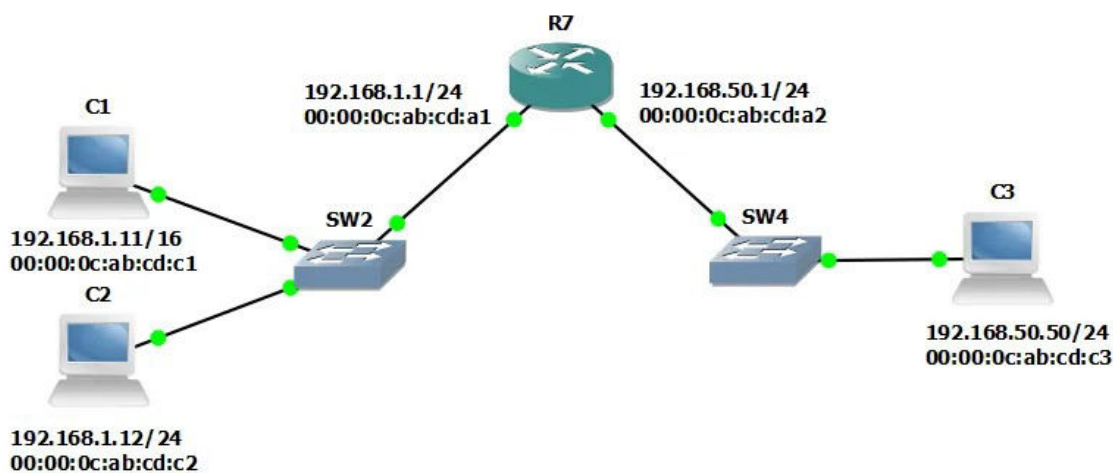
(b)Refer to the figure above, C1 pings C2. To create the ping packet C1 requires the destination mac address, which mac address shall it put in and explain how and where will it get it from? [4]

```
SW1#show mac-address-table dynamic
        Mac Address Table
--------------------------------------------
Vlan    Mac Address       Type      Ports
----    -----------       ----      -----
   1    aaaa.aaaa.aaaa    DYNAMIC   Fa0/1
   1    bbbb.bbbb.bbbb    DYNAMIC   Fa0/1
   1    cccc.cccc.cccc    DYNAMIC   Fa0/2
   1    dddd.dddd.dddd    DYNAMIC   Fa0/3
```

(c)(i) Refer to the above figure, when this switch SW1 receives a frame with a source mac address of abcd.abcd.abcd.abcd and the destination mac address of dddd.dddd.dddd, what will it do next? [2]

(c)(ii)What is the most common topology used in Ethernet? Why is Ethernet so popular? [2]

ANSWER TO QUESTION 3

Status

You have completed this assignment. Review your grade and your assessment details.

▸ | **Your Response** due Oct 3, 2020 06:00 +06 (in 0 minutes)   ✔ COMPLETE

  | **Staff Grade**   ✔   COMPLETE

▾ **Your Grade:**   12 out of 12

The question for this section

> Answer to Question 3(a)

Your Response

> For polling, the master node takes the frame from others by round robin way.so, if the
> master node fails the whole system will fail.that is why there is single point failure.
> For token passing, the token passed in a circular way to each node.whoever have the token
> can transmit data.so, if the token fails /loses then the whole system will fail.so, there is
> single point failure also.

The question for this section

> Answer to Question 3(b)

Your Response

> C1 shall put this address 00:00:0c:ab:cd:c2 as the destination MAC address.This MAC   ✎

address will be collected from the SW2 switch table.if it is not found on the table then an ARP packet will be broadcasted to this LAN to find this MAC address.then the table will be updated and will include this MAC address.

The question for this section

> Answer to Question 3(c)(i)

Your Response

The switch will update its table by the port number and the source MAC address abcd.abcd.abcd.abcd .and then it will find the destination port number by the destination MAC address dddd.dddd.dddd on its table.if it does not find then it will broadcast a ARP packet to others.

The question for this section

> Answer to Question 3(c)(ii)

Your Response

Star topology is the most common topology used in Ethernet.because it uses switch in the center and the nodes will not collide with each other.
Ethernet is so popular because of it is cheap ,simple and data transmission is fast.

Your Upload

Assessments of Your Response

▼ **Question 3(a)**   4 / 4   POINTS

● STAFF GRADE - 4 POINTS
  4 points ❶

✎

▼ **Question 3(b)**   4 / 4 POINTS

- STAFF GRADE - 4 POINTS
  4 points ❶

▼ **Question 3(c)(i)**   2 / 2 POINTS

- STAFF GRADE - 2 POINTS
  2 points ❶

▼ **Question 3(c)(ii)**   2 / 2 POINTS

- STAFF GRADE - 2 POINTS
  2 points ❶

(a) What are the ways of discovering a wireless access point? [3]

(b) SMTP has a fixed port number of 25, why? Do all email servers have a port number of 25, explain briefly? [4]

ANSWER TO QUESTION 4(A&B)

Status

You have completed this assignment. Review your grade and your assessment details.

▸   Your Response due Oct 3, 2020 06:00 +06 (in 0 minutes) ✔ COMPLETE

✎

| Staff Grade | ✔ COMPLETE |

▾ Your Grade: 7 out of 7

The question for this section

> Answer to Question 4(a)

Your Response

> There are 2 ways of discovering a wireless access point which are given below:
> 1.Passive mode: Here all the AP advertises their services by broadcasting beacon frames containing the SSID
> . For examample. if I turn on phone's wifi option, then I will see some wifi's SSID which are accessable for all. I don't have to do anything to obtain the SSID.
>
> 2. Active mode: It's mainly use in organization to secure the access point. Here the access point
> is private and in order to connect with the access point, I must have to know the SSID. It's not
> visible to anybody unless we enter the SSID.

The question for this section

> Answer to Question 4(b)

Your Response

> SMTP has a fixed number of 25 because port number 25 defines transmitting emails from one mail
> server to another.
> Yes, all email servers have a port number of 25 because its the default transmission channel for communication between mail servers.

Your Upload

Assessments of Your Response

▼ **Question 4(a)**   3 / 3 POINTS

───

- STAFF GRADE - 3 POINTS

  3 points 🛈

▼ **Question 4(b)**   4 / 4 POINTS

───

- STAFF GRADE - 4 POINTS

  4 points 🛈

CSE421FQ4_NSC

0.0/5.0 points (graded)

✏️

Client A and Server B are communicating over a TCP connection. Client A started the three way handshake with the initial sequence number of 6548 . The Server B's initial sequence number is 430 . The window size of Client A is 452 bytes and the window size of Server B is 355 bytes. Using the third TCP handshake ack segment Client A sends the http GET request of the size 127 bytes. The Server B answers with 2 segments containing the requested data. The first segment size is 70 bytes and the second segment size is 54 bytes respectively. Client A receives only the first segment within the timer. Unfortunately the second segment did not reach Client A. Client A sends an acknowledgement segment. Assume that Client A uses Go Back N ARQ.

----(a) What is the sequence number of this first ack segment from Client A?

----(b) What will be the acknowledgment number of this first ack segment from Client A?
----(c) What will be the window size of this first ack segment from Client A?

Now Server B resends the second segment along with a third segment of 39 bytes and Client A receives them. Client A is able to process all three segments and send them to the upper application layer protocol. Then Client A immediately sends a cumulative acknowledge and termination request to the server.

----(d) What will be the acknowledgment number of this second ack segment?
----(e) And what is the window size of this second ack segment?

Finally the server will send an acknowledgement back to the client to accept the termination request.

All the following textboxes are for numerical inputs,so please answer with numbers only.
(a) sequence number of the first ack segment from Client A to Server B

> 500   ✖

ed

ıe above ack segment from Client A

335 ✖

Cor

(d) acknowledgment number of the 2nd ack segment from Client A to Server B

540 ✖

(e) rwnd size of the above 2nd ack segment from Client A

335 ✖

Submit   You have used 1 of 1 attempt

ⓘ   Answers are displayed within the problem

❮ Previous

Next ❯

‹ Previous   ☑   Next ›

FINAL EXAMINATION

FINAL EXAMINATION

FINAL EXAMINATION

🔖 Bookmark this page

==DISCLAIMER==
=
NOT SUBMITTING YOUR ANSWER WILL RESULT YOU IN GETTING ZERO IN THAT PARTICULAR QUESTION.
WE WILL NOT BE CHECKING SAVED ANSWERS.
==
=

THERE'S ONLY ONE PAGE FOR THE EXAM.

Points to note:

1. If you are on your phone, try giving the exam in landscape mode.
2. If you are uploading files,
- - - - File name should contain your student ID.
- - - - Write which question you are answering in the "file description".
- - - - It can be a **PDF or Image** file. The **limit is 15MB per file**.
- - - - - - - - - You can use Cam-scanner/Microsoft Word/Online converters/etc. to convert your images to PDF.
- - - - Click on **"Choose Files"** first
- - - - Write something in the **Description box** that comes **below the "Choose Files"** button.
- - - - Then, click on **"Upload Files"**
- - - - Mention in the answering text-field "**I have attached files to answer this question**" if you have uploaded any files. A faculty **may miss** if you don't mention.
- - - - **IF YOU CAN'T UPLOAD ON BUX, UPLOAD ON YOUR GOOGLE DRIVE AND SHARE WITH YOUR FACULTY (arif.shakil@bracu.ac.bd, skazi@bracu.ac.bd, seraj.mehnaz@bracu.ac.bd). Next, paste the link in the text of the answer.**
3. All text fields and file upload fields are optional.
4. 15 Minutes extra time has been given to submit your answers and upload files.

Unacceptable:
-> Plagiarized answers.
-> Email submissions.
-> Saved answers.
-> Screenshots as means to proof that you had a problem during the exam.
-> Answers not specific to the question asked.

HONOR CODE

0 point possible (ungraded)

A QUICK GUIDE TO THE DO'S AND DON'TS

The exam timer won't pause/stop once you start...

THE DO'S	THE DON'TS
▪ Submit your own work based on your own understanding.	▪ Do not search for the specific solutions to your questions on the internet.
▪ Report to the faculties about any suspected violation of the honor code that you are aware of.	▪ Do not use any online or offline tools or softwares to determine the answers to questions (calculators are allowed).
▪ Save your exam progress after each submission.	

- Keep a <mark>back-up internet connection</mark> in the form of mobile data.

- Keep your laptop/mobile phone in full charge in case of loadshedding.

- Keep your powerbank charged if required

- In case of extreme emergencies, don't panic and contact a faculty member via **DISCORD VOICE CHANNEL** (each of us will be available in a room). Any unexpected incident will be considered and taken care of.

- For joining the voice channel on Discord, wait if there's another student there.

- Finally, keep yourself relaxed and well hydrated. Take the exam as an opportunity to assess your own learnings and to identify the areas that needs improving. Good Luck!

- Do not <mark>share or discuss</mark> any of the questions and/or their solutions with anyone (online or offline).

- Do not log into <mark>any discussion platforms</mark> such as messenger, google meet etc. (except Discord voice channel) while you are taking the exam.

- Do not panic if loadshedding or internet disruptions occur. Keep back-up options.

- Everything will be alright.

BRAC UNIVERSITY STUDENT HONOR CODE

Submit

ⓘ
Show Answer

Question 1 - IP Addressing and VLSM

16.0/16.0 points (graded)

Question 1

Given, the following output is from the 'ipconfig' command given in your computer's command prompt.

```
Connection-specific DNS Suffix  . :
        Link-local IPv6 Address . . . . . : fe80::c52f:5dda:afb0:47cc%8
        IPv4 Address. . . . . . . . . . . : 146.71.112.138
        Subnet Mask . . . . . . . . . . . : 255.240.0.0
        Default Gateway . . . . . . . . . : 146.71.112.2
```

(a) Find the **network** address.
Answer format: x.x.x.x/y where x is octet decimal value and y is the prefix mask

IP

146.64.0.0 ✓ / 12 ✓

b) What's the first host address of above network address ?
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix mask
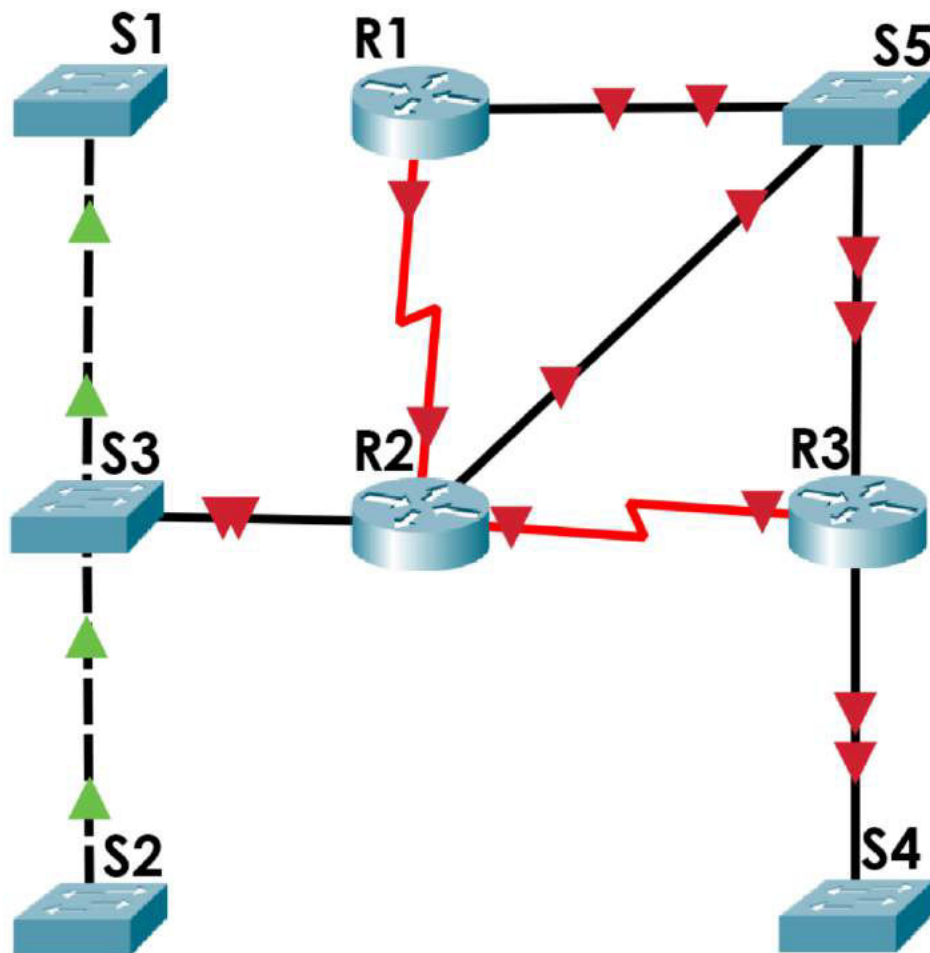Do not use space

IP

146.64.0.1 ✓ / 12 ✓

If the above image does not load, click here

Given, Switch S4 is connected to **3156 hosts** (which includes default gateway connection too), switch S1 is connected to **246 hosts** (which includes the default gateway connection too), S2is connected to **822 hosts** and finally, the Switch (S5) is connected to three routers. However, for the switched network (S5), you are instructed to keep room for 163 more routers for future use.
(c) Using the network address found in (a), apply VLSM to find the network address of the following three subnets

i) Network Address of the LAN connected to R3
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix.mask
Do not use space

IP   Prefix Mask

[146.64.0.0]   ✔   /   [20]   ✔

ii) Network Address of the LAN connected to R2
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix.mask
Do not use space

IP   Prefix Mask

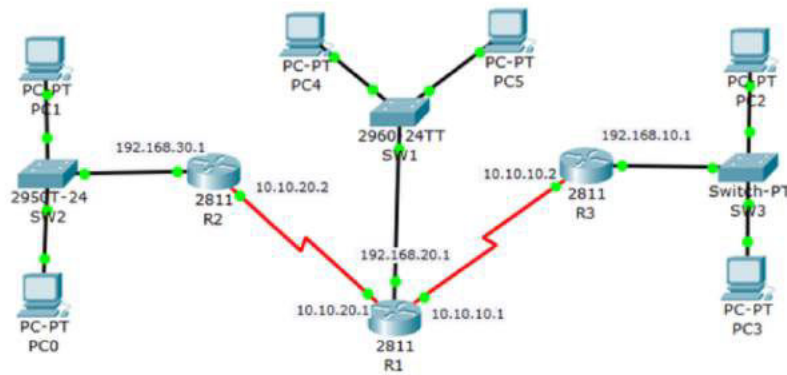[146.64.16.0]   ✔   /   [21]   ✔

iii) Network Address of the switched network
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix.mask
Do not use space

IP   Prefix Mask

[146.64.24.0]   ✔   /   [24]   ✔

[Submit]   You have used 1 of 2 attempts

ⓘ
Show Answer

Q. 2 (a) When dynamic routing would be preferred over static routing?

Refer to the above figure, a summarized static route has been configured in Router R1.

R1(config)# ip route 192.168.0.0 255.255.0.0 10.10.20.2

Will this command create any problem? Yes or No. Explain. [3 + 3 = 6 marks]

ANSWER TO QUESTION 2A - STATIC ROUTING SQ

Status

You have completed this assignment. Review your grade and your assessment details.

✔ COMPLETE

▸ 1   Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes)

✔ COMPLETE

2   Staff Grade

▾ Your Grade: 6 out of 6

The question for this section

> Answer to Question 2a - Static Routing SQ

Your Response

> Ans:2.a -
> i) Dynamic Routing would be preferred over Static Routing when the Network Topology contains a lot of Networks, say a 100 or even 1000 remote networks. At that time, it would be quite time-conuming for a network administrator to manually configure those 1000 networks to a router.
>
> ii) Yes, the summarized route will cause a problem. This is because suppose an incoming Datagram with Destination IP of 192.168.10.1 comes to the R1, according to R1's Routing Table, the IP will match with all the networks to 192.168.20.1 and also 192.168.30.1 because the subnet mask for the summarized route is /8 (only matches the first 8 bits). Hence, the original packet may not be transferred to the desired Destination Device (192.168.10.1). This will create a huge problem.

Assessments of Your Response

▾ Answer to Question 2a - Static Routing SQ   6 / 6 POINTS

STAFF GRADE - 6 POINTS
6 Point(s) ⓘ

Q. 2 (b) Refer to figure above, [3+3 = 6 marks]

i. Create a static route for the LAN1 network of Branch 2 router in Branch 3 router.

ii. If Branch 3 router has a connection to the ISP router, then create a default route in Branch 1 router.

ANSWER TO QUESTION 2B - STATIC ROUTING CONFIG

Status

You have completed this assignment. Review your grade and your assessment details.

✔ COMPLETE

▸ 1   Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes)

✔ COMPLETE

2   Staff Grade

▾ Your Grade: 6 out of 6

The question for this section

Answer to Question 2b - Static Routing Config

Your Response

Ans: 2.b -
i) Branch-3(config)# ip route 110.10.10.0 255.255.255.0 fa0/0 2.2.2.1

ii) Branch-1(config)# ip route 0.0.0.0 0.0.0.0 fa0/0 2.2.2.2

Assessments of Your Response

▾ Answer to Question 2a - Static Routing SQ   6 / 6 POINTS

STAFF GRADE - 6 POINTS
6 Point(s) ⓘ

Q. 3 (a) Why is SLAAC and Stateless DHCPv6 stateless? Does it cause a problem when it is stateless? [6 marks]

QUESTION 03A - IPV6

Status

You have completed this assignment. Review your grade and your assessment details.

✔ COMPLETE

▸ 1   Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes)

✔ COMPLETE

2   Staff Grade

▾ Your Grade: 3 out of 6

The question for this section

Your Response

Ans: 3.a -
SLAAC (Stateless Address Auto configuration) and Stateless DHCPv6 both are methods of assigning IPv6 addresses to different devices trying to configure their interfaces with IPv6 addresses. The term stateless means that when the services of an external Server (such as DHCPv6 Server for assigning IPv6 Addresses) are not required, at all or partly. When SLAAC is used, the RA (Router Advertisement) message contains all of the information of the IPv6 Address required by the Device, whereas while using Stateless DHCP, some of the networking information is taken from the RA Message from the router, but rest information are taken from the DHCPv6 Server. So, Stateless is being used in terms of Stateless DHCPv6 method cause the DHCP Server is completely not providing the networking information.
It will only cause a problem due to being stateless when the Default Router from which the RA messages were being received has been physically down. Otherwise, no problems would occur since all methods need the router to communicate with the DHCPv6 Server (Stateful/Stateless) or Not (Stateless).

Assessments of Your Response

▼ **Answer to Question 2a - Static Routing SQ**   3 / 6 POINTS
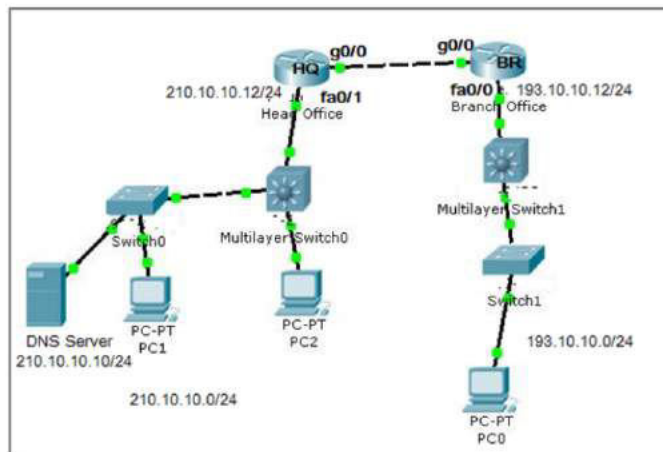

STAFF GRADE - 3 POINTS
3 Point(s) ⓘ

Q. 3(b) Refer to the topology and output shown in Figure below. HQ router has been configured to act as the DHCP server for the 210.10.10.0/24 and 193.10.10.0/24 networks. [3+3 marks]

i. Hosts from network 210.10.10.0/24 can not communicate with 193.10.10.0/24 network. why?

ii. PC0 cannot get any IP address via DHCP, why?


```
<output omitted>
ip dhcp excluded-address 210.10.10.12 210.10.10.12
ip dhcp excluded-address 193.10.10.12

ip dhcp pool HRPool
network 210.10.10.0 255.255.255.0
default-router 210.10.10.12
dns-server 210.10.10.10
!
interface FastEthernet 0/1
ip address 210.10.10.15 255.255.255.0
!
<output omitted>
```

QUESTION 03B - DHCPV4/NAT

Status

You have completed this assignment. Review your grade and your assessment details.

✔ COMPLETE

▸ 1   Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes)

✔ COMPLETE

2   Staff Grade

▾ Your Grade: 4 out of 6

The question for this section

> Question 03b - DHCPv4/NAT

Your Response

Ans: 3.b -
i) The reason why the hosts from 210.10.10.0/24 can not communicate with the shots from network 193.10.10.0/24 is because in HQ Router, only the Pool for Head office has been configured, but no DHCP Pool for the Branch Office was configured. As a result, no PCs or Hosts in Head Office know the Destination IP Addresses of the Hosts in Branch Office, and hence cannot communicate. Also, the HQ Routing Table does not know any LAN Addresses of the BR Router because of no WAN IPs being set in between their WAN Link.

ii) The reason why PC0 does not get any IP Address via the DHCP is because no DHCP Pools were created that consist of the network 193.10.10/24, for which no IPs have been provided to the Hosts connected to BR Router.

Assessments of Your Response

▾ Answer to Question 2a - Static Routing SQ   4 / 6 POINTS

STAFF GRADE - 4 POINTS
4 Point(s) ⓘ

Q. 4 (a) In which two case will a switch send a frame that it has received from a port to all other ports except the incoming one? [6 marks]

QUESTION 04A - DATA LINK SQ1

Status

You have completed this assignment. Review your grade and your assessment details.

✔ COMPLETE

▸ **1**   Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes)

✔ COMPLETE

2   Staff Grade

▾ Your Grade: 6 out of 6

The question for this section

> Question 04a - Data Link SQ1

Your Response

Ans: 4.a -
i) First case is when a switch receives an incoming packet from a host to another host but it has no entries listed on its Switch table. Then, it floods the Packet to all exiting interfaces except the interface through which it came.

ii) Second case can be when a host itself sends a Frame to all other Devices connected to the network, basically the Broadcast MAC Address. So, when the Switch sees the Destination MAC Address as a Broadcast Address, it again forwards the Frame to all interfaces except the one through which it received.

Assessments of Your Response

▾ Answer to Question 2a - Static Routing SQ   6 / 6 POINTS

STAFF GRADE - 6 POINTS

6 Point(s) ⓘ

Q. 4 (b) In CSMA/CD, why do collisions occur even though the devices are sensing the carrier or medium before transmitting and data? [6 marks]

QUESTION 04B - DATA LINK SQ2

Status

You have completed this assignment. Review your grade and your assessment details.

✔ COMPLETE

▸ 1   Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes)

✔ COMPLETE

2   Staff Grade

▾ Your Grade: 6 out of 6

The question for this section

> Question 04b - Data Link SQ2

Your Response

Ans: 4.b -
In CSMA/CD (Carrier Sense Multiple Access / Collision Detection) Protocol, even though the devices are sensing the medium while sending the frame, collisions occur. The reason is solely due to the channel propagation delay a broadcast channel. The propagation delay is basically the time taken for a signal to propagate from one of the ndoes to another in between any two nodes in a channel. If suppose a Node-A, while trying to sense a carrier/medium finds that the transmitting medium is free (ie no signal energy detected), it will start sending the frame. Meanwhile, another Node (say Node-B) at another time instance did not sense the signal already sent by Node-A, due to the propagation delay between them. Hence, it will start sending the Frame as well. At one point, both will collide and hence retransmit the frames at a later time, detecting the collisions. So, even through the devices are sensing the medium, due to the propagation delay between them, collisions would still occur. Hence, more propagationd delay would mean more chances of collisions in a broadcast channel.

Assessments of Your Response

▾ Answer to Question 2a - Static Routing SQ   6 / 6 POINTS

STAFF GRADE - 6 POINTS
6 Point(s) ⓘ

[OPTIONAL] ROUGH [OPTIONAL] WORK [OPTIONAL]

Status

This assignment has closed. One or more deadlines for this assignment have passed. You will receive an incomplete grade for this assignment.

⚠ INCOMPLETE

▸ 1   Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes)

NOT AVAILABLE

2   Staff Grade

▸ Your Grade: Not Started

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FINAL EXAMINATION

=====================================**DISCLAIMER**=================================

==========

NOT SUBMITTING **YOUR ANSWER WILL RESULT YOU IN GETTING** ZERO **IN THAT PARTICULAR QUESTION.**

WE WILL NOT BE CHECKING SAVED ANSWERS.

===

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THERE'S ONLY ONE PAGE FOR THE EXAM.

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2. If you are uploading files,

- - - File name should contain your student ID.

- - - Write which question you are answering in the "file description".

- - - It can be a **PDF or Image** file. The **limit is 15MB per file**.

- - - - - - - You can use Cam-scanner/Microsoft Word/Online converters/etc. to convert your images to PDF.

- - - Click on **"Choose Files"** first

- - - - Write something in the **Description box** that comes **below the "Choose Files"** button.

- - - - Then, click on **"Upload Files"**

- - - - Mention in the answering text-field "**I have attached files to answer this question**" if you have uploaded any files. A faculty **may miss** if you don't mention.

- - - - **IF YOU CAN'T UPLOAD ON BUX, UPLOAD ON YOUR GOOGLE DRIVE AND SHARE WITH YOUR FACULTY (arif.shakil@bracu.ac.bd, skazi@bracu.ac.bd, seraj.mehnaz@bracu.ac.bd). Next, paste the link in the text of the answer.**

3. All text fields and file upload fields are optional.

4. 15 Minutes extra time has been given to submit your answers and upload files.

Unacceptable:

-> Plagiarized answers.

-> Email submissions.

-> Saved answers.

-> Screenshots as means to proof that you had a problem during the exam.

-> Answers not specific to the question asked.

HONOR CODE

0 point possible (ungraded)

A QUICK GUIDE TO THE DO'S AND DON'TS

The exam timer won't pause/stop once you start...

THE DO'S   THE DON'TS

- Submit your own work based on your own understanding.

- Report to the faculties about any suspected violation of the honor code that you are aware of.

- Save your exam progress after each submission.

- Keep a back-up internet connection in the form of mobile data.

- Keep your laptop/mobile phone in full charge in case of loadshedding.

- Keep your powerbank charged if required

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- Do not use any online or offline tools or softwares to determine the answers to questions (calculators are allowed).

- Do not share or discuss any of the questions and/or their solutions with anyone (online or offline).

- Do not log into any discussion platforms such as messenger, google meet etc. (except Discord voice channel) while you are taking the exam.

- Do not panic if loadshedding or internet disruptions occur. Keep back-up options.

- Everything will be alright.

BRAC UNIVERSITY STUDENT HONOR CODE

Question 1 - IP Addressing and VLSM

9.6/16.0 points (graded)
Question 1

Given, the following output is from the 'ipconfig' command given in your computer's command prompt.

```
Connection-specific DNS Suffix  . :
        Link-local IPv6 Address . . . . . : fe80::c52f:5dda:afb0:47cc%8
        IPv4 Address. . . . . . . . . . . : 173.88.30.1
        Subnet Mask . . . . . . . . . . . : 255.255.0.0
        Default Gateway . . . . . . . . . : 173.88.30.2
```

(a) Find the **broadcast** address.
Answer format: x.x.x.x/y where x is octet decimal value and y is the prefix mask

IP

Prefix Mask

173.88.255.255   ✔ Answer: 173.88.255.255 /   16   ✔ Answer: 16

S1   **R1**   **S5**
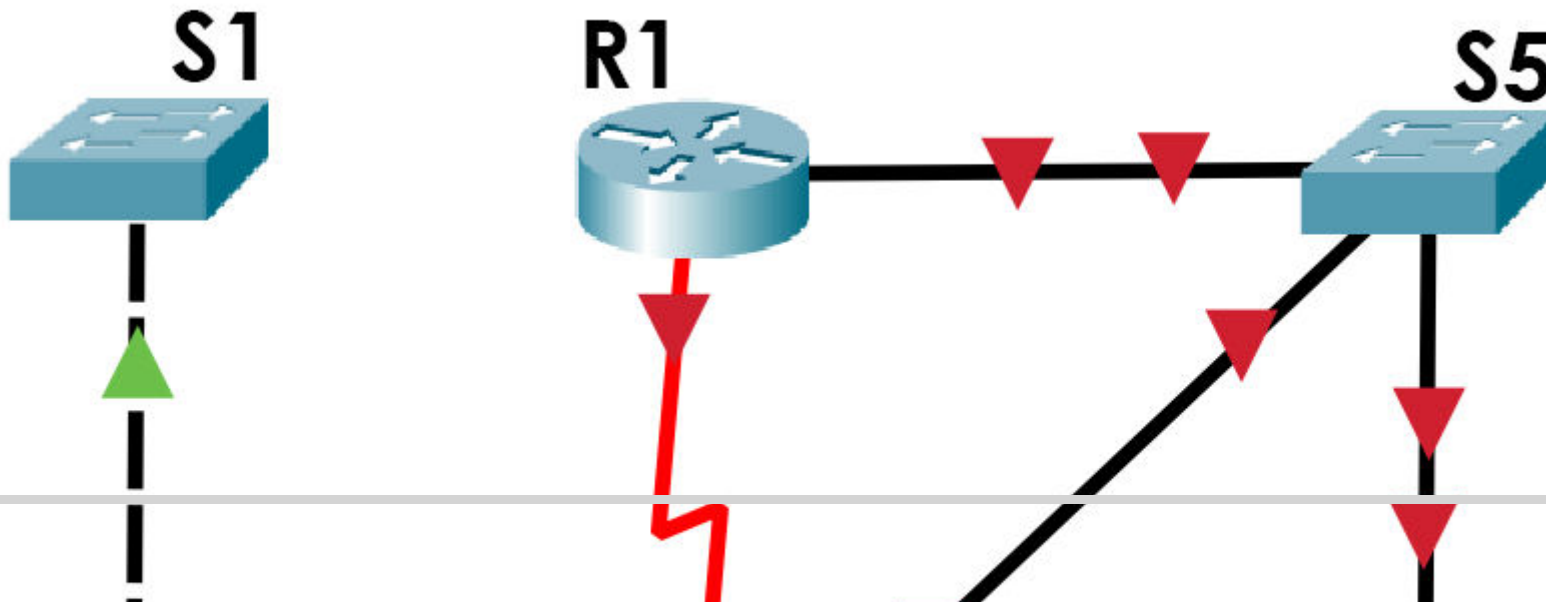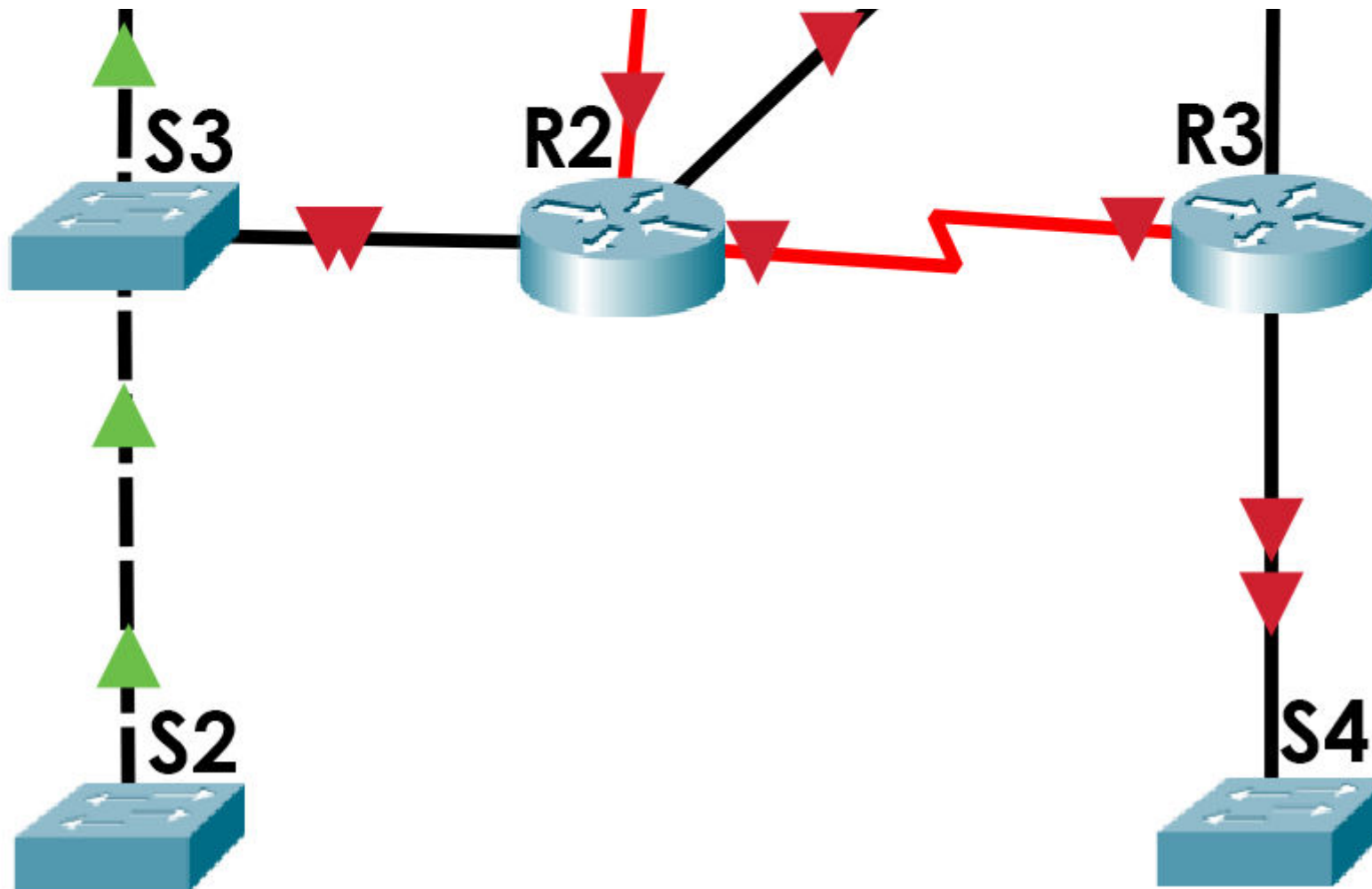
If the above image does not load, click here

Given, Switch S4 is connected to **3041 hosts** (which includes default gateway connection too), switch S1 is connected to **536 hosts** (which includes the default gateway connection too), S2is connected to **424 hosts** and finally, the Switch (S5) is connected to three routers only.
(b) Using the network address found in (a), apply VLSM to find the network address of the following three subnets

i) Network Address of the LAN connected to R3
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix mask

Answer format: x.x.x.x/y where x is octet decimal value and y is prefix mask
Do not use space

IP   **Prefix Mask**

| 173.88.0.0 | ✔ **Answer:** 173.88.0.0 / | 20 | ✔ **Answer:** 20 |

ii) Network Address of the LAN connected to R2
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix mask
Do not use space

IP   **Prefix Mask**

| 173.88.16.0 | **Answer:** 173.88.16.0 / | 22 | ✔ **Answer:** 22 |

iii) Network Address of the switched network
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix mask
Do not use space

IP   **Prefix Mask**

| 173.88.0.3 | ✘ **Answer:** 173.88.20.0 / | 29 | ✔ **Answer:** 29 |

c) What's the first host address of the LAN connected to R2 ?
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix mask
Do not use space

IP   **Prefix Mask**

| | ✘ **Answer:** 173.88.16.1 / | 22 | **Answer:** 22 |

Q. 2 (a) Why do we change the AD of a floating static route but not a summarized static route? Explain in brief. [6 marks]

ANSWER TO QUESTION 2A - STATIC ROUTING SQ

Status

You have completed this assignment. Review your grade and your assessment details.

▸   Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE

Staff Grade   ✔   COMPLETE

▾ Your Grade: 1 out of 6

The question for this section

Answer to Question 2a - Static Routing SQ

Your Response   ✏

a) We change the AD of a floating static route but not a summarized static route. Because in Summuraize there are many ips included. We give AD to floating static route only.

Assessments of Your Response

▼ **Answer to Question 2a - Static Routing SQ**

● STAFF GRADE - 1 POINT

1 Point(s) ⓘ

30.30.30.0/24

Internet
S0/0   S1/0
        G0/0
        .12
                                20.20.20.0/24
S2/0   S3/0
        .10   .11
        G0/1   G0/1
R1   R3
        172.16.32.0/24
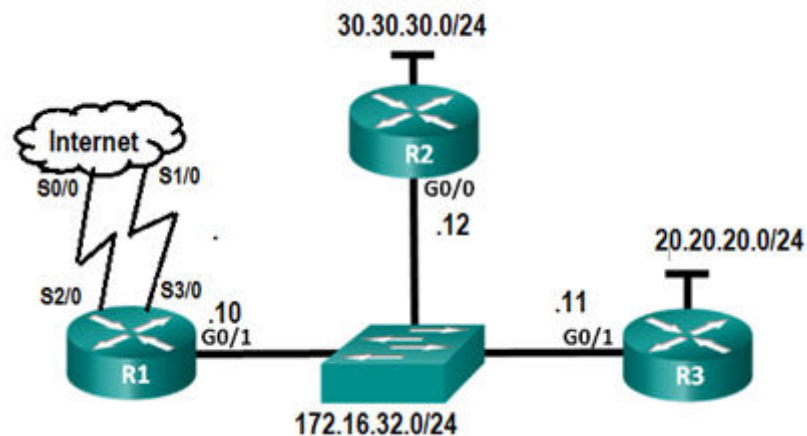
Q. 2 (b) Refer to figure above, [3+3 = 6 marks]

i. Create a static route for the network 20.20.20.0/24 in Router R1 and a default route in Router R3.

ii. Write the commands that will allow the network administrator to create a backup path in Router R1 to the Internet. What is this route called?

ANSWER TO QUESTION 2B - STATIC ROUTING CONFIG

Status

You have completed this assignment. Review your grade and your assessment details.

▶   Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE

Staff Grade ✔ COMPLETE

▼ Your Grade: 5 out of 6

The question for this section

> Answer to Question 2b - Static Routing Config

Your Response ✏

i) ip route 20.20.20.0 255.255.255.0 G0/1
ip route 0.0.0.0 0.0.0.0 G0/1

ii) ip route 0.0.0.0 0.0.0.0 s2/0
ip route 0.0.0.0 0.0.0.0 s3/0 5 this is the backup path as AD=5 where in the primary path AD=1
The route is called floating static route.

Assessments of Your Response

▼ **Answer to Question 2a - Static Routing SQ**   5 / 6 POINTS

- **STAFF GRADE - 5 POINTS**
  ## 5 Point(s) ⓘ

  STAFF COMMENTS
  Multiaccess network requires both int and next hop IP

Q. 3 (a) In SLAAC, a device receives no IPv6 address. This statement is true, then how will the device get it's IPv6 address, explain in brief? [6 marks]

QUESTION 03A - IPV6

Status   ✏

▸   Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE

Staff Grade   ✔   COMPLETE

▾ Your Grade: 4 out of 6

The question for this section

> Question 03a - IPv6

Your Response

> In SLAAC, the device will use router Sollicuitation to the router. The router will give an ack with IPV6 all nodes multicast as Router advertisement to the PC. Then the device would create IPv6 global unicast address. Then the device would detect if there any duplicate address of that address. This is how the device will get it's IPv6 address.

Assessments of Your Response

▾ Answer to Question 3a - Static Routing SQ

4 / 6   POINTS

✏️   ━

- **STAFF GRADE - 4 POINTS**

4 Point(s) ⓘ

STAFF COMMENTS
Create how??

Q. 3 (b) (i) In DHCPv4 the first and the 3rd packet are usually sent as broadcast, why? [3 marks]

(ii) A gaming organization has two servers. One server is hosting their website while the other hosts their game. How does the organization forward a client's request to the correct server? [3 marks]

QUESTION 03B - DHCPV4/NAT

Status

You have completed this assignment. Review your grade and your assessment details.

▸   Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE

Staff Grade ✔ COMPLETE

▾Your Grade: 6 out of 6

The question for this section

✏

> Question 03b - DHCPv4/NAT

Your Response

i) In DHCPv4, the first and the 3rd packet are usually sent as broadcast beacuse there might have DHCP server more than one and the PC does not know the DHCP server which means the IP of DHCP server is unknown to the PC or an end device.

ii) By port forwarding, the organization forward a client's request to the correct server in the given scenerio. Port forwarding on the organization's router allows the client to enter a port number and an IP address. All incoming connections with a matching port number will be forwarded to the internal computer with that address. In port forwarding , packet sent to the public IP address and port of a router can be forwarded to a private IP address and port in inside network. In the given secerio, the organization forward a client's request to the correct server by checking the port number in the last and this process is knbown as port forwarding.

Assessments of Your Response

▼ **Answer to Question 2a - Static Routing SQ**   6 / 6 POINTS

- STAFF GRADE - 6 POINTS

6 Point(s) ⓘ

Q. 4 (a) MAC addresses have two parts, what are they and why do MAC addresses have two parts? [6 marks]

✎

QUESTION 04A - DATA LINK SQ1

Status

You have completed this assignment. Review your grade and your assessment details.

▸ | Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE

Staff Grade ✔ COMPLETE

▾ Your Grade: 6 out of 6

The question for this section

> Question 04a - Data Link SQ1

Your Response

1. Organizationally Unique Identifier
This are represented by 3 octets and it is the identifiers of the organization which made that device. It will be different for different orgfanization.
2. Network Interface Control Specific
This will be represented by last 3 octets which will represent what type adapter it is.

✏

Assessments of Your Response

▼ Answer to Question 2a - Static Routing SQ

6 / 6 POINTS

- STAFF GRADE - 6 POINTS
  ## 6 Point(s) ℹ

Q. 4 (b) FDM is considered as being efficient during high load as compared to TDM. Yes or No? Explain why. [6 marks]

QUESTION 04B - DATA LINK SQ2

Status

You have completed this assignment. Review your grade and your assessment details.

▸ | Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE

Staff Grade ✔ COMPLETE

▾ Your Grade: 3 out of 6

The question for this section ✏

Question 04b - Data Link SQ2

Your Response

No.TDMA divides the time frames into time slots. Each slot is assigned to one of the nodes. Slots sizes are usually the same as the packet (frame) size of node and unused slots go idle even in the high load. However, in FDM the channel spectrum divided into frequency bands and each station assigned fixed frequency band. So even in high load, the FDM will divide the channels into frequency band and each node assigned fixed frequency band. It will work same as TDMA as unused transmission time in frequency bands go idle in FDM. Moreover, in both protocol, data transmit at average rate of R/N bps.

Assessments of Your Response

▼ **Answer to Question 2a - Static Routing SQ**   3 / 6   POINTS

- **STAFF GRADE - 3 POINTS**

3 Point(s) ❶

STAFF COMMENTS

Not clear why?

[OPTIONAL] ROUGH [OPTIONAL] WORK [OPTIONAL]

Status   ✏

This assignment has closed. One or more deadlines for this assignment have passed. You will receive an incomplete grade for this assignment.

▸ | Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ⚠ INCOMPLETE

Staff Grade   NOT AVAILABLE

▸ Your Grade: Not Started

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FINAL EXAMINATION

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HONOR CODE

0 point possible (ungraded)

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platforms such as messenger,
google meet etc. (except Discord
voice channel) while you are
taking the exam.

- Do not panic if loadshedding or
  internet disruptions occur. Keep
  back-up options.

- Everything will be alright.

BRAC UNIVERSITY STUDENT HONOR CODE

You agree to the following terms by attempting the exam.

On this exam, I will not cheat, use unfair means, join intentionally or unintentionally any online or offline group in which exam answers are posted or discussed, or engage in any behavior that would commonly be deemed to be academically unethical. I will immediately notify the course teacher of any such activity or online or offline groups that I become aware of. I acknowledge that I may be suspended or expelled from Brac University if I am found to have engaged in any academically unethical behavior.

I understand that a certain percentage of students will be randomly selected for a viva after the exam and asked about their exam answers and related information and that if called for a viva, that I must appear for the viva within a designated time frame. I understand and accept that the viva may be scheduled at any point in time after I submit my answers online. I may be contacted at the email address listed below for a viva. I understand that a failure to appear for the viva after being notified at the email address below will be considered as evidence of cheating. An inability to explain my exam answers during the viva may also be considered as evidence of cheating.

I consent to video/audio recording of these viva sessions. I further recognize that non-compliance with the above may lead to further disciplinary actions that I will be ready to accept without complaint.

NO need to click on "Submit". You agree to the above honor code by attempting the exam.

Submit

Question 1 - IP Addressing and VLSM ✏️

6.4/16.0 points (graded)
Question 1

Given, the following output is from the 'ipconfig' command given in your computer's command prompt.

```
Connection-specific DNS Suffix  . :
        Link-local IPv6 Address . . . . . : fe80::c52f:5dda:afb0:47cc%8
        IPv4 Address. . . . . . . . . . . : 82.230.180.31
        Subnet Mask . . . . . . . . . . . : 255.128.0.0
        Default Gateway . . . . . . . . . : 82.230.180.2
```

(a) Find the **network** address.
Answer format: x.x.x.x/y where x is octet decimal value and y is the prefix mask

IP

82.230.180.0   ✖

    /

Prefix Mask

9   ✔

Answer: 82.128.0.0   Answer: 9

b) What's the first host address of above network address ?
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix mask
Do not use space

IP

82.230.180.1   ✖

    /

Prefix Mask

9   ✔

Answer: 82.128.0.1   Answer: 9
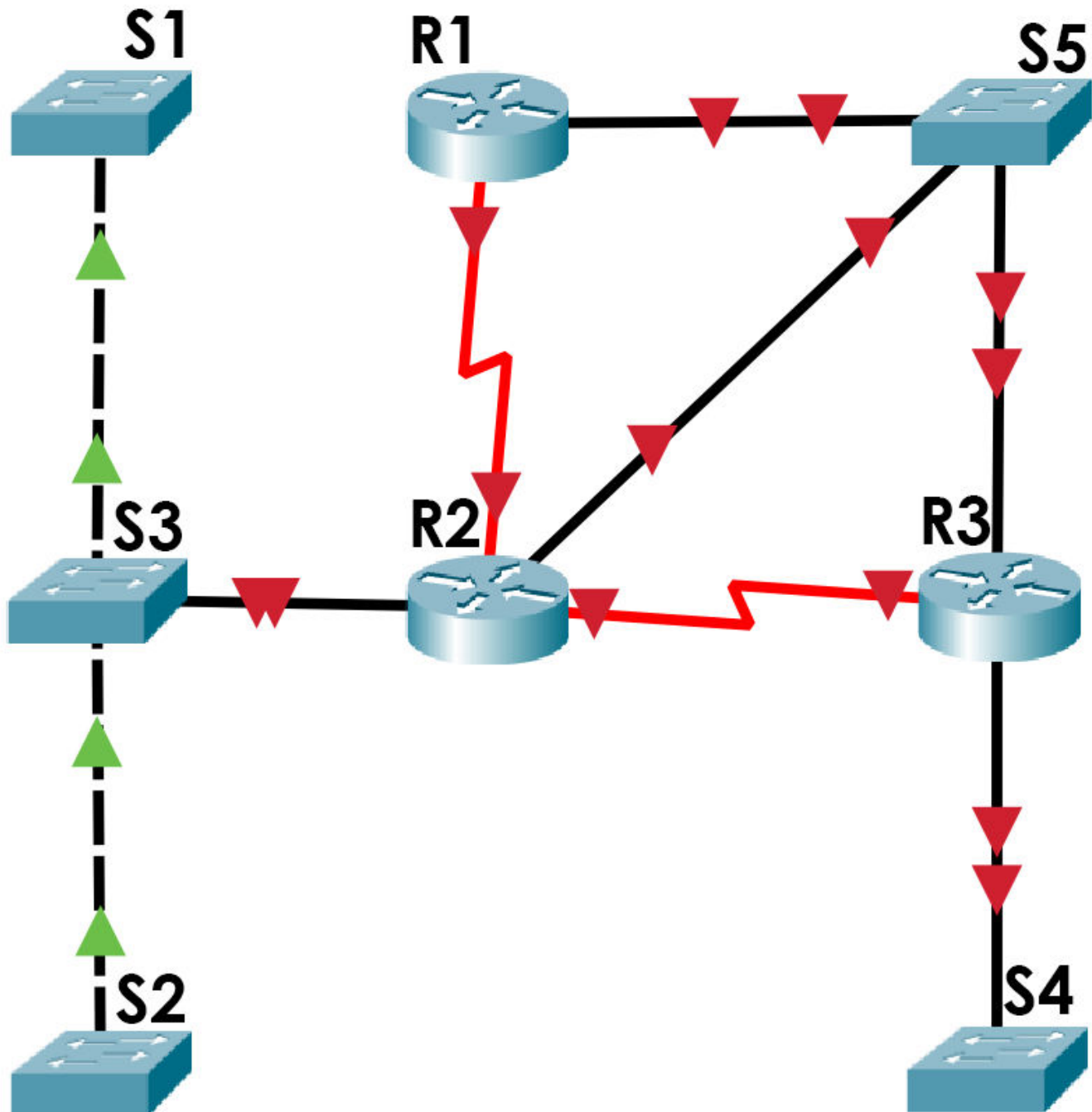
If the above image does not load, click here

Given, Switch S4 is connected to **3302 hosts** (which includes default gateway connection too), switch S1 is connected to **119 hosts** (which includes the default gateway connection too), S2is connected to **559 hosts** and finally, the Switch (S5) is connected to three routers. However, for the switched network (S5), you are instructed to keep room for 73 more routers for future use. (c) Using the network address found in (a), apply VLSM to find the network address of the following three subnets

i) Network Address of the LAN connected to R3
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix mask
Do not use space

IP   **Prefix Mask**

| 82.230.180.0 | ✖ | / | 20 | ✔ |

Answer: 82.128.0.0   **Answer: 20**

ii) Network Address of the LAN connected to R2
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix mask
Do not use space

IP   **Prefix Mask**

| 82.230.199.0 | ✖ | / | 29 | ✖ |

Answer: 82.128.16.0   **Answer: 22**

iii) Network Address of the switched network
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix mask
Do not use space

IP   **Prefix Mask**

| 82.230.198.128 | ✖ | / | 25 | ✔ |

Answer: 82.128.20.0   **Answer: 25**

| Submit | You have used 1 of 2 attempts

ⓘ   Answers are displayed within the problem
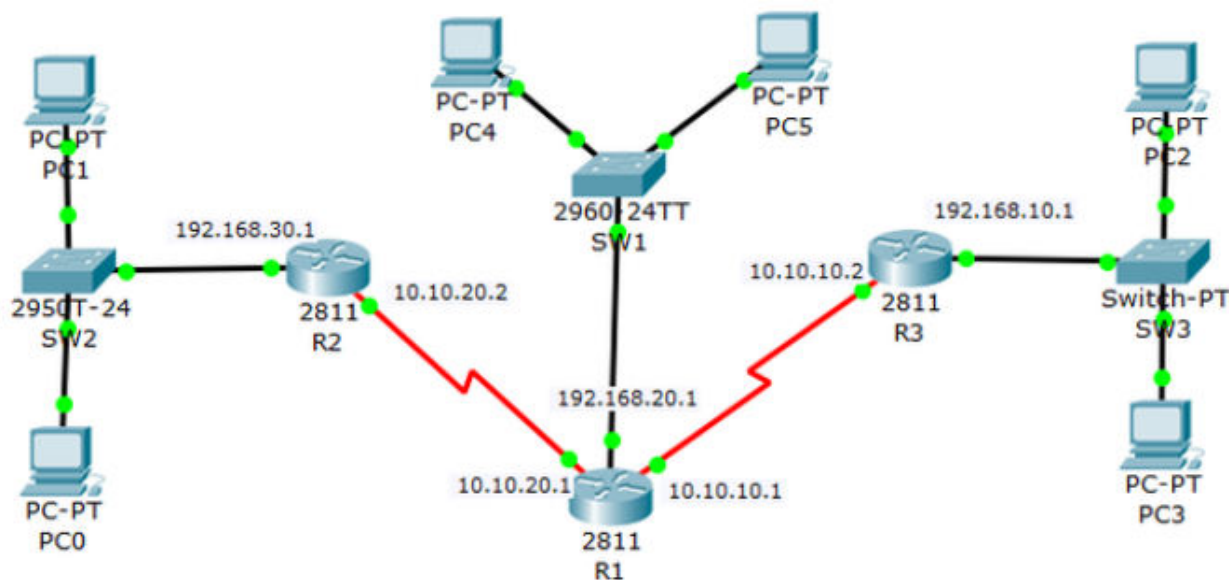
Q. 2 (a) When dynamic routing would be preferred over static routing?

Refer to the above figure, a summarized static route has been configured in Router R1.

R1(config)# ip route 192.168.0.0 255.255.0.0 10.10.20.2

Will this command create any problem? Yes or No. Explain. [3 + 3 = 6 marks]

ANSWER TO QUESTION 2A - STATIC ROUTING SQ

Status

You have completed this assignment. Review your grade and your assessment details.

▸ | Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE

Staff Grade ✔ COMPLETE

▾ Your Grade: 6 out of 6

The question for this section ✎

Answer to Question 2a - Static Routing SQ

Your Response

2.a) The static routing is best for small network implementation and star topologies. It is not as good for any other topologies. Whereas dynamic routing is best for a large network implementation. it is good for network topologies that consist of redundant links.

This command will create problem because whenever any packet to 192.168.30.1 or 192.168.20.1 or 192.168.10.1 send packet to router1 , router will accept this as a format of summarized ip and whenever router send packet , as 3 ip is in 3 LAN, Router send packet to one LAN that may can't recognize that packet as ip doesn't match. So packet will be dropped.

Assessments of Your Response

▼ Answer to Question 2a - Static Routing SQ   6 / 6   POINTS

● STAFF GRADE - 6 POINTS

6 Point(s) ⓘ

30.30.30.0/24

R2

G0/0
.12

20.20.20.0/24

Internet

S0/0   S1/0

S2/0   S3/0
         .10
         G0/1   .11
                       G0/1
R1   R3

172.16.32.0/24

Q. 2 (b) Refer to figure above, [3+3 = 6 marks]

i. Create a static route for the network 30.30.30.0/24 in Router R1 and a default route in Router R2.

✏

ii. Write the commands that will allow the network administrator to create a recursive backup path in Router R1 to the Internet. What is this route called?

ANSWER TO QUESTION 2B - STATIC ROUTING CONFIG

Status

You have completed this assignment. Review your grade and your assessment details.

▸ | Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE

| Staff Grade   ✔   COMPLETE

▾ Your Grade: 6 out of 6

The question for this section

> Answer to Question 2b - Static Routing Config

Your Response

b)i. ip route 30.30.30.0 255.255.255.0 g0/1 172.16.32.12
ip route 0.0.0.0 0.0.0.0 172.16.32.10

ii. ip route 0.0.0.0 0.0.0.0 [serial_interface] 5
this router is called isp router

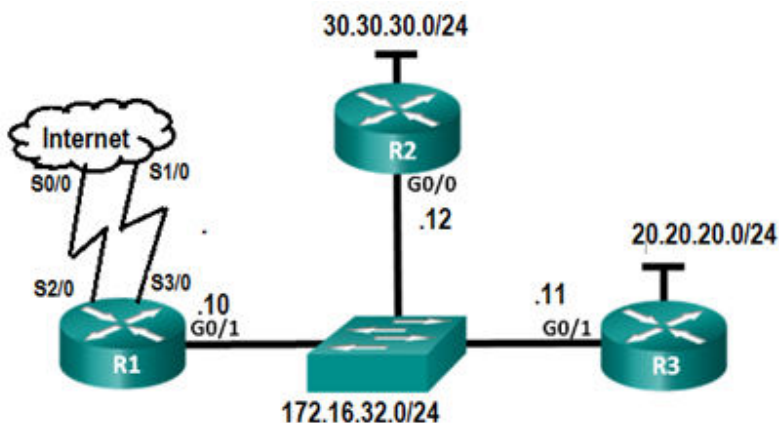**Assessments of Your Response**

▾ Answer to Question 2a - Static Routing SQ   6 / 6   POINTS

● STAFF GRADE - 6 POINTS

6 Point(s) ⓘ

✎

STAFF COMMENTS
ip route 0.0.0.0 0.0.0.0 172.16.32.10 g0/0 is missing

Q. 3 (a) IPv6 Address -- ::5:6:7::8

Expand the above IPv6 address in it's real format. Mention which rules have been followed. [6 marks]

QUESTION 03A - IPV6

Status

You have completed this assignment. Review your grade and your assessment details.

▸ | Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE

Staff Grade ✔ COMPLETE

▾ Your Grade: 6 out of 6

The question for this section

Question 03a - IPv6

Your Response

We can't expand the actual IPv6 address, because this format is illegal.
According to the rule 2(IPv6 representation),
any single, contiguous string of more 16 bit segment consisting of all zeros can be
represented once with a double colon.
But there are two colon in the given ip.
so length of two all zeros string is ambiguous.
So we can't represent it in real form as there can be 3 different combination possible.

✏

Assessments of Your Response

▼ **Answer to Question 2a - Static Routing SQ**　　　　　　6 / 6　POINTS
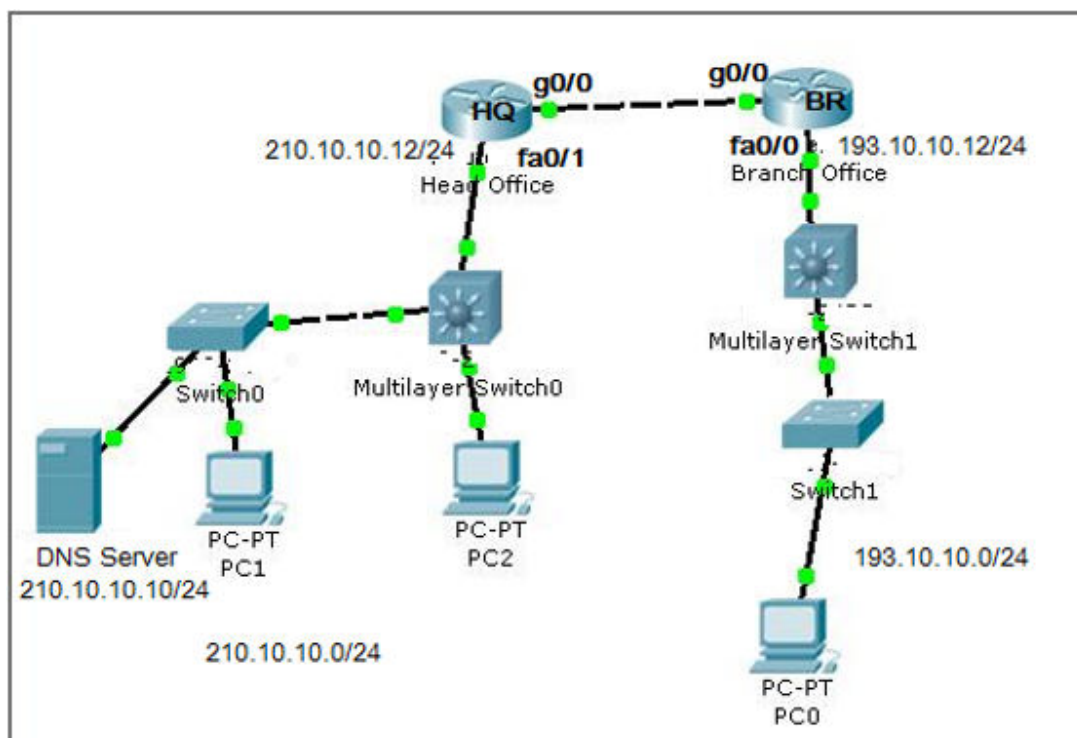

• STAFF GRADE - 6 POINTS

6 Point(s) ⓘ

Q. 3(b) Refer to the topology and output shown in Figure below. HQ router has been configured to act as the DHCP server for the 210.10.10.0/24 and 193.10.10.0/24 networks. [3+3 marks]

i. Hosts from network 210.10.10.0/24 can not communicate with 193.10.10.0/24 network. why?

ii. HQ router displays error message of address conflicts, why?

```
<output omitted>
ip dhcp excluded-address 210.10.10.12 210.10.10.12
ip dhcp excluded-address 193.10.10.12

ip dhcp pool HRPool
network 210.10.10.0 255.255.255.0
default-router 210.10.10.12
dns-server 210.10.10.10
!
interface FastEthernet 0/1
ip address 210.10.10.15 255.255.255.0
!
<output omitted>
```

QUESTION 03B - DHCPV4/NAT

Status

You have completed this assignment. Review your grade and your assessment details.

| ▸ | | Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE |

| | Staff Grade   ✔   COMPLETE |

▾Your Grade: 1 out of 6

The question for this section

> Question 03b - DHCPv4/NAT

Your Response

i) Hosts from network 210.10.10.0/24 can not communicate with 193.10.10.0/24 network. Because These 2 address are not directly connected. So we need to routing 1st statically or dynamically.

ii) Because here given excluded address range from same adress to same address lower address and higher address are same.

✏

Assessments of Your Response

▾ Answer to Question 2a - Static Routing SQ   1 / 6   POINTS

- **STAFF GRADE - 1 POINT**

  ### 1 Point(s) ⓘ

  STAFF COMMENTS
  DHCP relay not set. default router IP miss match. DNS address is not excluded.
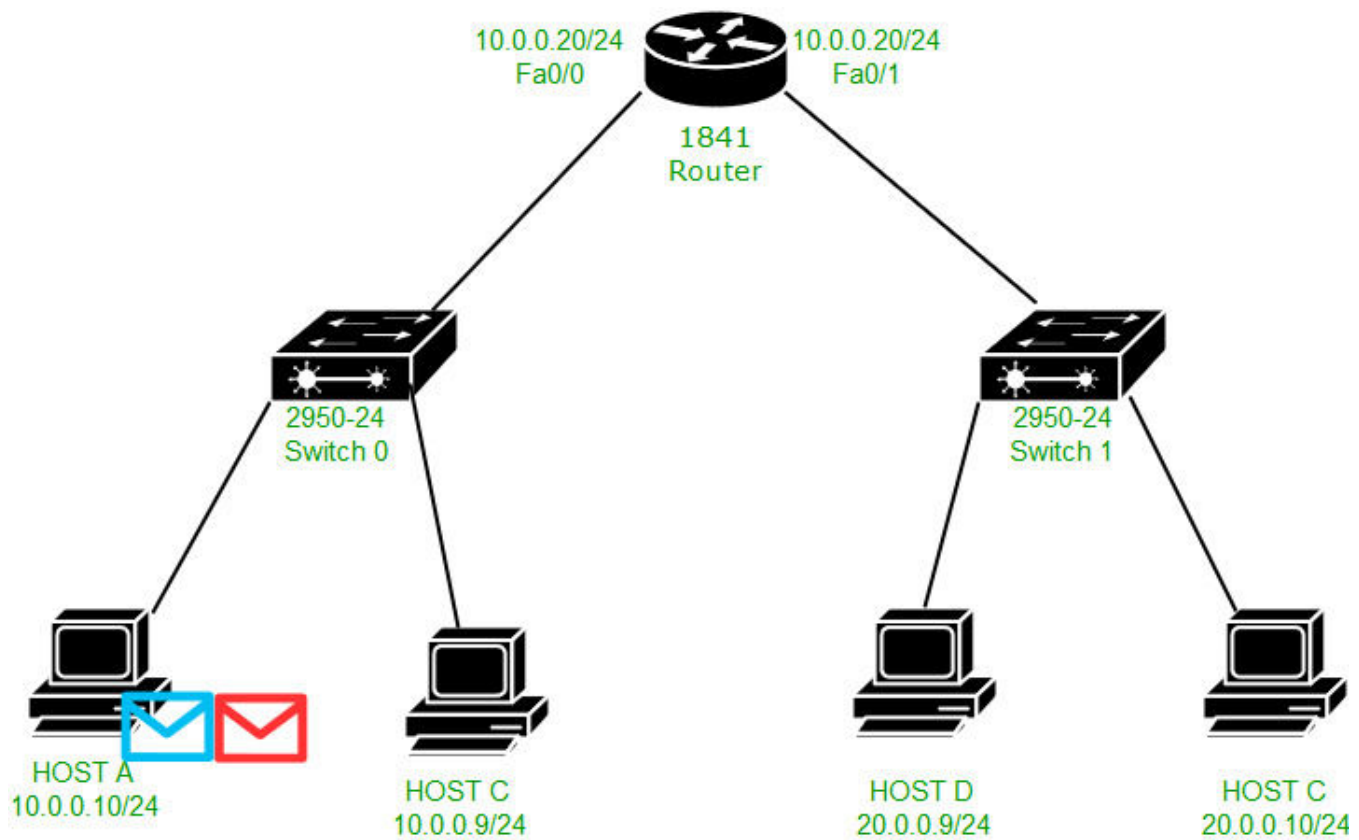
Click here if image does not load.

Q. 4 (a) Refer to the above image Host A wishes to ping Host D. So it creates a ping packet with the necessary source and destination IP and MAC addresses. What are the source and destination MAC addresses (just mention the device or device-port)? Do we need ARP here, if yes then for which MAC address? [3+3 marks]

✎

QUESTION 04A - DATA LINK SQ1

Status

You have completed this assignment. Review your grade and your assessment details.

▸ | Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE

Staff Grade ✔ COMPLETE

▾ Your Grade: 6 out of 6

The question for this section

> Question 04a - Data Link SQ1

Your Response

> 4) a) source MAC address ---- Host A MAC address
> Destination MAC Address ---- ff.ff.ff.ff.ff.ff
>
> Yes , we need ARP here , Because after broadcasting switch will broadcast request to Host C
> and the router. Host C declined request , But Router will accept as Router can find match with
> the destination Ip address via router's default gateway.
> But now we can't broadcast.
> ARP will have fa0/0 port of router ---- as a destination MAC address now and source ----
> remain same(Host A)
> Now , from router 2nd port it can recognize device and get respond and then
> Source MAC is ------ router port Fa0/1
> and send it to switch1.

Assessments of Your Response

▾ Answer to Question 2a - Static Routing SQ   6 / 6 POINTS

● STAFF GRADE - 6 POINTS   ✏

6 Point(s) ❶

Q. 4 (b) Why is medium access control necessary in the Data link layer? In CSMA/CD, which desired features of a multiple access protocol do we get? [3 + 3 = 6 marks]

QUESTION 04B - DATA LINK SQ2

Status

You have completed this assignment. Review your grade and your assessment details.

▸　　　　Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE

Staff Grade ✔ COMPLETE

▾Your Grade: 6 out of 6

The question for this section

> Question 04b - Data Link SQ2

Your Response

4)b) MAC is a data link layer reference model for data transmission. It is responsible for flow control and multiplexing for transmission medium. It controls the transmission of data packets via remotely shared channels. The main job of the MAC layer is to move the data from the network interface card of a network to a shared channel. The MAC layer along with data link control is responsible for the complete physical addressing of the data link layer.

In CSMA/CD, the desired features of a multiple access protocol do we get is
- carrier sensing
so less collision occurred or collision detected within a short period of time
so it reduced the channel wastage.

✏

Assessments of Your Response

▼ **Answer to Question 2a - Static Routing SQ**   6 / 6   POINTS

- STAFF GRADE - 6 POINTS
  ## 6 Point(s) 🛈

[OPTIONAL] ROUGH [OPTIONAL] WORK [OPTIONAL]

Status

This assignment has closed. One or more deadlines for this assignment have passed. You will receive an incomplete grade for this assignment.

| ▸ | Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ⚠ INCOMPLETE |

| Staff Grade   NOT AVAILABLE |

| ▸ Your Grade: Not Started |

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FINAL EXAMINATION

==**DISCLAIMER**======
=====================================

NOT SUBMITTING **YOUR ANSWER WILL RESULT YOU IN GETTING** ZERO **IN THAT PARTICULAR**
QUESTION.
WE WILL NOT BE CHECKING SAVED ANSWERS.
==
=====================================

THERE'S ONLY ONE PAGE FOR THE EXAM.

Points to note:

1. If you are on your phone, try giving the exam in landscape mode.

2. If you are uploading files,

- - - - File name should contain your student ID.

- - - - Write which question you are answering in the "file description".

- - - - It can be a **PDF or Image** file. The **limit is 15MB per file**.

- - - - - - - - You can use Cam-scanner/Microsoft Word/Online converters/etc. to convert your

images to PDF.

- - - - Click on **"Choose Files"** first

✎

- - - - Write something in the **Description box** that comes **below the "Choose Files"** button.

- - - - Then, click on **"Upload Files"**

- - - - Mention in the answering text-field "**I have attached files to answer this question**" if you have uploaded any files. A faculty **may miss** if you don't mention.

- - - - **IF YOU CAN'T UPLOAD ON BUX, UPLOAD ON YOUR GOOGLE DRIVE AND SHARE WITH YOUR FACULTY (arif.shakil@bracu.ac.bd, skazi@bracu.ac.bd, seraj.mehnaz@bracu.ac.bd). Next, paste the link in the text of the answer.**

3. All text fields and file upload fields are optional.

4. 15 Minutes extra time has been given to submit your answers and upload files.

Unacceptable:

-> Plagiarized answers.

-> Email submissions.

-> Saved answers.

-> Screenshots as means to proof that you had a problem during the exam.

-> Answers not specific to the question asked.

HONOR CODE

0 point possible (ungraded)

A QUICK GUIDE TO THE DO'S AND DON'TS

The exam timer won't pause/stop once you start...

THE DO'S

- Submit your own work based on your own understanding.

- Report to the faculties about any suspected violation of the honor code that you are aware of.

- Save your exam progress after each submission.

- Keep a back-up internet connection in the form of mobile data.

- Keep your laptop/mobile phone in full charge in case of loadshedding.

- Keep your powerbank charged if required

- In case of extreme emergencies, don't panic and contact a faculty member via ***DISCORD VOICE CHANNEL*** (each of us will be available in a room). Any unexpected incident will be considered and taken care of.

- For joining the voice channel on Discord, wait if there's another student there.

- Finally, keep yourself relaxed and well hydrated. Take the exam as an opportunity to assess your own learnings and to identify the areas that needs improving. Good Luck!

THE DON'TS

- Do not search for the specific solutions to your questions on the internet.

- Do not use any online or offline tools or softwares to determine the answers to questions (calculators are allowed).

- Do not share or discuss any of the questions and/or their solutions with anyone (online or offline).

- Do not log into any discussion platforms such as messenger, google meet etc. (except Discord voice channel) while you are taking the exam.

- Do not panic if loadshedding or internet disruptions occur. Keep back-up options.

- Everything will be alright.

BRAC UNIVERSITY STUDENT HONOR CODE

You agree to the following terms by attempting the exam.

On this exam, I will not cheat, use unfair means, join intentionally or unintentionally any online or offline group in which exam answers are posted or discussed, or engage in any behavior that would commonly be deemed to be academically unethical. I will immediately notify the course teacher of any such activity or online or offline groups that I become aware of. I acknowledge that I may be suspended or expelled from Brac University if I am found to have engaged in any academically unethical behavior.

I understand that a certain percentage of students will be randomly selected for a viva after the exam and asked about their exam answers and related information and that if called for a viva, that I must appear for the viva within a designated time frame. I understand and accept that the viva may be scheduled at any point in time after I submit my answers online. I may be contacted at the email address listed below for a viva. I understand that a failure to appear for the viva after being notified at the email address below will be considered as evidence of cheating. An inability to explain my exam answers during the viva may also be considered as evidence of cheating.

I consent to video/audio recording of these viva sessions. I further recognize that non-compliance with the above may lead to further disciplinary actions that I will be ready to accept without complaint.

NO need to click on "Submit". You agree to the above honor code by attempting the exam.

Submit

Question 1 - IP Addressing and VLSM

8.0/16.0 points (graded)
Question 1

Given, the following output is from the 'ipconfig' command given in your computer's command prompt.

```
Connection-specific DNS Suffix  . :
        Link-local IPv6 Address . . . . . : fe80::c52f:5dda:afb0:47cc%8
        IPv4 Address. . . . . . . . . . . : 216.44.7.124
        Subnet Mask . . . . . . . . . . . : 255.255.0.0
        Default Gateway . . . . . . . . . : 216.44.7.2
```

(a) Find the **network** address.
Answer format: x.x.x.x/y where x is octet decimal value and y is the prefix mask

IP   **Prefix Mask**

216.44.0.0   ✔ / 16   ✔

b) What's the first host address of above network address ?
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix mask
Do not use space

IP   **Prefix Mask**

216.44.0.1   ✔ / 16   ✔

If the above image does not load, click here

Given, Switch S4 is connected to **2841 hosts** (which includes default gateway connection too), switch S1 is connected to **296 hosts** (which includes the default gateway connection too), S2is connected to **536 hosts** and finally, the Switch (S5) is connected to three routers. However, for the switched network (S5), you are instructed to keep room for 81 more routers for future use. (c) Using the network address found in (a), apply VLSM to find the network address of the following three subnets

i) Network Address of the LAN connected to R3
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix mask
Do not use space

IP   **Prefix Mask**

> 216.44.22.0   ✖ /   20   ✔

ii) Network Address of the LAN connected to R2
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix mask
Do not use space

IP   **Prefix Mask**
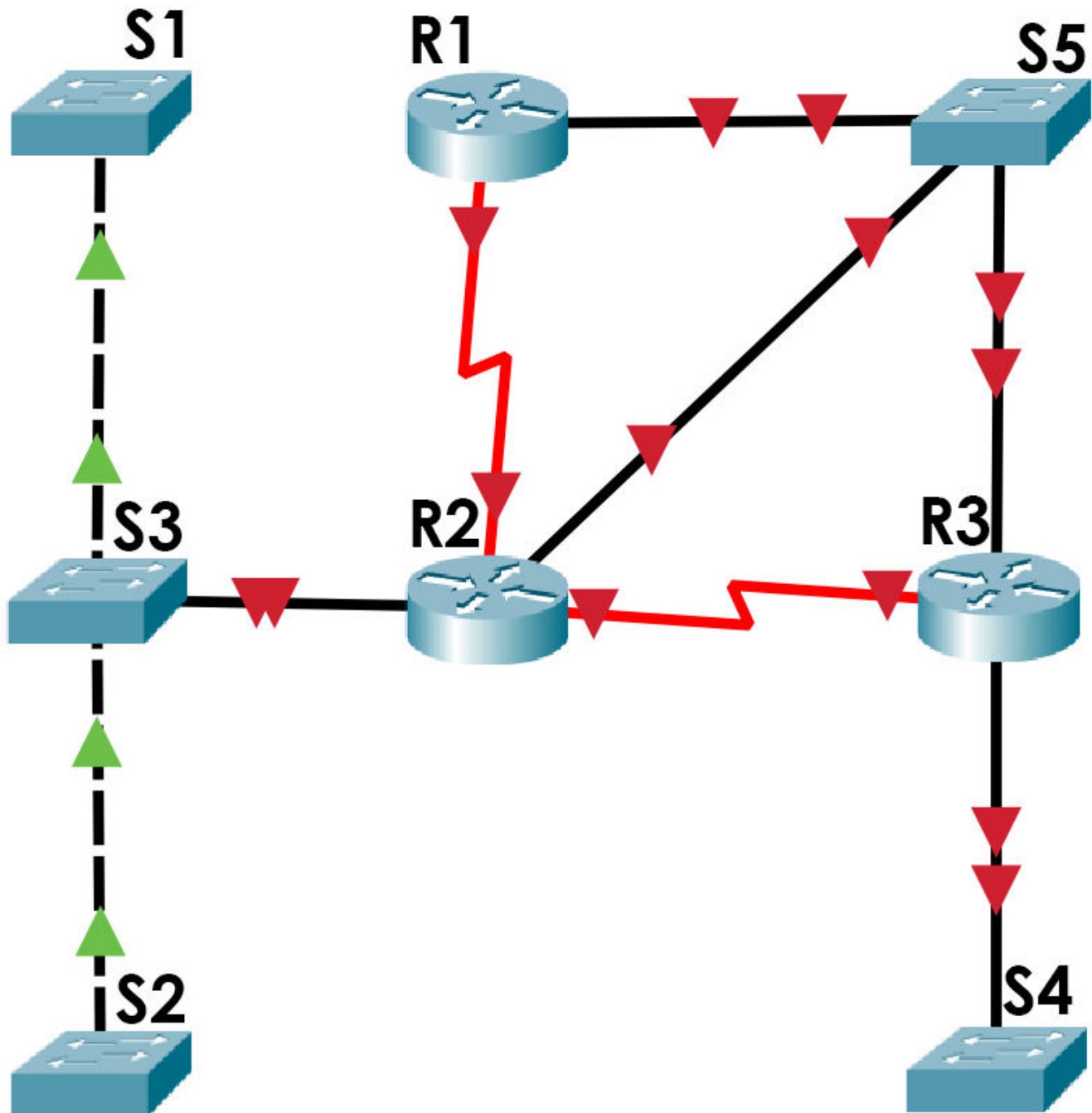
> 216.44.   ✖ /   ✖

iii) Network Address of the switched network
Answer format: x.x.x.x/y where x is octet decimal value and y is prefix mask
Do not use space
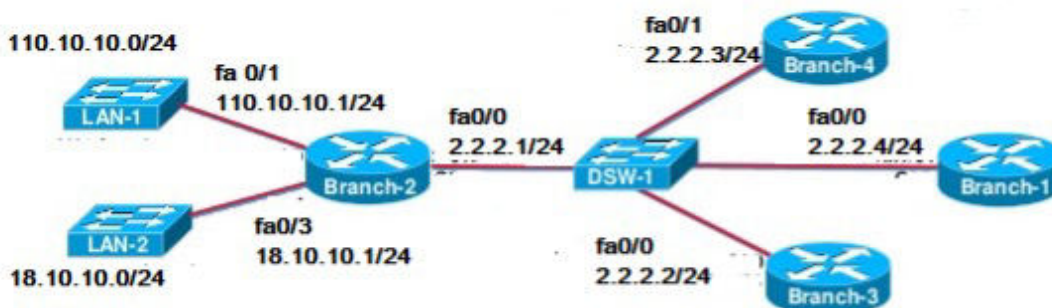
IP   **Prefix Mask**

>   ✖ /   ✖

| Submit | You have used 1 of 2 attempts |

If the above image doesn't load, click here.

Q. 2 (a) Refer to the above figure, to configure a static route here, we have to use both the interface number and next hop IP address, why? [6 marks]

ANSWER TO QUESTION 2A - STATIC ROUTING SQ

Status

You have completed this assignment. Review your grade and your assessment details.

▸ | Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE

| Staff Grade   ✔   COMPLETE

▾ Your Grade: 6 out of 6

The question for this section

> Answer to Question 2a - Static Routing SQ

Your Response

a) As it is a multi -access network and when the output interface is a multi-access interface and need to identify the next-hop address it requires fully specified static routing otherwise it will not be able to send any packet successfully to the destination.
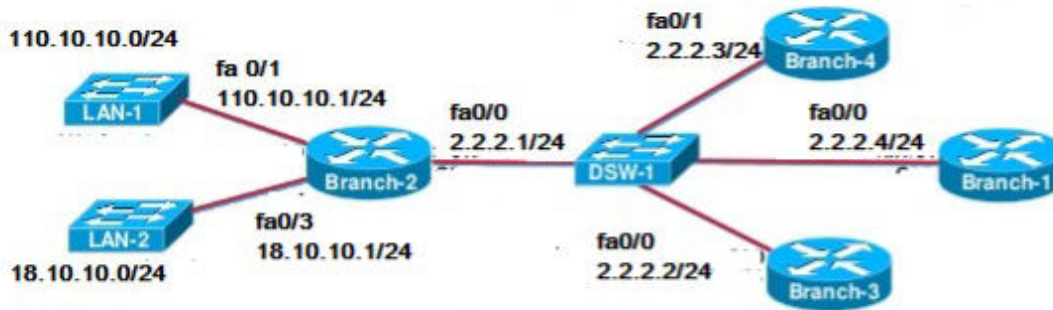
Assessments of Your Response

▾ Answer to Question 2a - Static Routing SQ   6 / 6   POINTS

● STAFF GRADE - 6 POINTS

   6 Point(s) ℹ️

✏️

Click here if image does not load.

Q. 2 (b) Refer to figure above, [3+3 = 6 marks]

i. Create a static route for the LAN1 network of Branch 2 router in Branch 3 router.

ii.
 If Branch 3 router has a connection to the ISP router, then create a default route in Branch 1 router.

ANSWER TO QUESTION 2B - STATIC ROUTING CONFIG

Status

You have completed this assignment. Review your grade and your assessment details.

┌───┐
│ ▸ │ Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE │
└───┘

┌───┐
│ Staff Grade ✔ COMPLETE   │
└───┘

┌───┐
│ ▾ Your Grade: 5 out of 6   │
│   │
│ **The question for this section**   │
│   │
│   Answer to Question 2b - Static Routing Config   │
│   │
│ Your Response   │
│   ✎   │
└───┘

2b(i) ip route 110.10.10.0 255.255.255.0 fa0/0 2.2.2.1
(ii) ip route 0.0.0.0 0.0.0.0 fa0/0

Assessments of Your Response

▼ **Answer to Question 2a - Static Routing SQ**   5 / 6 POINTS

- STAFF GRADE - 5 POINTS
  ### 5 Point(s) ❶

  STAFF COMMENTS
  (ii) ip route 0.0.0.0 0.0.0.0 fa0/0 2.2.2.2

Q. 3 (a) In IPv6 address assignment, DAD of ICMPv6 is widely used. Why and how? [6 marks]

QUESTION 03A - IPV6

Status

You have completed this assignment. Review your grade and your assessment details.

▸ | **Your Response** due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE

  | **Staff Grade** ✔ COMPLETE

▼ **Your Grade:**   6 out of 6

The question for this section

| Question 03a - IPv6

✏

Your Response

> DAD is Duplicate address detection which is used to prevent attack on duplicate address detection process in IPv6 link.
> It is implemented to make sure that IP addresses do not conflict with each other on the same link .it prevents the host from configuring its IP address by responding to each Neighbor Solicitation (NS) through fake Neighbor Advertisement (NA).

Assessments of Your Response

▼ **Answer to Question 2a - Static Routing SQ**   6 / 6   POINTS

- STAFF GRADE - 6 POINTS
  ## 6 Point(s) ⓘ

Q. 3 (b) (i) In which scenarios should we not use DHCP for devices? [3 marks]

(ii) How does PAT save public IP addresses? [3 marks]

QUESTION 03B - DHCPV4/NAT

Status

You have completed this assignment. Review your grade and your assessment details.

| ▸ | Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE |

| | Staff Grade   ✔ COMPLETE |

▼ Your Grade: 4 out of 6

✎

The question for this section

> Question 03b - DHCPv4/NAT

Your Response

(i)When we need to configure statically we can not use DHCP. We cannot use it for manual configuration.

(ii) In PAT single public IP address is used for all internal private IP addresses, but a different port is assigned to each private IP address. It works by creating dynamic NAT mapping, in which a global (public) IP address and a unique port number are selected. The router keeps a NAT table entry for every unique combination of the private IP address and port, with translation to the global address and a unique port number.

Assessments of Your Response

▼ **Answer to Question 2a - Static Routing SQ**   4 / 6   POINTS

- **STAFF GRADE - 4 POINTS**
  ## 4 Point(s) ❶

  STAFF COMMENTS
  Why and when DHCP is not accepted?

Q. 4 (a) In which two case will a switch send a frame that it has received from a port to all other ports except the incoming one? [6 marks]

QUESTION 04A - DATA LINK SQ1

Status

You have completed this assignment. Review your grade and your assessment details.

▸   **Your Response** due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE   ✏

Staff Grade ✔ COMPLETE

▾ Your Grade: 6 out of 6

The question for this section

> Question 04a - Data Link SQ1

Your Response

When a switch receives a broadcast frame, the switch forwards the frame out each of the switch ports, except the ingress port where the broadcast frame was received. Each device connected to the switch receives a copy of the broadcast frame and processes it.

Assessments of Your Response

▾ **Answer to Question 2a - Static Routing SQ**   6 / 6 POINTS

- **STAFF GRADE - 6 POINTS**
  6 Point(s) ⓘ

Q. 4 (b) TDM is considered as being efficient during high load as compared to ALOHA which is inefficient during high load. Explain why. [6 marks]

QUESTION 04B - DATA LINK SQ2

Status

You have completed this assignment. Review your grade and your assessment details.

▸   Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ✔ COMPLETE ✎

Staff Grade ✓ COMPLETE

▼ Your Grade: 6 out of 6

The question for this section

> Question 04b - Data Link SQ2

Your Response

b)Time Division Multiplexing (TDM) is possible when data transmission rate of the media is much higher than that of the data rate of the source. Multiple signals can be transmitted if each signal is allowed to be transmitted for a definite amount of time. These time slots are so small that all transmissions appear to be in parallel while The relatively low performance of ALOHA originates from its random access nature. The node having a packet accesses the medium through a Bernoulli trial with a given probability. High access probability makes for high collisions

Assessments of Your Response

▼ **Answer to Question 2a - Static Routing SQ**   6 / 6 POINTS
_____

• STAFF GRADE - 6 POINTS
  6 Point(s) ℹ

[OPTIONAL] ROUGH [OPTIONAL] WORK [OPTIONAL]

Status

This assignment has closed. One or more deadlines for this assignment have passed. You will receive an incomplete grade for this assignment.

✏

▸ | Your Response due Sep 16, 2021 19:30 +06 (in 0 minutes) ⚠ INCOMPLETE

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▸Your Grade: Not Started

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