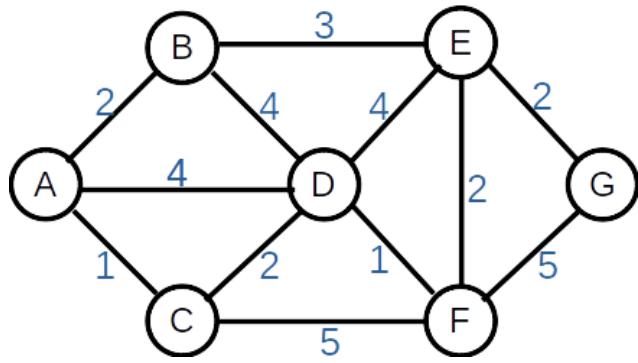


Question 1

Correct

Mark 10.00 out of 10.00



Consider the network shown above, and assume that each node initially knows the costs to each of its neighbors. Consider the distance-vector algorithm. Show the distance table entries at node A after the first iteration!

NOTE:

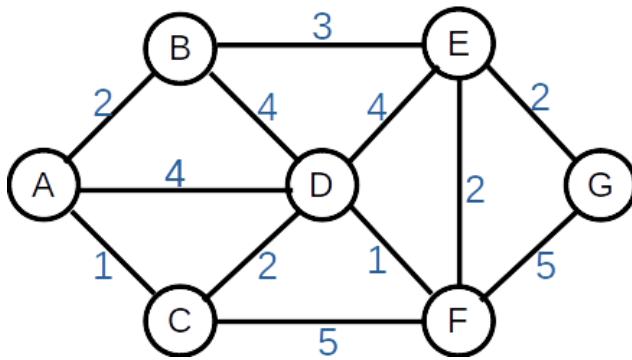
- It is case insensitive
- If the cost = infinity, you can simply write `inf` and the corresponding next hop can be written as '`-`' (without quote)
- If there are more than one paths with similar minimum cost, choose only one possible next hop (don't write all possible next hops)

	B	C	D	E	F	G						
Cost	2	✓	1	✓	3	✓	5	✓	5	✓	inf	✓
Next hop	B	✓	C	✓	C	✓	B	✓	D	✓	-	✓

Question 2

Correct

Mark 20.00 out of 20.00



Consider the above network. With the indicated link costs, use Link State routing algorithm to compute the shortest path from D to all network nodes. Show how the algorithm works by computing a table in the following format:

NOTE:

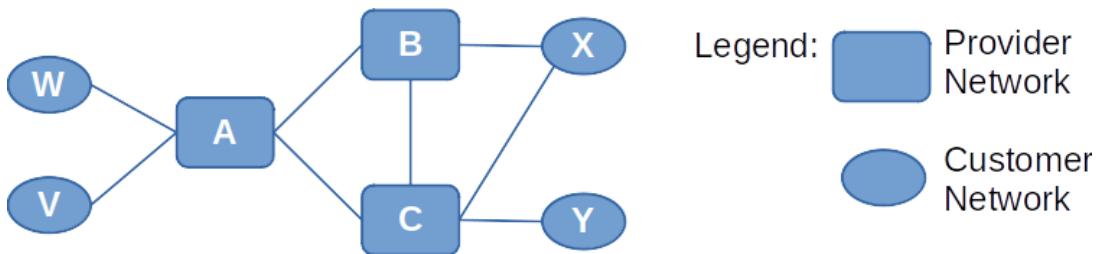
- Do not give space between $D(x)$ and $p(x)$, while the node is case insensitive, e.g. 3,A or 4,b or 5,c etc
- For infinity link cost, you can simply write **inf**.
- If there is any tie in least cost path calculation to some nodes, take left most node first, and then go to the right. For example: $D(A) = 3$, $D(C) = 3$, $D(E) = 3$, then you take $D(A)$ first, then $D(C)$, and finally $D(E)$.

Step	N'	$D(A), p(A)$	$D(B), p(B)$	$D(C), p(C)$	$D(E), p(E)$	$D(F), p(F)$	$D(G), p(G)$
0	D	4,D ✓	4,D ✓	2,D ✓	4,D ✓	1,D ✓	inf ✓
1	DF ✓	4,D ✓	4,D ✓	2,D ✓	3,F ✓	- ✓	6,F ✓
2	DFC ✓	3,C ✓	4,D ✓	- ✓	3,F ✓	- ✓	6,F ✓
3	DFCA ✓	- ✓	4,D ✓	- ✓	3,F ✓	- ✓	6,F ✓
4	DFCAE ✓	- ✓	4,D ✓	- ✓	- ✓	- ✓	5,E ✓
5	DFCAEB ✓	- ✓	- ✓	- ✓	- ✓	- ✓	5,E ✓
6	DFCAEBG ✓						

Question 3

Correct

Mark 5.00 out of 5.00



Suppose B and C are tier 2 ISP and both of them have peering agreement (i.e. they'll transit traffic from each other). A is a tier 3 ISP and is a customer of both B and C. Suppose A would like to have the traffic destined to W to come from B only, and the traffic destined to V from either B or C.

How should A advertise its route to B? (check all that applies, negative point for wrong choice)

- AW ✓ correct
- CAV
- AV ✓ correct
- CAW

Mark 2.00 out of 2.00

The correct answer is:

- AW
- AV

How should A advertise its route to C? (check all that applies, negative point for wrong choice)

- CAV
- AV ✓ correct
- AW
- CAW

Mark 1.00 out of 1.00

The correct answer is:

- AV

What AS routes does C receive? (check all that applies, negative point for wrong choice)

- AV ✓ correct
- BAV ✓ correct
- BAW ✓ correct
- AW

Mark 3.00 out of 3.00

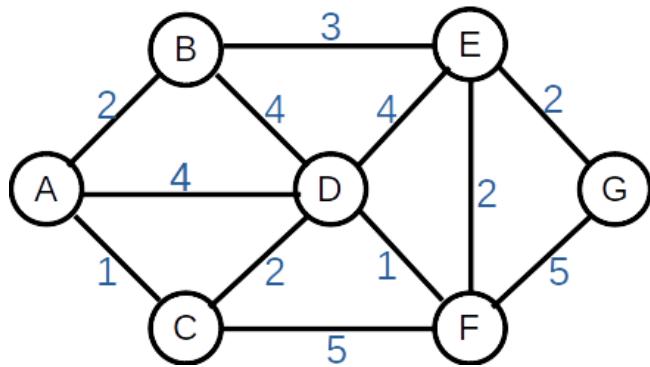
The correct answer is:

- AV
- BAV
- BAW

Question 1

Partially correct

Mark 19.52 out of 20.00



Consider the above network. With the indicated link costs, use Link State routing algorithm to compute the shortest path from A to all network nodes. Show how the algorithm works by computing a table in the following format:

NOTE:

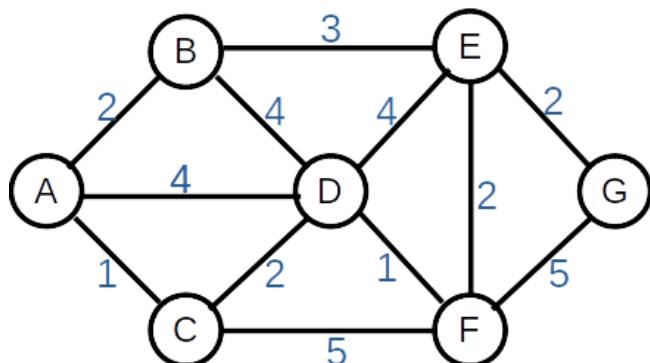
- Do not give space between $D(x)$ and $p(x)$, while the node is case insensitive, e.g. 3,A or 4,b or 5,c etc
- For infinity link cost, you can simply write **inf**.
- If there is any tie in least cost path calculation to some nodes, take left most node first, and then go to the right. For example: $D(A) = 3, D(C) = 3, D(E) = 3$, then you take $D(A)$ first, then $D(C)$, and finally $D(E)$.

Step N'	D(B),p(B)	D(C),p(C)	D(D),p(D)	D(E),p(E)	D(F),p(F)	D(G),p(G)
0 A	2,A ✓	1,A ✓	4,D ✗	inf ✓	inf ✓	inf ✓
1 AC	- ✓	- ✓	3,C ✓	inf ✓	6,C ✓	inf ✓
2 ACB	- ✓	- ✓	- ✓	5,B ✓	6,C ✓	inf ✓
3 ACBD	- ✓	- ✓	- ✓	- ✓	4,D ✓	inf ✓
4 ACBDF	- ✓	- ✓	- ✓	- ✓	- ✓	9,F ✓
5 ACBDFE	- ✓	- ✓	- ✓	- ✓	- ✓	7,E ✓
6 ACBDFEG	✓					

Question 2

Correct

Mark 10.00 out of 10.00



Consider the network shown above, and assume that each node initially knows the costs to each of its neighbors. Consider the distance-vector algorithm. Show the distance table entries at node D after the first iteration!

NOTE:

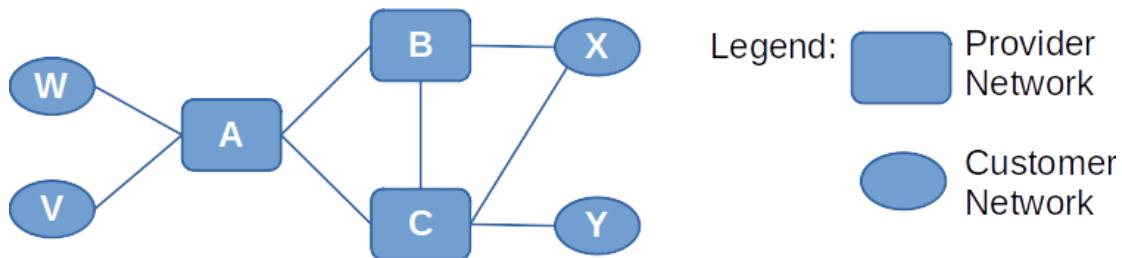
- It is case insensitive
- If the cost = infinity, you can simply write **inf** and the corresponding next hop can be written as '-' (without quote)
- If there are more than one paths with similar minimum cost, choose only one possible next hop (don't write all possible next hops)

	A	B	C	D	E	F
Cost	3 ✓	4 ✓	2 ✓	0 ✓	3 ✓	1 ✓
Next hop	C ✓	B ✓	C ✓	D ✓	F ✓	F ✓

Question 3

Correct

Mark 5.00 out of 5.00



Suppose B and C are tier 2 ISP and both of them have peering agreement (i.e. they'll transit traffic from each other). A is a tier 3 ISP and is a customer of both B and C. Suppose A would like to have the traffic destined to W to come from B only, and the traffic destined to V from either B or C.

How should A advertise its route to B? (check all that applies, negative point for wrong choice)

- AV ✓ correct
- CAW
- CAV
- AW ✓ correct

Mark 2.00 out of 2.00

The correct answer is:

- AW
- AV

How should A advertise its route to C? (check all that applies, negative point for wrong choice)

- CAV
- AW
- AV ✓ correct
- CAW

Mark 1.00 out of 1.00

The correct answer is:

- AV

What AS routes does C receive? (check all that applies, negative point for wrong choice)

- BAW ✓ correct
- AV ✓ correct
- BAV ✓ correct
- AW

Mark 3.00 out of 3.00

The correct answer is:

- AV
- BAV
- BAW



Started on Friday, 19 November 2021, 9:08 AM

State Finished

Completed on Friday, 19 November 2021, 9:58 AM

Time taken 50 mins

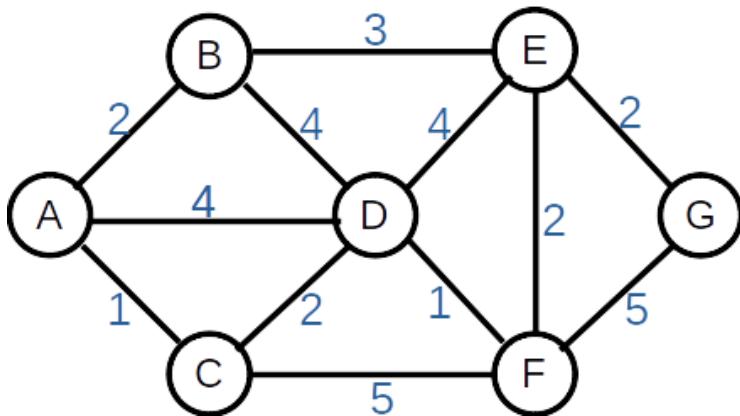
Marks 33.33/35.00

Grade 95.24 out of 100.00

Question 1

Correct

Mark 10.00 out of 10.00



Consider the network shown above, and assume that each node initially knows the costs to each of its neighbors. Consider the distance-vector algorithm. Show the distance table entries at node D after the first iteration!

NOTE:

- It is case insensitive
- If the cost = infinity, you can simply write **inf** and the corresponding next hop can be written as '-' (without quote)
- If there are more than one paths with similar minimum cost, choose only one possible next hop (don't write all possible next hops)

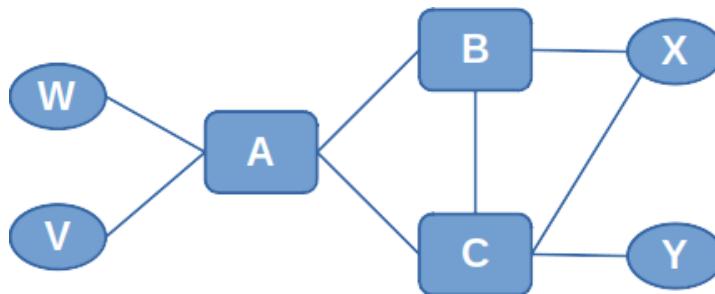
	A	B	C	D	E	F
Cost	3 ✓	4 ✓	2 ✓	0 ✓	3 ✓	1 ✓
Next hop	C ✓	B ✓	C ✓	D ✓	F ✓	F ✓



Question 2

Partially correct

Mark 3.33 out of 5.00



Legend:

- Provider Network (rectangle)
- Customer Network (circle)

Suppose B and C are tier 2 ISP and both of them have peering agreement (i.e. they'll transit traffic from each other). A is a tier 3 ISP and is a customer of both B and C. Suppose A would like to have the traffic destined to V to come from B only, and the traffic destined to W from either B or C.

How should A advertise its route to B? (check all that applies, negative point for wrong choice)

- CAV
- CAW X wrong
- AW ✓ correct
- AV ✓ correct

Mark 1.00 out of 2.00

The correct answer is:

- AW
- AV

How should A advertise its route to C? (check all that applies, negative point for wrong choice)

- CAW
- AW ✓ correct
- AV
- CAV

Mark 1.00 out of 1.00

The correct answer is:

- AW

What AS routes does C receive? (check all that applies, negative point for wrong choice)

- BAW ✓ correct
- AV
- AW ✓ correct
- BAV

Mark 2.00 out of 3.00



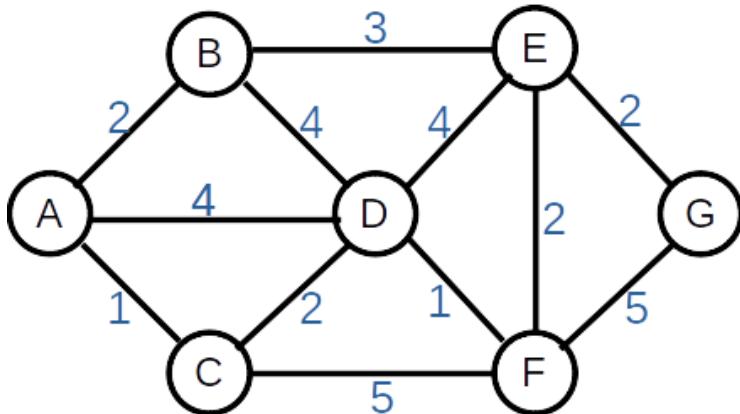
The correct answer is:

- AW
- BAV
- BAW

Question 3

Correct

Mark 20.00 out of 20.00



Consider the above network. With the indicated link costs, use Link State routing algorithm to compute the shortest path from A to all network nodes. Show how the algorithm works by computing a table in the following format:

NOTE:

- Do not give space between $D(x)$ and $p(x)$, while the node is case insensitive, e.g. 3,A or 4,b or 5,c etc
- For infinity link cost, you can simply write **inf**.
- If there is any tie in least cost path calculation to some nodes, take left most node first, and then go to the right. For example: $D(A) = 3$, $D(C) = 3$, $D(E) = 3$, then you take $D(A)$ first, then $D(C)$, and finally $D(E)$.

Step	N'	D(B),p(B)	D(C),p(C)	D(D),p(D)	D(E),p(E)	D(F),p(F)	D(G),p(G)
0	A	2,A ✓	1,A ✓	4,A ✓	inf ✓	inf ✓	inf ✓
1	AC ✓	2,A ✓	- ✓	3,C ✓	inf ✓	6,C ✓	inf ✓
2	ACB ✓	- ✓	- ✓	3,C ✓	5,B ✓	6,C ✓	inf ✓
3	ACBD ✓	- ✓	- ✓	- ✓	5,B ✓	4,D ✓	inf ✓
4	ACBDF ✓	- ✓	- ✓	- ✓	5,B ✓	- ✓	9,F ✓
5	ACBDFE ✓	- ✓	- ✓	- ✓	- ✓	- ✓	7,E ✓
6	ACBDFEG ✓						





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Started on Friday, 19 November 2021, 9:04 AM

State Finished

Completed on Friday, 19 November 2021, 9:51 AM

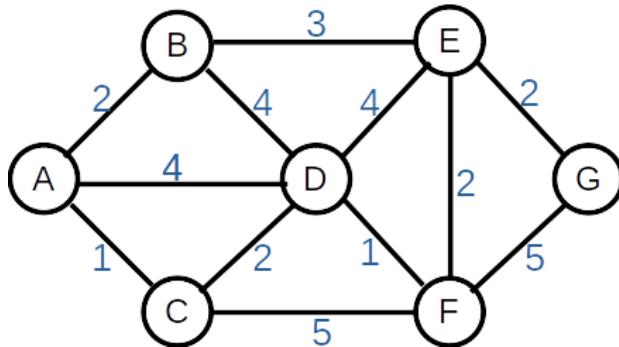
Time taken 46 mins 37 secs

Marks 34.52/35.00

Grade 98.64 out of 100.00

Question 1

Partially correct Mark 19.52 out of 20.00



Consider the above network. With the indicated link costs, use Link State routing algorithm to compute the shortest path from G to all network nodes. Show how the algorithm works by computing a table in the following format:

NOTE:

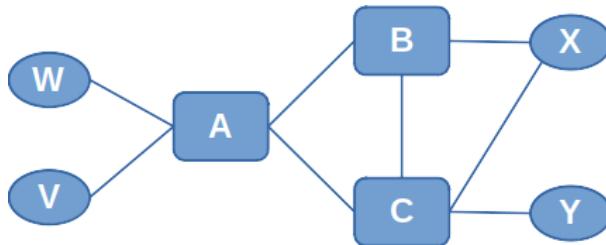
- Do not give space between $D(x)$ and $p(x)$, while the node is case insensitive, e.g. 3,A or 4,b or 5,c etc
- For infinity link cost, you can simply write inf.
- If there is any tie in least cost path calculation to some nodes, take left most node first, and then go to the right. For example: $D(A) = 3$, $D(C) = 3$, $D(E) = 3$, then you take D(A) first, then D(C), and finally D(E).

Step	N'	$D(A), p(A)$	$D(B), p(B)$	$D(C), p(C)$	$D(D), p(D)$	$D(E), p(E)$	$D(F), p(F)$
0	G	inf ✓	inf ✓	inf ✓	inf ✓	2,G ✓	5,G ✓
1	GE ✓	inf ✓	5,E ✓	inf ✓	6,E ✓	- ✓	4,E ✓
2	GEF ✓	inf ✓	5,E ✓	9,F ✓	5,F ✗	- ✓	- ✓
3	GEFB ✓	7,B ✓	- ✓	9,F ✓	5,F ✓	- ✓	- ✓
4	GEFBDA ✓	7,B ✓	- ✓	7,D ✓	- ✓	- ✓	- ✓
5	GEFBDA ✓	- ✓	- ✓	7,D ✓	- ✓	- ✓	- ✓
6	GEFBDAC ✓						

Question 2

Correct

Mark 5.00 out of 5.00



Legend:

- Provider Network (blue square)
- Customer Network (blue circle)

Suppose B and C are tier 2 ISP and both of them have peering agreement (i.e. they'll transit traffic from each other). A is a tier 3 ISP and is a customer of both B and C. Suppose A would like to have the traffic destined to V to come from B only, and the traffic destined to W from either B or C.

How should A advertise its route to B? (check all that applies, negative point for wrong choice)

- AW ✓ correct
- CAV
- CAW
- AV ✓ correct

Mark 2.00 out of 2.00

The correct answer is:

- AW
- AV

How should A advertise its route to C? (check all that applies, negative point for wrong choice)

- AV
- CAV
- CAW
- AW ✓ correct

Mark 1.00 out of 1.00

The correct answer is:

- AW

What AS routes does C receive? (check all that applies, negative point for wrong choice)

- BAW ✓ correct
- AV
- BAV ✓ correct
- AW ✓ correct

Mark 3.00 out of 3.00

The correct answer is:

- AW
- BAV
- BAW

Question 3

Correct Mark 10.00 out of 10.00



Consider the network shown above, and assume that each node initially knows the costs to each of its neighbors. Consider the distance-vector algorithm. Show the distance table entries at node A after the first iteration!

NOTE:

- It is case insensitive
- If the cost = infinity, you can simply write **inf** and the corresponding next hop can be written as '-' (without quote)
- If there are more than one paths with similar minimum cost, choose only one possible next hop (don't write all possible next hops)

	B	C	D	E	F	G						
Cost	2	✓	1	✓	3	✓	5	✓	5	✓	inf	✓
Next hop	B	✓	C	✓	C	✓	B	✓	D	✓	-	✓



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Started on Tuesday, 4 May 2021, 11:11 AM

State Finished

Completed on Tuesday, 4 May 2021, 11:53 AM

Time taken 42 mins 30 secs

Grade 85.00 out of 100.00

Question 1

Correct Mark 2.50 out of 2.50

What is an advantage of using dynamic routing protocols instead of static routing?

Select one:

- a. the path is chosen by the administrator
- b. fewer router resource overhead requirements
- c. more secure in controlling routing updates
- d. ability to maintain routing table without intervention ✓

The correct answer is: ability to maintain routing table without intervention

Question 2

Correct

Mark 2.50 out of 2.50

Which of the following is the advantage provided by static routing over the dynamic routing?

Select one:

- a. Static routing is relatively easy to configure for large networks.
- b. Static routes scale well as the network grows.
- c. Configuration of static routes is error-free.
- d. The path a static route uses to send data is known. ✓

The correct answer is: The path a static route uses to send data is known.

Question 3

Correct

Mark 2.50 out of 2.50

Give one reason for creating an OSPF network with multiple areas!

Select one:

- a. to provide areas in the network for routers that are not running OSPF
- b. to reduce use of memory and processor resources ✓
- c. to ensure that an area is used to connect the network to the Internet
- d. to simplify configuration

The correct answer is: to reduce use of memory and processor resources

Question 4

Correct

Mark 2.50 out of 2.50

What is used to facilitate hierarchical routing in OSPF?

Select one:

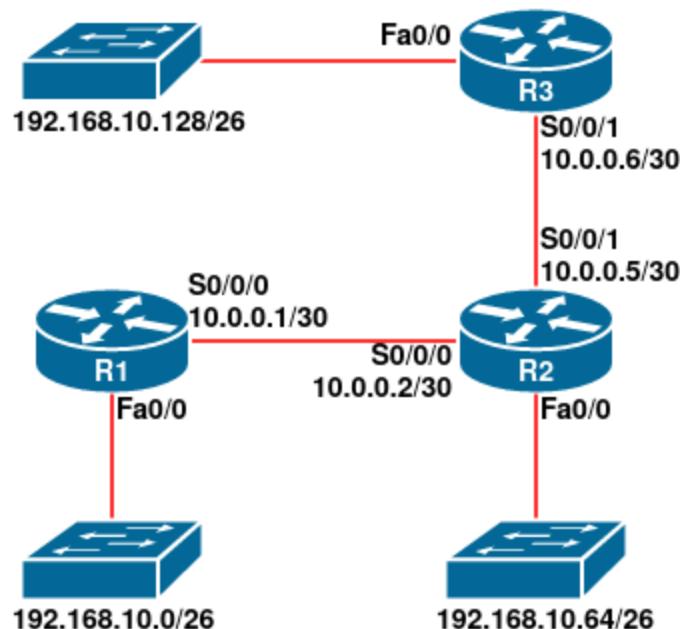
- a. frequent SPF calculations
- b. the election of designated routers
- c. the use of multiple areas ✓
- d. autosummarization

The correct answer is: the use of multiple areas

Question 5

Correct

Mark 2.50 out of 2.50



What will router R2 do with a packet destined for 192.168.10.50?

Select one:

- a. drop the packet
- b. send the packet out interface Serial0/0/1
- c. send the packet out interface FastEthernet0/0
- d. send the packet out interface Serial0/0/0 ✓

The correct answer is: send the packet out interface Serial0/0/0

Question 6

Correct

Mark 2.50 out of 2.50

Which statement express one of key characteristics of BGP?

Select one:

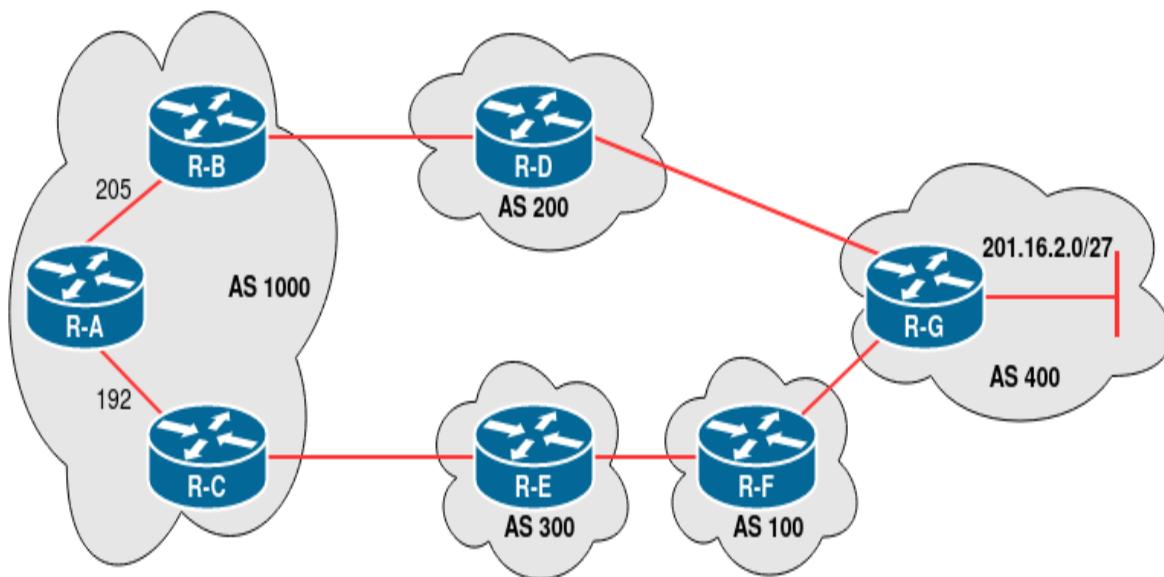
- a. It uses cost as its metric.
- b. It is an advanced distance vector routing protocol.
- c. It is a policy-based routing protocol. ✓
- d. It uses bandwidth and delay as its metric.

The correct answer is: It is a policy-based routing protocol.

Question 7

Incorrect

Mark 0.00 out of 15.00



R-B receives an eBGP advertisement from R-D. When propagated into AS 1000 by iBGP, which router would be used as the next hop for R-C?

Select one:

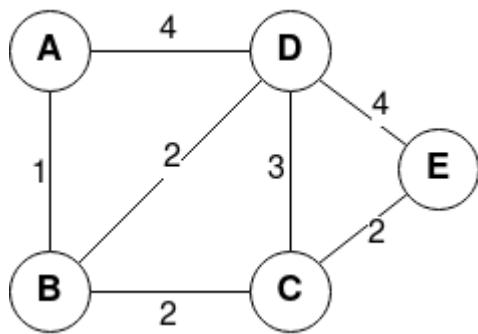
- a. R-D
- b. R-A
- c. R-B
- d. R-E ✗

The correct answer is: R-A

Question 8

Correct

Mark 40.00 out of 40.00



Consider the above network. With the indicated link costs, use Link State routing algorithm to compute the shortest path from **A** to all network nodes. Show how the algorithm works by computing a table in the following format:

NOTE:

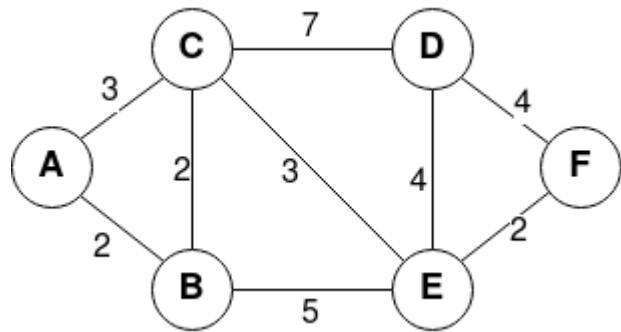
- Do not give space between $D(x)$ and $p(x)$, while the node is case insensitive, e.g. 3,A or 4,b or 5,c etc
- For infinity link cost, you can simply write **inf**.
- If there is any tie in least cost path calculation to some nodes, take left most node first, and then go to the right. For example: $D(A) = 3$, $D(C) = 3$, $D(E) = 3$, then you take $D(A)$ first, then $D(C)$, and finally $D(E)$.

N'	$D(B), p(B)$	$D(C), p(C)$	$D(D), p(D)$	$D(E), p(E)$
A	1,A ✓	inf ✓	4,A ✓	inf ✓
AB	✓	1,A ✓	3,B ✓	3,B ✓
ABC	✓	1,A ✓	3,B ✓	3,B ✓
ABCD	✓	1,A ✓	3,B ✓	3,B ✓
ABCDE	✓			

Question 9

Correct

Mark 30.00 out of 30.00



Consider the network shown above, and assume that each node initially knows the costs to each of its neighbors. Consider the distance-vector algorithm. Show the distance table entries at node F after the **first iteration!**

NOTE:

- It is case insensitive
- If the cost = infinity, you can simply write **inf** and the corresponding next hop can be written as '-' (without quote)
- If there are more than one paths with similar minimum cost, choose only one possible next hop (don't write all possible next hops)

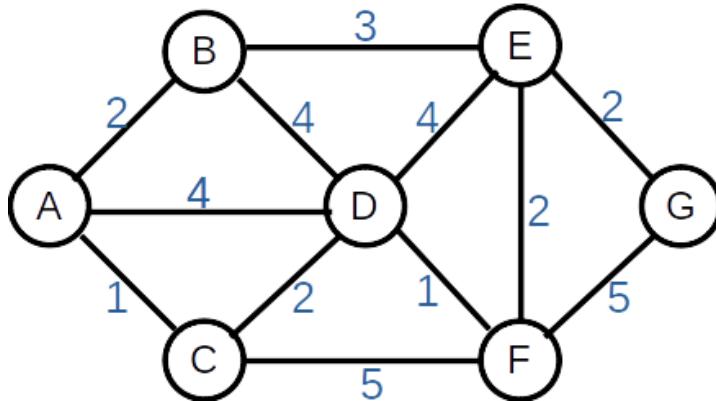
	A	B	C	D	E					
Cost	inf	✓	7	✓	5	✓	4	✓	2	✓
Next hop	-	✓	E	✓	E	✓	D	✓	E	✓



Question 1

Correct

Mark 10.00 out of 10.00



Consider the network shown above, and assume that each node initially knows the costs to each of its neighbors. Consider the distance-vector algorithm. Show the distance table entries at node A after the first iteration!

NOTE:

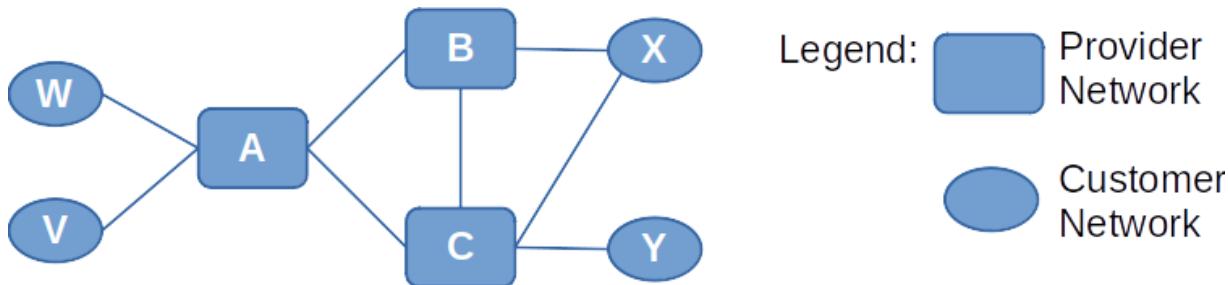
- It is case insensitive
- If the cost = infinity, you can simply write **inf** and the corresponding next hop can be written as '**-**' (without quote)
- If there are more than one paths with similar minimum cost, choose only one possible next hop (don't write all possible next hops)

	B	C	D	E	F	G						
Cost	2	✓	1	✓	3	✓	5	✓	5	✓	inf	✓
Next hop	B	✓	C	✓	C	✓	B	✓	D	✓	-	✓

Question 2

Correct

Mark 5.00 out of 5.00



Suppose B and C are tier 2 ISP and both of them have peering agreement (i.e. they'll transit traffic from each other). A is a tier 3 ISP and is a customer of both B and C. Suppose A would like to have the traffic destined to V to come from B only, and the traffic destined to W from either B or C.

How should A advertise its route to B? (check all that applies, negative point for wrong choice)

- AV ✓ correct
- AW ✓ correct
- CAW
- CAV

Mark 2.00 out of 2.00

The correct answer is:

- AW
- AV

How should A advertise its route to C? (check all that applies, negative point for wrong choice)

- AW ✓ correct
- CAW
- AV
- CAV

Mark 1.00 out of 1.00

The correct answer is:

- AW

What AS routes does C receive? (check all that applies, negative point for wrong choice)

- AW ✓ correct
- AV
- BAW ✓ correct
- BAV ✓ correct

Mark 3.00 out of 3.00

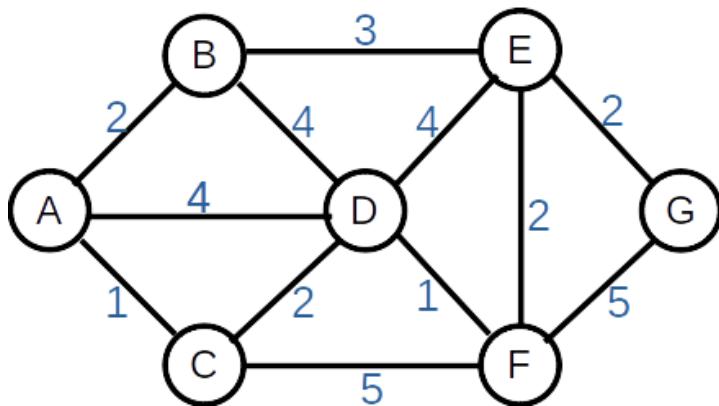
The correct answer is:

- AW
- BAV
- BAW

Question 3

Correct

Mark 20.00 out of 20.00



Consider the above network. With the indicated link costs, use Link State routing algorithm to compute the shortest path from D to all network nodes. Show how the algorithm works by computing a table in the following format:

NOTE:

- Do not give space between $D(x)$ and $p(x)$, while the node is case insensitive, e.g. 3,A or 4,b or 5,c etc
 - For infinity link cost, you can simply write **inf**.
 - If there is any tie in least cost path calculation to some nodes, take left most node first, and then go to the right. For example: $D(A) = 3$, $D(C) = 3$, $D(E) = 3$, then you take $D(A)$ first, then $D(C)$, and finally $D(E)$.

Step	N'	D(A),p(A)	D(B),p(B)	D(C),p(C)	D(E),p(E)	D(F),p(F)	D(G),p(G)
0	D	4,D ✓	4,D ✓	2,D ✓	4,D ✓	1,D ✓	inf ✓
1	DF ✓	4,D ✓	4,D ✓	2,D ✓	3,F ✓	- ✓	6,F ✓
2	DFC ✓	3,C ✓	4,D ✓	- ✓	3,F ✓	- ✓	6,F ✓
3	DFCA ✓	- ✓	4,D ✓	- ✓	3,F ✓	- ✓	6,F ✓
4	DFCAE ✓	- ✓	4,D ✓	- ✓	- ✓	- ✓	5,E ✓
5	DFCAEB ✓	- ✓	- ✓	- ✓	- ✓	- ✓	5,E ✓
6	DFCAEBG ✓						



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Started on Friday, 19 November 2021, 9:00 AM

State Finished

Completed on Friday, 19 November 2021, 9:49 AM

Time taken 49 mins 21 secs

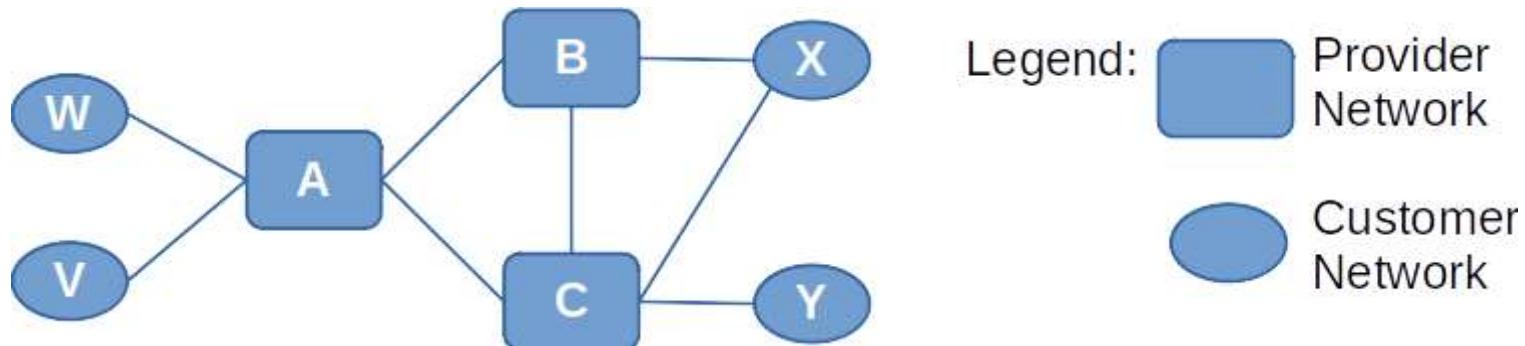
Marks 29.17/35.00

Grade **83.33** out of 100.00

Question 1

Correct

Mark 5.00 out of 5.00



Suppose B and C are tier 2 ISP and both of them have peering agreement (i.e. they'll transit traffic from each other). A is a tier 3 ISP and is a customer of both B and C. Suppose A would like to have the traffic destined to V to come from B only, and the traffic destined to W from either B or C.

How should A advertise its route to B? (check all that applies, negative point for wrong choice)

- AW ✓ correct
- AV ✓ correct
- CAV
- CAW

Mark 2.00 out of 2.00

The correct answer is:

- AW
- AV

How should A advertise its route to C? (check all that applies, negative point for wrong choice)

- AV
- AW ✓ correct

CAV

CAW

Mark 1.00 out of 1.00

The correct answer is:

- AW

What AS routes does C receive? (check all that applies, negative point for wrong choice)

AV

BAW ✓ correct

BAV ✓ correct

AW ✓ correct

Mark 3.00 out of 3.00

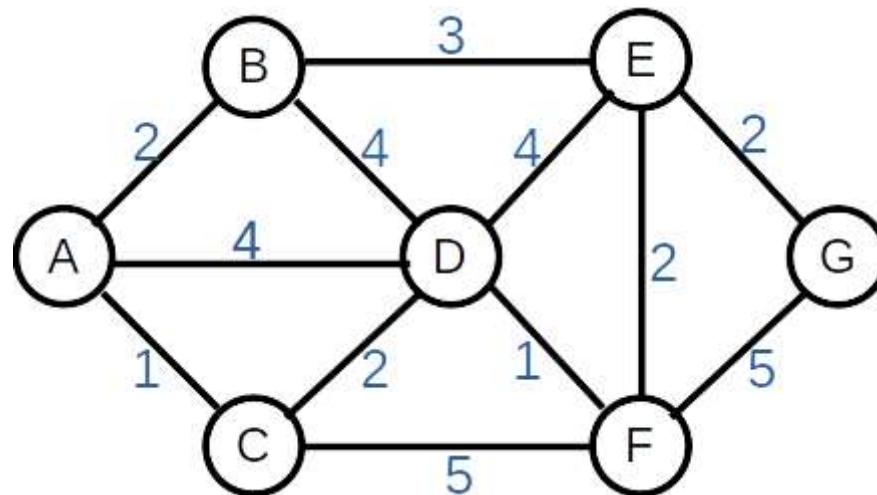
The correct answer is:

- AW
- BAV
- BAW

Question 2

Correct

Mark 20.00 out of 20.00



Consider the above network. With the indicated link costs, use Link State routing algorithm to compute the shortest path from **G** to all network nodes. Show how the algorithm works by computing a table in the following format:

NOTE:

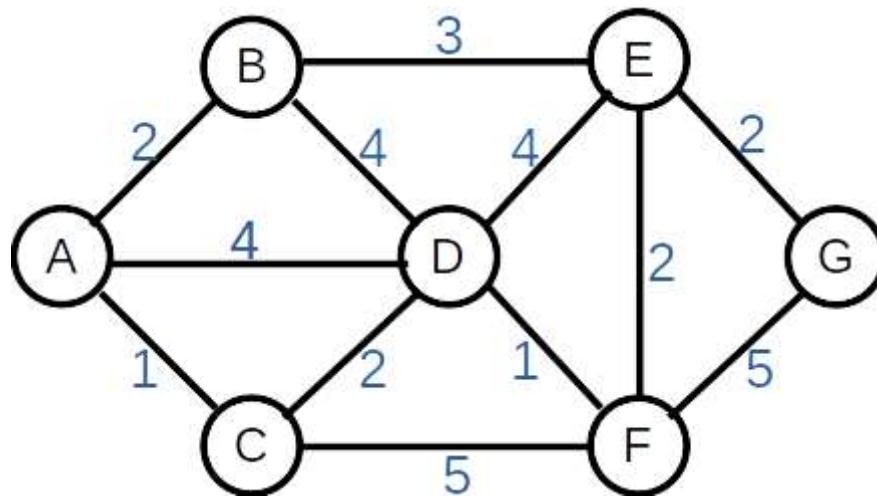
- Do not give space between $D(x)$ and $p(x)$, while the node is case insensitive, e.g. 3,A or 4,b or 5,c etc
- For infinity link cost, you can simply write **inf**.
- If there is any tie in least cost path calculation to some nodes, take left most node first, and then go to the right. For example: $D(A) = 3$, $D(C) = 3$, $D(E) = 3$, then you take $D(A)$ first, then $D(C)$, and finally $D(E)$.

Step	N'	D(A),p(A)	D(B),p(B)	D(C),p(C)	D(D),p(D)	D(E),p(E)	D(F),p(F)
0	G	inf ✓	inf ✓	inf ✓	inf ✓	2,G ✓	5,G ✓
1	GE ✓	inf ✓	5,E ✓	inf ✓	6,E ✓	- ✓	4,E ✓
2	GEF ✓	inf ✓	5,E ✓	9,F ✓	5,F ✓	- ✓	- ✓
3	GEFB ✓	7,B ✓	- ✓	9,F ✓	5,F ✓	- ✓	- ✓
4	GEFBDA ✓	7,B ✓	- ✓	7,D ✓	- ✓	- ✓	- ✓
5	GEFBDA ✓	- ✓	- ✓	7,D ✓	- ✓	- ✓	- ✓
6	GEFBDAC ✓						

Question 3

Partially correct

Mark 4.17 out of 10.00



Consider the network shown above, and assume that each node initially knows the costs to each of its neighbors. Consider the distance-vector algorithm. Show the distance table entries at node D after the first iteration!

NOTE:

- It is case insensitive
- If the cost = infinity, you can simply write **inf** and the corresponding next hop can be written as '**-**' (without quote)
- If there are more than one paths with similar minimum cost, choose only one possible next hop (don't write all possible next hops)

	A	B	C	E	F	G
Cost	4	4	2	4	1	inf
Next hop	C	A	A	F	E	-



Home > My courses > PROG. IK REGULAR > REG - Gasal 2021/2022 > [Reg] Jaringan Komputer (A,B,C) Gasal 2021-2022 > Chapter 5. Network Layer (Control Plane) > Kuis Chapter 5 - Kelas A

Started on Friday, 19 November 2021, 9:09 AM

State Finished

Completed on Friday, 19 November 2021, 9:59 AM

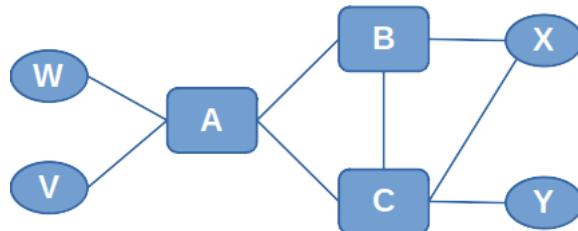
Time taken 49 mins 56 secs

Marks 35.00/35.00

Grade 100.00 out of 100.00

Question 1

Correct Mark 5.00 out of 5.00



Legend:

- Provider Network
- Customer Network

Suppose B and C are tier 2 ISP and both of them have peering agreement (i.e. they'll transit traffic from each other). A is a tier 3 ISP and is a customer of both B and C. Suppose A would like to have the traffic destined to W to come from B only, and the traffic destined to V from either B or C.

How should A advertise its route to B? (check all that applies, negative point for wrong choice)

- AV ✓ correct
- AW ✓ correct
- CAV
- CAW

Mark 2.00 out of 2.00

The correct answer is:

- AW
- AV

How should A advertise its route to C? (check all that applies, negative point for wrong choice)

- AV ✓ correct
- AW
- CAV
- CAW

Mark 1.00 out of 1.00

The correct answer is:

- AV

What AS routes does C receive? (check all that applies, negative point for wrong choice)

- BAV ✓ correct
- AW
- AV ✓ correct
- BAW ✓ correct

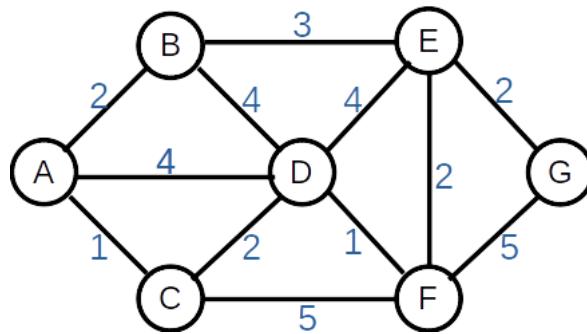
Mark 3.00 out of 3.00

The correct answer is:

- AV
- BAV
- BAW

Question 2

Correct Mark 20.00 out of 20.00



Consider the above network. With the indicated link costs, use Link State routing algorithm to compute the shortest path from **G** to all network nodes.

Show how the algorithm works by computing a table in the following format:

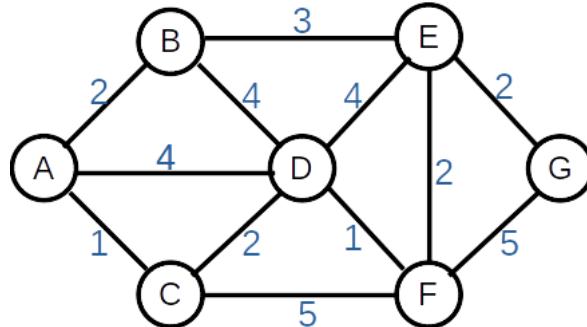
NOTE:

- Do not give space between $D(x)$ and $p(x)$, while the node is case insensitive, e.g. 3,A or 4,b or 5,c etc
- For infinity link cost, you can simply write **inf**.
- If there is any tie in least cost path calculation to some nodes, take left most node first, and then go to the right. For example: $D(A) = 3$, $D(C) = 3$, $D(E) = 3$, then you take $D(A)$ first, then $D(C)$, and finally $D(E)$.

Step	N'	$D(A), p(A)$	$D(B), p(B)$	$D(C), p(C)$	$D(D), p(D)$	$D(E), p(E)$	$D(F), p(F)$
0	G	inf ✓	inf ✓	inf ✓	inf ✓	2,G ✓	5,G ✓
1	GE ✓	inf ✓	5,E ✓	inf ✓	6,E ✓	- ✓	4,E ✓
2	GEF ✓	inf ✓	5,E ✓	9,F ✓	5,F ✓	- ✓	- ✓
3	GEFB ✓	7,B ✓	- ✓	9,F ✓	5,F ✓	- ✓	- ✓
4	GEFBDA ✓	7,B ✓	- ✓	7,D ✓	- ✓	- ✓	- ✓
5	GEFBDAC ✓	- ✓	- ✓	7,D ✓	- ✓	- ✓	- ✓
6							

Question 3

Correct Mark 10.00 out of 10.00



Consider the network shown above, and assume that each node initially knows the costs to each of its neighbors. Consider the distance-vector algorithm. Show the distance table entries at node **D** after the first iteration!

NOTE:

- It is case insensitive
- If the cost = infinity, you can simply write **inf** and the corresponding next hop can be written as '-' (without quote)
- If there are more than one paths with similar minimum cost, choose only one possible next hop (don't write all possible next hops)

	A	B	C	E	F	G
Cost	3 ✓	4 ✓	2 ✓	3 ✓	1 ✓	6 ✓
Next hop	C ✓	B ✓	C ✓	F ✓	F ✓	F ✓

Question 1

Correct Mark 5.00 out of 5.00

Suppose five nodes -- A, B, C, D and E -- are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send.

Each node attempts to transmit in each slot with probability p . The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.

- What is the probability of node C succeeds for the first time in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication)
 ✓
- What is the probability of the first success in slot 5? (NOTE: do not use space and use dot (".") sign to express multiplication)
 ✓
- Find value p^* that maximizes the efficiency? (HINT: use first derivative from the equation)
 ✓

The probability of node C succeeds for the first time in slot 4: probability of C fails in the first 3 slots and succeeds in the 4th slot. The probability of C succeed in a slot (p_C): $p(1-p)^4$, thus the probability of C fails to transmit in a slot: $1-p_C = 1 - p(1-p)^4$. Now, the probability of C succeeds for the first time in slot 4: $p_C(1-p_C)^3 = p(1-p)^4(1-p(1-p)^4)^3$

Correct
The correct answer is: 1/5
Mark 1.00 out of 1.00

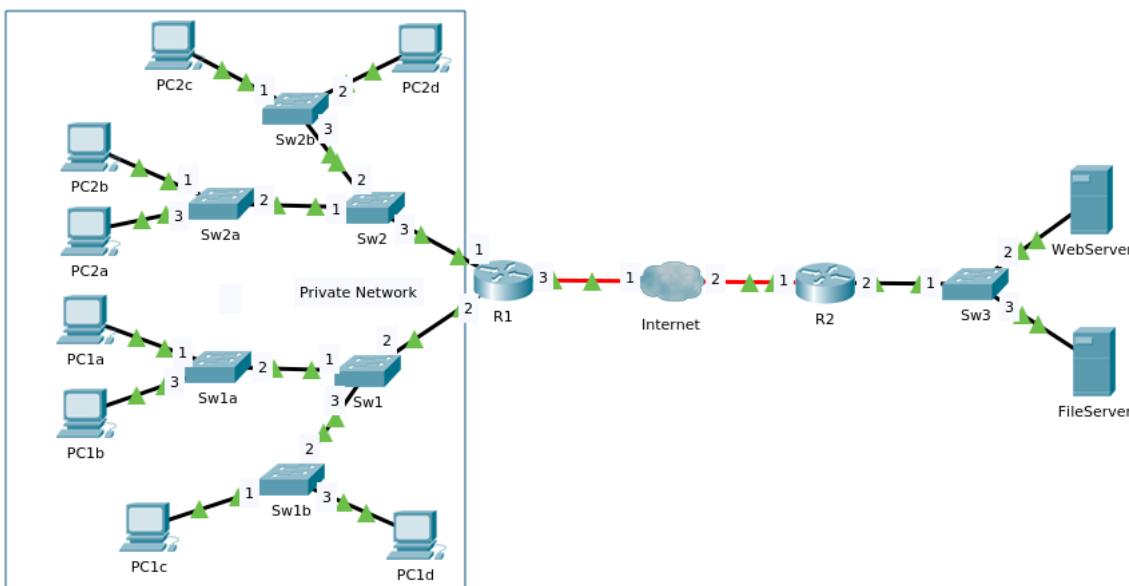
The probability of the first success in slot 5: the probability of any node fails in the first 4 slots and succeeds in the 5th slot. The probability of any node succeed in a slot (p_{any}): $5p(1-p)^4$, thus the probability of any node fails to transmit in a slot: $1-p_{any} = 1-5p(1-p)^4$. Now, the probability of any node succeeds for the first time in slot 5: $p_{any}(1-p_{any})^4 = 5p(1-p)^4(1-5p(1-p)^4)^4$

Efficiency of 5 nodes system: $5p(1-p)^4$

The first derivative: $5(1-p)^4 - 5p(4)(1-p)^3 = 5(1-p)^3(1-p - 4p) \rightarrow$ to get optimum solution it should be equals to 0 $\rightarrow 1-5p = 0 \rightarrow p = 1/5 = 0.2$

Question 2

Partially correct Mark 23.94 out of 30.00



Consider the network above. Please **NOTE** that the network inside blue rectangle is a **private network** (i.e. private IP addresses are used by its hosts) and R1 is a **NAT enabled router**. Suppose that, initially the **ARP table** in all hosts and routers are **empty**, and all **Switch tables** are **empty** too. Then, the following transmissions happen in chronological order:

1. PC1b sends a ping command to PC1d
2. PC1c sends a ping command to PC2d
3. PC2b accesses a file from FileServer

After the last packet transmission, please fill in the **ARP tables** in each host and router, as well as the **Switch tables**, by completing the tables below:

NOTE:

- Router is written with the interface number separated by '-'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
- Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an **ARP** or a **Switch** table, fill the table based on the chronological order.
- In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables

PC1a		PC1b		PC1c		PC1d		PC2a		PC2b		PC2c		PC2d	
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
-	-	PC1d	PC1d	R1-2	R1-2	PC1b	PC1b	-	-	R1-1	R1-1	-	-	R1-1	R1-1
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WebServer		FileServer		R1-1		R1-2		R1-3		R2-1		R2-2			
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	
-	-	R2-2	R2-2	PC2d	PC2d	PC1c	PC1c	Internet-1	Internet-1	Internet-2	Internet-2	FileServer	F		
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
				PC2b	PC2b										
				✓	✓										

Switch tables

Sw1		Sw1a		Sw1b		Sw2		Sw2a		Sw2b		Sw3	
MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port
PC1b	Sw1-1	PC1b	Sw1a-3	PC1-c	Sw1b-1	R1-1	Sw2-3			R1-1	Sw2b-3		Sw3-1
✓	✓	✓	✓	✗	✗	✓	✓	✗	✗	✓	✓	✓	✓
PCa	2			Sw1a-2	PC1-d	2	PC2d	Sw2-2		Pc2d	Sw2b-2	FileServer	Sw3-3
✗	✗	✗	✗	✓	✗	✗	✓	✗	✗	✓	✓	✓	✓
PC1c	Sw1-3				PC2b	Sw2-1							
✓	✓				✗	✗	✗						
	3				3								
✗	✗				✗	✗							

When PC2b accesses a file from FileServer, an FTP request message is sent from PC2b to FileServer, and an FTP response in the opposite direction.

Please complete the information about **source** and **destination** of **IP Address** and **MAC Address**, during this communication process at various locations:

Location	Source MAC	Destination MAC	Source IP	Destination IP

PC2b --> R1	PC2b ✓	R1-1 ✓	PC2b ✓	FileServer ✓
R1 --> Internet	R1-3 ✓	Internet-1 ✓	R1-3 ✓	FileServer ✓
R2 --> FileServer	R2-2 ✓	FileServer ✓	R1-3 ✓	FileServer ✓
FileServer --> R2	FileServer ✓	R2-2 ✓	FileServer ✓	R1-3 ✓
Internet --> R1	Internet-1 ✓	R1-3 ✓	FileServer ✓	R1-3 ✓
R1 --> PC2b	R1-1 ✓	PC2b ✓	FileServer ✓	PC2b ✓



Started on Friday, 3 December 2021, 9:04 AM

State Finished

Completed on Friday, 3 December 2021, 9:55 AM

Time taken 50 mins 57 secs

Marks 33.09/35.00

Grade 94.53 out of 100.00

Question 1

Correct Mark 5.00 out of 5.00

Suppose eight nodes -- A, B, C, D, E, F, G, and H -- are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot with probability p . The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.

- What is the probability of node C succeeds for the first time in slot 6? (NOTE: do not use space and use dot (".") sign to express multiplication)
 ✓
- What is the probability of the first success in slot 7? (NOTE: do not use space and use dot (".") sign to express multiplication)
 ✓
- Find value p^* that maximizes the efficiency? (HINT: use first derivative from the equation)
 ✓

The probability of node C succeeds for the first time in slot 6: probability of C fails in the first 5 slots and succeeds in the 6th slot. The probability of C succeed in a slot (p_C): $p(1-p)^7$, thus the probability of C fails to transmit in a slot: $1-p_C = 1 - p(1-p)^7$. Now, the probability of C succeeds for the first time in slot 6: $p_C(1-p_C)^5 = p(1-p)^7(1-p(1-p)^7)^5$

The probability of the first success in slot 7: the probability of any node fails in the first 6 slots and succeeds in the 7th slot. The probability of any node succeed in a slot (p_{any}): $8p(1-p)^7$, thus the probability of any node fails to transmit in a slot: $1-p_{any} = 1-8p(1-p)^7$. Now, the probability of any node succeeds for the first time in slot 7: $p_{any}(1-p_{any})^6 = 8p(1-p)^7(1-8p(1-p)^7)^6$

Efficiency of 8 nodes system: $8p(1-p)^7$

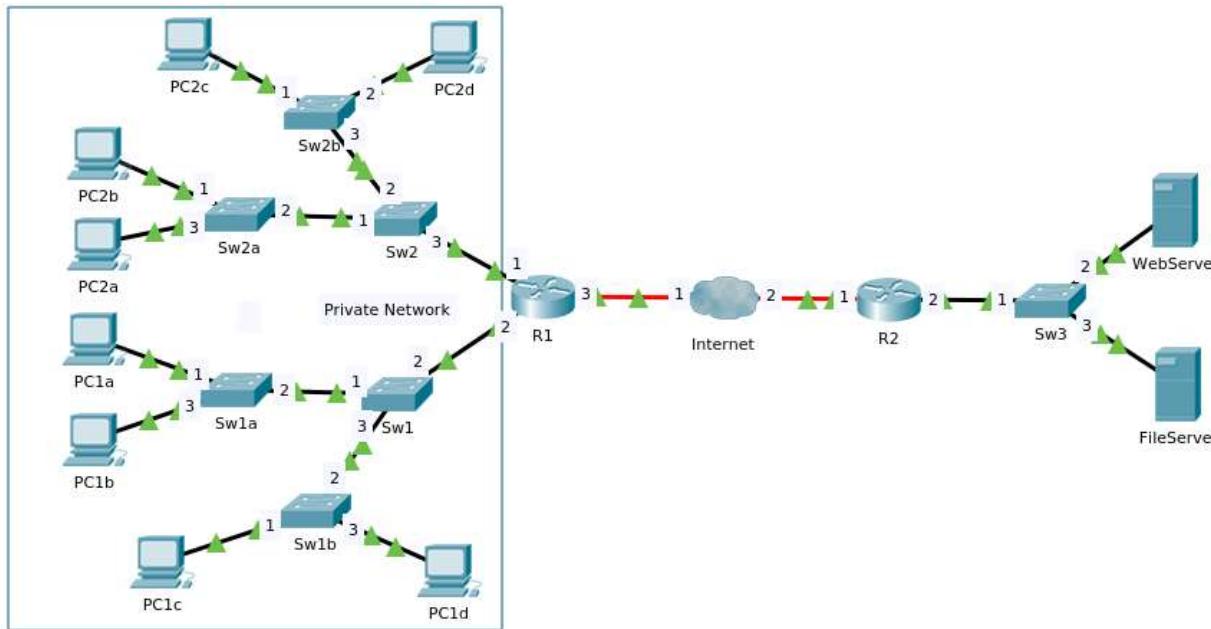
The first derivative: $8(1-p)^7 - 8p(7)(1-p)^6 = 8(1-p)^6(1-p - 7p)$ --> to get optimum solution it should be equals to 0 --> $1-8p = 0 \rightarrow p = 1/8 = 0.125$



Question 2

Partially correct

Mark 28.09 out of 30.00



Consider the network above. Please NOTE that the network inside blue rectangle is a **private network** (i.e. private IP addresses are used by its hosts) and R1 is a **NAT enabled router**. Suppose that, initially the **ARP table** in all hosts and routers are **empty**, and all **Switch tables** are **empty** too. Then, the following transmissions happen in chronological order:

1. PC1c sends a ping command to PC1a
2. PC1d sends a ping command to PC2d
3. PC2a accesses a web page from WebServer

After the last packet transmission, please fill in the **ARP tables** in each host and router, as well as the **Switch tables**, by completing the tables below:

NOTE:

- Router is written with the interface number separated by '-'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
- Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an **ARP** or a **Switch** table, fill the table based on the chronological order.
- In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables

PC1a		PC1b		PC1c		PC1d		PC2a		PC2b		PC2c		PC2d	
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
PC1c	PC1c	-	-	PC1a	PC1a	R1-2	R1-2	R1-1	R1-1	-	-	-	-	R1-1	R1-1
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WebServer		FileServer		R1-1		R1-2		R1-3		R2-1		R2-2			
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
R2-2	R2-2	-	-	PC2d	PC2d	PC1d	PC1d	Internet-1	Internet-1	Internet-2	Internet-2	WebServer	WebServer		
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		



Switch tables

When PC2a accesses a web page from WebServer, an HTTP request message is sent from PC2a to WebServer, and an HTTP response in the opposite direction. Please complete the information about **source** and **destination** of IP Address and MAC Address, during this communication process at various locations:

Location	Source MAC	Destination MAC	Source IP	Destination IP
PC2a --> R1	PC2a ✓	R1-1 ✓	PC2a ✓	WebServer ✓
R1 --> Internet	R1-3 ✓	Internet-1 ✓	R1-3 ✓	WebServer ✓
R2 --> WebServer	R2-2 ✓	WebServer ✓	R2-2 ✗	WebServer ✓
WebServer --> R2	WebServer ✓	R2-2 ✓	WebServer ✓	R2-2 ✗
Internet --> R1	Internet-1 ✓	R1-3 ✓	WebServer ✓	R1-3 ✓
R1 --> PC2a	R1-1 ✓	PC2a ✓	WebServer ✓	PC2a ✓



Question 1

Partially correct Mark 1.67 out of 5.00

Suppose eight nodes -- A, B, C, D, E, F, G, and H -- are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot with probability p . The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.

- What is the probability of node C succeeds for the first time in slot 6? (NOTE: do not use space and use dot (".") sign to express multiplication)
 X
- What is the probability of the first success in slot 7? (NOTE: do not use space and use dot (".") sign to express multiplication)
 X
- Find value p^* that maximizes the efficiency? (HINT: use first derivative from the equation) ✓

The probability of node C succeeds for the first time in slot 6: probability of C fails in the first 5 slots and succeeds in the 6th slot. The probability of C succeed in a slot (p_C): $p(1-p)^7$, thus the probability of C fails to transmit in a slot: $1-p_C = 1 - p(1-p)^7$. Now, the probability of C succeeds for the first time in slot 6: $p_C(1-p_C)^5 = p(1-p)^7(1-p(1-p)^7)^5$

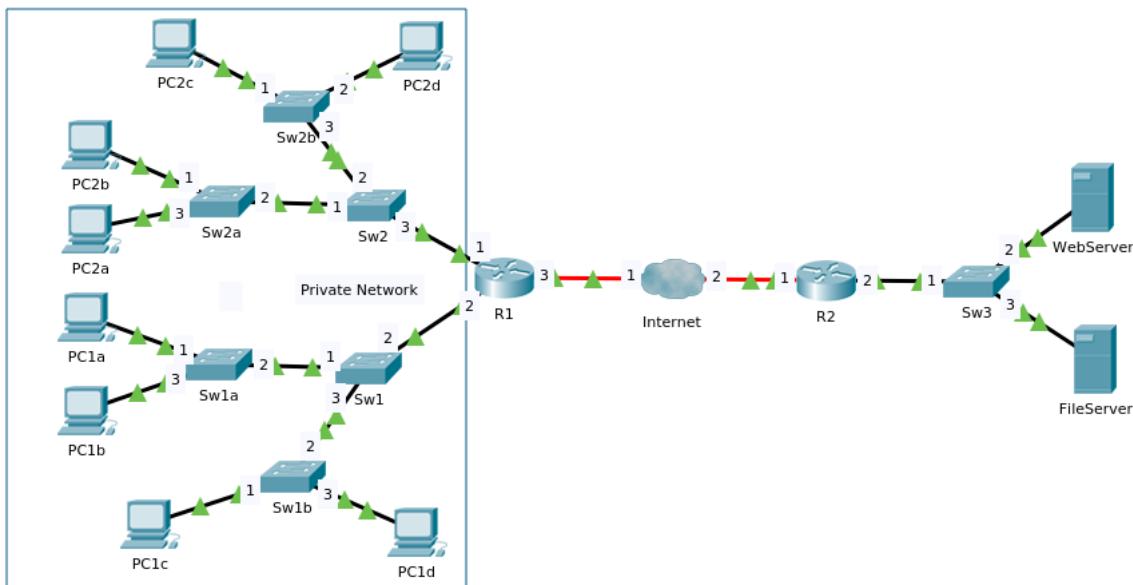
The probability of the first success in slot 7: the probability of any node fails in the first 6 slots and succeeds in the 7th slot. The probability of any node succeed in a slot (p_{any}): $8p(1-p)^7$, thus the probability of any node fails to transmit in a slot: $1-p_{any} = 1-8p(1-p)^7$. Now, the probability of any node succeeds for the first time in slot 7: $p_{any}(1-p_{any})^6 = 8p(1-p)^7(1-8p(1-p)^7)^6$

Efficiency of 8 nodes system: $8p(1-p)^7$

The first derivative: $8(1-p)^7 - 8p(7)(1-p)^6 = 8(1-p)^6(1-p - 7p) \rightarrow$ to get optimum solution it should be equals to 0 $\rightarrow 1-8p = 0 \rightarrow p = 1/8 = 0.125$

Question 2

Partially correct Mark 29.68 out of 30.00



Consider the network above. Please **NOTE** that the network inside blue rectangle is a **private network** (i.e. private IP addresses are used by its hosts) and R1 is a **NAT enabled router**. Suppose that, initially the **ARP table** in all hosts and routers are **empty**, and all **Switch tables** are **empty** too. Then, the following transmissions happen in chronological order:

1. PC2b sends a ping command to PC2d
2. PC2a sends a ping command to PC1b
3. PC1d accesses a web page from WebServer

After the last packet transmission, please fill in the **ARP tables** in each host and router, as well as the **Switch tables**, by completing the tables below:

NOTE:

- Router is written with the interface number separated by '-'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
- Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an **ARP** or a **Switch** table, fill the table based on the chronological order.
- In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables

PC1a		PC1b		PC1c		PC1d		PC2a		PC2b		PC2c		PC2d	
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
-	-	R1-2	R1-2	-	-	R1-2	R1-2	R1-1	R1-1	PC2d	PC2d	-	-	PC2b	PC2b
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WebServer		FileServer		R1-1		R1-2		R1-3		R2-1		R2-2			
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
R2-2	R2-2	-	-	PC2a	PC2a	PC1b	PC1b	Internet-1	Internet-1	Internet-2	Internet-2	Internet-2	Internet-2	WebServer	WebServer
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
						PC1d	PC1d								
						✓	✓								

Switch tables

Sw1		Sw1a		Sw1b		Sw2		Sw2a		Sw2b		Sw3	
MAC	Port	MAC	Port										
R1-2	2	R1-2	2	PC1d	3	PC2b	1	PC2b	1	PC2b	3	R2-2	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PC1b	1	PC1b	3	R1-2	2	PC2d	2	PC2d	2	PC2d	2	WebServer	2
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PC1d	3					PC2a	1	PC2a	3				
✓	✓					✓	✓	✓	✓				
						R1-1	3	R1-1	2				
						✓	✓	✓	✓				

When PC1d accesses a web page from WebServer, an HTTP request message is sent from PC1d to WebServer, and an HTTP response in the opposite direction. Please complete the information about **source** and **destination** of IP Address and MAC Address, during this communication process at various locations:

Location	Source MAC	Destination MAC	Source IP	Destination IP
PC1d --> R1	PC1d ✓	R1-2 ✓	PC1d ✓	WebServer ✓
R1 --> Internet	R1-3 ✓	Internet-1 ✓	R1-3 ✓	WebServer ✓
R2 --> WebServer	R2-2 ✓	WebServer ✓	R1-3 ✓	WebServer ✓
WebServer --> R2	WebServer ✓	R2-2 ✓	WebServer ✓	R1-3 ✓
Internet --> R1	Internet-1 ✓	R1-3 ✓	WebServer ✓	R1-3 ✓
R1 --> PC1d	R1-2 ✓	PC1s ✘	WebServer ✓	PC1d ✓



Started on Friday, 3 December 2021, 9:01 AM

State Finished

Completed on Friday, 3 December 2021, 9:51 AM

Time taken 49 mins 55 secs

Marks 34.36/35.00

Grade **98.18** out of 100.00

Question 1

Correct Mark 5.00 out of 5.00

Suppose eight nodes -- A, B, C, D, E, F, G, and H -- are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot with probability p . The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.

- What is the probability of node C succeeds for the first time in slot 6? (NOTE: do not use space and use dot (".") sign to express multiplication)
 ✓
- What is the probability of the first success in slot 7? (NOTE: do not use space and use dot (".") sign to express multiplication)
 ✓
- Find value p^* that maximizes the efficiency? (HINT: use first derivative from the equation)
 ✓

The probability of node C succeeds for the first time in slot 6: probability of C fails in the first 5 slots and succeeds in the 6th slot. The probability of C succeed in a slot (p_C): $p(1-p)^7$, thus the probability of C fails to transmit in a slot: $1-p_C = 1 - p(1-p)^7$. Now, the probability of C succeeds for the first time in slot 6: $p_C(1-p_C)^5 = p(1-p)^7(1-p(1-p)^7)^5$

The probability of the first success in slot 7: the probability of any node fails in the first 6 slots and succeeds in the 7th slot. The probability of any node succeed in a slot (p_{any}): $8p(1-p)^7$, thus the probability of any node fails to transmit in a slot: $1-p_{any} = 1-8p(1-p)^7$. Now, the probability of any node succeeds for the first time in slot 7: $p_{any}(1-p_{any})^6 = 8p(1-p)^7(1-8p(1-p)^7)^6$

Efficiency of 8 nodes system: $8p(1-p)^7$

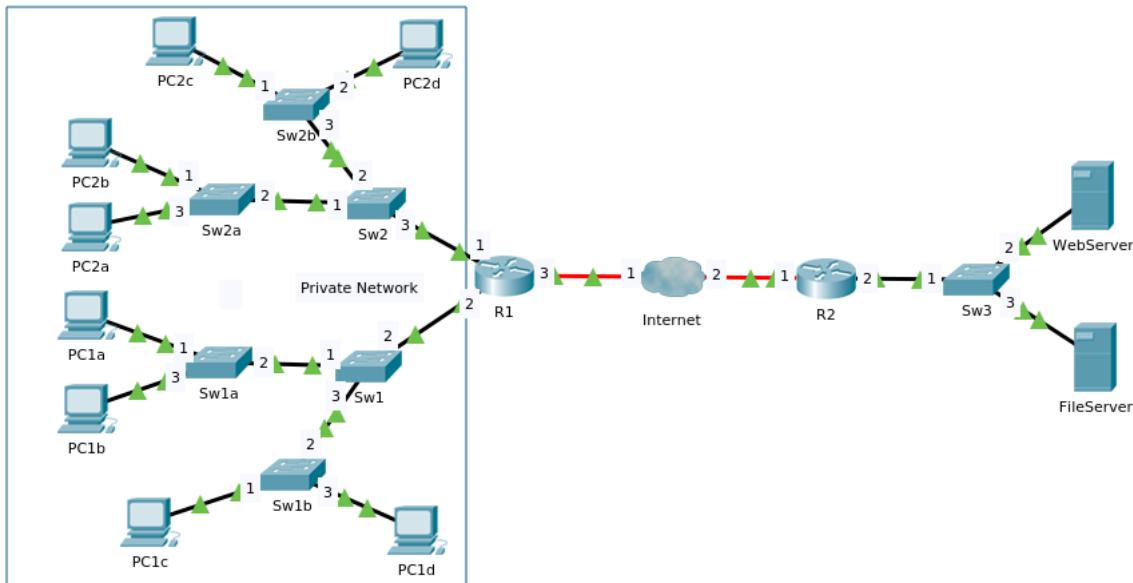
The first derivative: $8(1-p)^7 - 8p(7)(1-p)^6 = 8(1-p)^6(1-p - 7p) \rightarrow$ to get optimum solution it should be equals to 0 $\rightarrow 1-8p = 0 \rightarrow p = 1/8 = 0.125$



Question 2

Partially correct

Mark 29.36 out of 30.00



Consider the network above. Please **NOTE** that the network inside blue rectangle is a **private network** (i.e. private IP addresses are used by its hosts) and **R1** is a **NAT enabled router**. Suppose that, initially the **ARP table** in all hosts and routers are **empty**, and all **Switch tables** are **empty** too. Then, the following transmissions happen in chronological order:

1. PC2b sends a ping command to PC2d
2. PC2a sends a ping command to PC1b
3. PC1d accesses a web page from WebServer

After the last packet transmission, please fill in the **ARP tables** in each host and router, as well as the **Switch tables**, by completing the tables below:

NOTE:

- Router is written with the interface number separated by '.'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
- Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an **ARP** or a **Switch** table, fill the table based on the chronological order.
- In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables

PC1a		PC1b		PC1c		PC1d		PC2a		PC2b		PC2c		PC2d	
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
-	-	R1-2	R1-2	-	-	R1-2	R1-2	R1-1	R1-1	PC2d	PC2d	-	-	PC2b	PC2b
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WebServer		FileServer		R1-1		R1-2		R1-3		R2-1		R2-2			
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
R2-2	R2-2	-	-	PC2a	PC2a	PC1b	PC1b	Internet-1	Internet-1	Internet-2	Internet-2	Internet-2	Internet-2	WebServer	WebServer
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Location	Source MAC	Destination MAC	Source IP	Destination IP
PC1d --> R1	PC1d ✓	R1-2 ✓	PC1d ✓	WebServer ✓
R1 --> Internet	R1-3 ✓	Internet-1 ✓	R1-3 ✓	WebServer ✓
R2 --> WebServer	R2-2 ✓	WebServer ✓	R1-3 ✓	WebServer ✓
WebServer --> R2	WebServer ✓	R2-2 ✓	WebServer ✓	R1-3 ✓
Internet --> R1	Internet-1 ✓	R1-3 ✓	WebServer ✓	R1-3 ✓
R1 --> PC1d	R1-2 ✓	PC1d ✓	WebServer ✓	PC1d ✓





Question 1

Correct Mark 5.00 out of 5.00

Suppose five nodes -- A, B, C, D and E -- are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send.

Each node attempts to transmit in each slot with probability p . The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.

- What is the probability of node C succeeds for the first time in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication)
 ✓
- What is the probability of the first success in slot 5? (NOTE: do not use space and use dot (".") sign to express multiplication)
 ✓
- Find value p^* that maximizes the efficiency? (HINT: use first derivative from the equation)
 ✓

The probability of node C succeeds for the first time in slot 4: probability of C fails in the first 3 slots and succeeds in the 4th slot. The probability of C succeed in a slot (p_C): $p(1-p)^4$, thus the probability of C fails to transmit in a slot: $1-p_C = 1 - p(1-p)^4$. Now, the probability of C succeeds for the first time in slot 4: $p_C(1-p_C)^3 = p(1-p)^4(1-p(1-p)^4)^3$

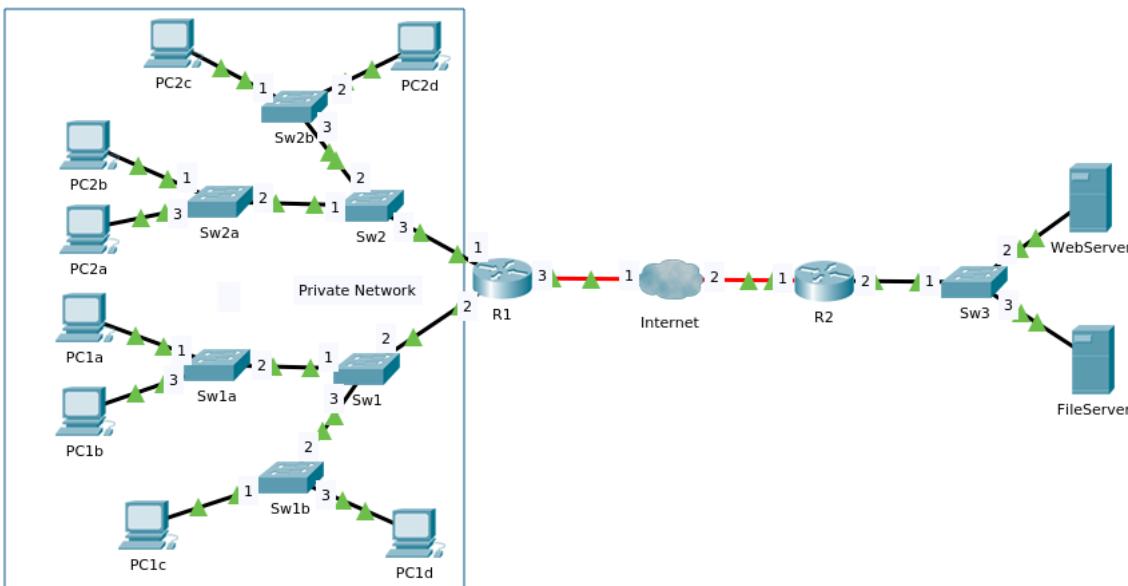
The probability of the first success in slot 5: the probability of any node fails in the first 4 slots and succeeds in the 5th slot. The probability of any node succeed in a slot (p_{any}): $5p(1-p)^4$, thus the probability of any node fails to transmit in a slot: $1-p_{any} = 1-5p(1-p)^4$. Now, the probability of any node succeeds for the first time in slot 5: $p_{any}(1-p_{any})^4 = 5p(1-p)^4(1-5p(1-p)^4)^4$

Efficiency of 5 nodes system: $5p(1-p)^4$

The first derivative: $5(1-p)^4 - 5p(4)(1-p)^3 = 5(1-p)^3(1-p - 4p) \rightarrow$ to get optimum solution it should be equals to 0 $\rightarrow 1-5p = 0 \rightarrow p = 1/5 = 0.2$

Question 2

Partially correct Mark 28.72 out of 30.00



Consider the network above. Please **NOTE** that the network inside blue rectangle is a **private network** (i.e. private IP addresses are used by its hosts) and **R1** is a **NAT enabled router**. Suppose that, initially the **ARP table** in all hosts and routers are **empty**, and all **Switch tables** are **empty** too. Then, the following transmissions happen in chronological order:

1. PC2c sends a ping command to PC2a
2. PC2b sends a ping command to PC1b
3. PC1c accesses a file from FileServer

After the last packet transmission, please fill in the **ARP tables** in each host and router, as well as the **Switch tables**, by completing the tables below:

NOTE:

- Router is written with the interface number separated by '-'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
- Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an **ARP** or a **Switch** table, fill the table based on the chronological order.
- In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables

PC1a		PC1b		PC1c		PC1d		PC2a		PC2b		PC2c		PC2d	
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
-	-	R1-2	R1-2	R1-2	R1-2	-	-	PC2c	PC2c	R1-1	R1-1	PC2a	PC2a	-	-
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WebServer FileServer R1-1 R1-2 R1-3 R2-1 R2-2															
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
-	-	R2-2	R2-2	PC2b	PC2b	PC1b	PC1b	Internet-1	Internet-1	Internet-2	Internet-2	FileServer	FileServer	-	-
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
						PC1c	PC1c								
						✓	✓								

Switch tables

Sw1		Sw1a		Sw1b		Sw2		Sw2a		Sw2b		Sw3	
MAC	Port	MAC	Port										
R1-2	2	R1-2	2	R1-2	2	PC2c	2	PC2c	2	PC2c	1	R2-2	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PC1b	1	PC1b	3	PC1c	1	PC2a	1	PC2a	3	PC2a	3	FileServer	2
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
PC1c	3					PC2b	1	PC2b	1				
✓	✓					✓	✓	✓	✓				
						R1-1	3	R1-1	2				
						✓	✓	✓	✓				

When PC1c accesses a file from FileServer, an FTP request message is sent from PC1c to FileServer, and an FTP response in the opposite direction.

Please complete the information about **source** and **destination** of **IP Address** and **MAC Address**, during this communication process at various locations:

Location	Source MAC	Destination MAC	Source IP	Destination IP

PC1c --> R1	PC1c ✓	R1-2 ✓	PC1c ✓	FileServer ✓
R1 --> Internet	R1-3 ✓	Internet-1 ✓	R1-3 ✓	FileServer ✓
R2 --> FileServer	R2-2 ✓	WebServer ✗	R1-3 ✓	FileServer ✓
FileServer --> R2	WebServer ✗	R2-2 ✓	FileServer ✓	R1-3 ✓
Internet --> R1	Internet ✗	R1-3 ✓	FileServer ✓	R1-3 ✓
R1 --> PC1c	R1-2 ✓	PC1c ✓	FileServer ✓	PC1c ✓



Home > My courses > PROG. IK REGULAR > REG - Genap 2020/2021 > [Reg] Jaringan Komputer Genap 2020-2021 > 6. Link Layer and LAN > Kuis 6 - Link Layer and LAN

Started on Tuesday, 25 May 2021, 11:09 AM

State Finished

Completed on Tuesday, 25 May 2021, 11:59 AM

Time taken 50 mins 1 sec

Grade 43.51 out of 100.00

Question 1

Correct Mark 10.00 out of 10.00

Suppose the information content of a packet is the bit pattern 0100 1100 1001 1110 and an ODD parity scheme is being used. What would the value of the field containing the parity bits for the case of two-dimensional parity scheme?

Please fill in your answer in the following matrix!

bits	parity
0100	0 ✓
1100	1 ✓
1001	1 ✓
1110	0 ✓
parity	0000 ✓ 1 ✓

Question 2

Incorrect Mark 0.00 out of 15.00

A data D that consists of bit-stream 1101111101 is sent out using CRC error detection with generator G = 1010. Determine the value of R that is sent out together with the data D!

Answer: 011

The correct answer is: 110

Question 3

Not answered Marked out of 25.00

Suppose eighth nodes -- A, B, C, D, E, F, G, and H -- are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot with probability p . The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.

- What is the probability of node C succeeds for the first time in slot 6? (NOTE: do not use space and use dot (".") sign to express multiplication)
 X
- What is the probability of the first success in slot 7? (NOTE: do not use space and use dot (".") sign to express multiplication)
 X
- Find value p^* that maximizes the efficiency? (HINT: use first derivative from the equation) X

The probability of node C succeeds for the first time in slot 6: probability of C fails in the first 5 slots and succeeds in the 6th slot. The probability of C succeed in a slot (p_C): $p(1-p)^7$, thus the probability of C fails to transmit in a slot: $1-p_C = 1 - p(1-p)^7$. Now, the probability of C succeeds for the first time in slot 6: $p_C(1-p_C)^5 = p(1-p)^7(1-p(1-p)^7)^5$

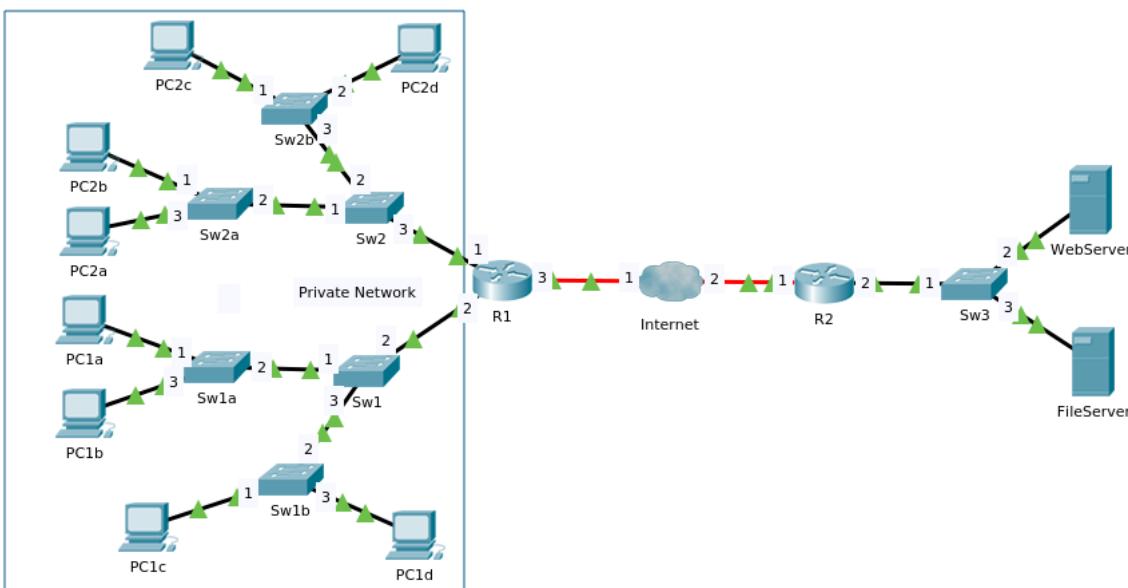
The probability of the first success in slot 7: the probability of any node fails in the first 6 slots and succeeds in the 7th slot. The probability of any node succeed in a slot (p_{any}): $8p(1-p)^7$, thus the probability of any node fails to transmit in a slot: $1-p_{any} = 1-8p(1-p)^7$. Now, the probability of any node succeeds for the first time in slot 7: $p_{any}(1-p_{any})^6 = 8p(1-p)^7(1-8p(1-p)^7)^6$

Efficiency of 8 nodes system: $8p(1-p)^7$

The first derivative: $8(1-p)^7 - 8p(7)(1-p)^6 = 8(1-p)^6(1-p - 7p)$ --> to get optimum solution it should be equals to 0 --> $1-8p = 0$ --> $p = 1/8 = 0.125$

Question 4

Partially correct Mark 33.51 out of 50.00



Consider the network above. Please **NOTE** that the network inside blue rectangle is a **private network** (i.e. private IP addresses are used by its hosts) and R1 is a **NAT enabled router**. Suppose that, initially the **ARP table** in all hosts and routers are **empty**, and all **Switch tables** are **empty** too. Then, the following transmissions happen in chronological order:

1. PC1b sends a ping command to PC1d
2. PC1c sends a ping command to PC2d
3. PC2b accesses a file from FileServer

After the last packet transmission, please fill in the **ARP tables** in each host and router, as well as the **Switch tables**, by completing the tables below:

NOTE:

- Router is written with the interface number separated by '-'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
- Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an **ARP** or a **Switch** table, fill the table based on the chronological order.
- In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables

PC1a		PC1b		PC1c		PC1d		PC2a		PC2b		PC2c		PC2d	
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
-	-	PC1d	PC1d	PC2d	R1-2	PC1b	PC1b	-	-	FileServer	R1-2	-	-	PC1c	R1-1
✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✗	✗	✓	✓	✗	✓
WebServer															
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
-	-	R1-3	R2-2	PC1c	PC1c	PC2d	PC2d	FileServer	Internet-1	Internet-2	Internet-2	FileServer	FileServer	FileServer	FileServer
✓	✓	✗	✓	✗	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓
				PC2d	PC2d										
				✗	✗										

Switch tables

Sw1		Sw1a		Sw1b		Sw2		Sw2a		Sw2b		Sw3	
MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port
PC1b	Sw1-1	PC1b	Sw1a-3	PC1c	Sw1b-1	R1-1	Sw2-3	PC2b	Sw2a-1	R1-1	Sw2b-3	R2-2	Sw3-1
✓	✓	✓	✓	✗	✗	✓	✓	✗	✗	✓	✓	✓	✓
R1-2	Sw1-2	R1-2	Sw1a-2	R1-2	Sw1b-2	PC2d	Sw2-2	R1-1	Sw2a-2	PC2d	Sw2b-2	FileServer	Sw3-3
✗	✗	✗	✓	✗	✗	✓	✓	✗	✗	✓	✓	✓	✓
PC1c	Sw1-3			-	-	PC2b	Sw2-1						
✓	✓			✗	✗	✓	✓						
-	-			-	-								
✗	✗			✗	✗								

When PC2b accesses a file from FileServer, an FTP request message is sent from PC2b to FileServer, and an FTP response in the opposite direction.

Please complete the information about **source** and **destination** of **IP Address** and **MAC Address**, during this communication process at various locations:

Location	Source MAC	Destination MAC	Source IP	Destination IP

PC2b --> R1	PC2b ✓	R1-1 ✓	PC2b ✓	FileServer ✓
R1 --> Internet	R1-3 ✓	Internet-1 ✓	R1-3 ✓	FileServer ✓
R2 --> FileServer	R2-2 ✓	FileServer ✓	R1-3 ✓	FileServer ✓
FileServer --> R2	FileServer ✓	R2-3 ✗	FileServer ✓	R1-3 ✓
Internet --> R1	Internet-1 ✓	R1-3 ✓	FileServer ✓	R1-3 ✓
R1 --> PC2b	R1-2 ✗	PC2b ✓	FileServer ✓	PC2b ✓



Started on Friday, 3 December 2021, 9:00 AM

State Finished

Completed on Friday, 3 December 2021, 9:45 AM

Time taken 45 mins 37 secs

Marks 33.72/35.00

Grade 96.35 out of 100.00

Question 1

Correct Mark 5.00 out of 5.00

Suppose five nodes -- A, B, C, D and E -- are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send.

Each node attempts to transmit in each slot with probability p . The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.

- What is the probability of node C succeeds for the first time in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication)
 $p(1-p)^4(1-p(1-p)^4)^3$ ✓
- What is the probability of the first success in slot 5? (NOTE: do not use space and use dot (".") sign to express multiplication)
 $5p(1-p)^4(1-5p(1-p)^4)^4$ ✓
- Find value p^* that maximizes the efficiency? (HINT: use first derivative from the equation) 0.2 ✓

The probability of node C succeeds for the first time in slot 4: probability of C fails in the first 3 slots and succeeds in the 4th slot. The probability of C succeed in a slot (p_C): $p(1-p)^4$, thus the probability of C fails to transmit in a slot: $1-p_C = 1 - p(1-p)^4$. Now, the probability of C succeeds for the first time in slot 4: $p_C(1-p_C)^3 = p(1-p)^4(1-p(1-p)^4)^3$

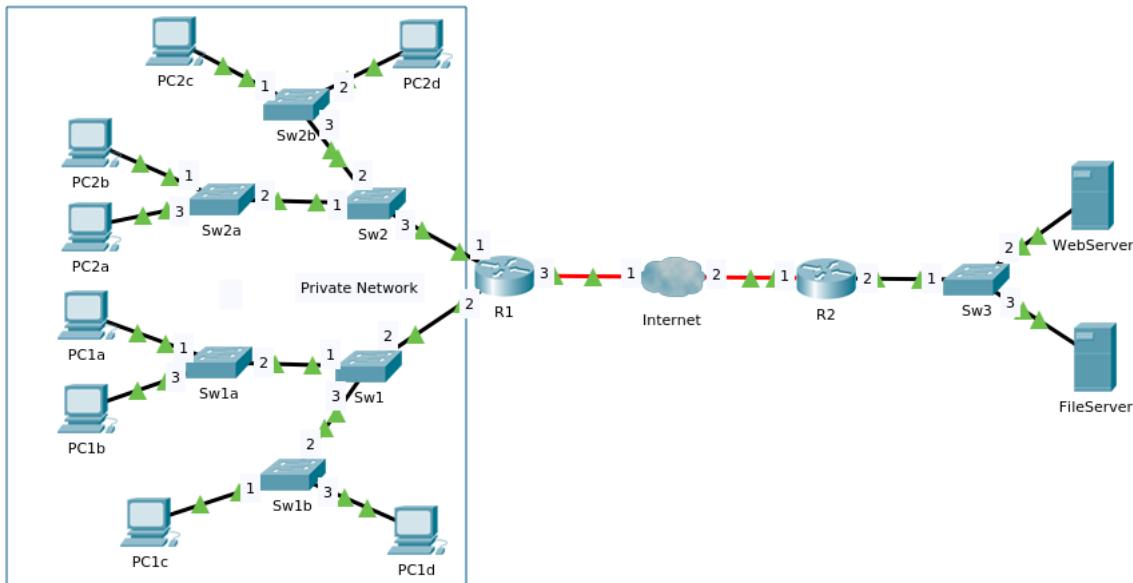
The probability of the first success in slot 5: the probability of any node fails in the first 4 slots and succeeds in the 5th slot. The probability of any node succeed in a slot (p_{any}): $5p(1-p)^4$, thus the probability of any node fails to transmit in a slot: $1-p_{any} = 1-5p(1-p)^4$. Now, the probability of any node succeeds for the first time in slot 5: $p_{any}(1-p_{any})^4 = 5p(1-p)^4(1-5p(1-p)^4)^4$

Efficiency of 5 nodes system: $5p(1-p)^4$

The first derivative: $5(1-p)^4 - 5p(4)(1-p)^3 = 5(1-p)^3(1-p - 4p) \rightarrow$ to get optimum solution it should be equals to 0 $\rightarrow 1-5p = 0 \rightarrow p = 1/5 = 0.2$

Question 2

Partially correct Mark 28.72 out of 30.00



Consider the network above. Please **NOTE** that the network inside blue rectangle is a **private network** (i.e. private IP addresses are used by its hosts) and **R1** is a **NAT enabled router**. Suppose that, initially the **ARP table** in all hosts and routers are **empty**, and all **Switch tables** are **empty** too. Then, the following transmissions happen in chronological order:

1. PC1c sends a ping command to PC1a
2. PC1d sends a ping command to PC2d
3. PC2a accesses a web page from WebServer

After the last packet transmission, please fill in the **ARP tables** in each host and router, as well as the **Switch tables**, by completing the tables below:

NOTE:

- Router is written with the interface number separated by '.'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
- Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an **ARP** or a **Switch** table, fill the table based on the chronological order.
- In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables

PC1a		PC1b		PC1c		PC1d		PC2a		PC2b		PC2c		PC2d	
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
PC1c	PC1c	-	-	PC1a	PC1a	R1-2	R1-2	R1-1	R1-1	-	-	-	-	R1-1	R1-1
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WebServer		FileServer		R1-1		R1-2		R1-3		R2-1		R2-2			
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
R2-2	R2-2	-	-	PC2d	PC2d	PC1d	PC1d	Internet-1	Internet-1	Internet-2	Internet-2	Internet-2	Internet-2	WebServer	WebServer
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
				PC2a	PC2a										
				✓	✓										

Switch tables

Sw1		Sw1a		Sw1b		Sw2		Sw2a		Sw2b		Sw3	
MAC	Port	MAC	Port										
PC1c	3	PC1c	2	PC1c	1	R1-1	3	R1-1	2	R1-1	3	R2-2	1
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PC1a	1	PC1a	1	PC1a	2	PC2d	2	PC2a	3	PC2d	2	WebServer	2
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PC1d	3			PC1d	3	PC2a	1						
✓	✓			✓	✓	✓	✓						
R1-2	2			R1-2	2								
✓	✓			✓	✓								

When PC2a accesses a web page from WebServer, an HTTP request message is sent from PC2a to WebServer, and an HTTP response in the opposite direction. Please complete the information about **source** and **destination** of **IP Address** and **MAC Address**, during this communication process at various locations:

Location	Source MAC	Destination MAC	Source IP	Destination IP
PC2a --> R1	PC2a ✓	R1-1 ✓	PC2a ✓	WebServer ✓
R1 --> Internet	R1-3 ✓	Internet-1 ✓	R1-1 ✗	WebServer ✓
R2 --> WebServer	R2-2 ✓	WebServer ✓	R2-2 ✗	WebServer ✓
WebServer --> R2	WebServer ✓	R2-2 ✓	WebServer ✓	R2-2 ✗
Internet --> R1	Internet-1 ✓	R1-3 ✓	WebServer ✓	R1-1 ✗
R1 --> PC2a	R1-1 ✓	PC2a ✓	WebServer ✓	PC2a ✓



Home > My courses > PROG. IK REGULAR > REG - Genap 2020/2021 > [Reg] Jaringan Komputer Genap 2020-2021 > 8. Security in Computer Networks > Kuis 7 & 8 - Wireless Network & Security

Started on Thursday, 10 June 2021, 12:14 PM

State Finished

Completed on Thursday, 10 June 2021, 12:54 PM

Time taken 40 mins 1 sec

Marks 16.00/20.00

Grade 80.00 out of 100.00

Question 1 Correct Mark 1.00 out of 1.00

Interferensi pada sistem wireless diakibatkan oleh transmisi yang dilakukan oleh wireless node lain yang menggunakan frequency band yang sama.

Select one:

- True ✓
 False

The correct answer is 'True'.

Question 2 Incorrect Mark 0.00 out of 1.00

Jaringan GSM menggunakan kombinasi FDMA dan TDMA sebagai protokol multiple access. Hal itu berarti users yang berada di cell berbeda TIDAK dapat menggunakan timeslot yang sama secara mutlak untuk berkomunikasi dengan base station mereka di cell tersebut.

Select one:

- True ✗
 False

Multiple users within the same cell are assigned with different time slot to communicate with the base station (TDMA). But users in different cell may be assigned with the same time slot to communicate with their respective base station, since base station in different cells work independently.

The correct answer is 'False'.

Question 3

Incorrect

Mark 0.00 out of 1.00

Sebuah WiFi host dengan mekanisme *Collision Avoidance* akan melakukan sensing terhadap medium terlebih dahulu sebelum mengirim frame. Host tersebut hanya akan mengirim frame jika medium idle selama beberapa saat yang sudah ditetapkan.

Select one:

- True ✗
- False

WiFi with collision avoidance will first make sure that there is no hidden terminal by using RTS-CTS mechanism

The correct answer is 'False'.

Question 4

Correct

Mark 1.00 out of 1.00

Adi dan Bagas sedang nongkrong di sebuah cafe dan keduanya ingin mengakses internet menggunakan WiFi. Adi ingin menggunakan WiFi yang disediakan oleh cafe, sedangkan Bagas ingin menggunakan WiFi hotspot nya sendiri (e.g. modem 4G WiFi). Hotspot yang disetup Bagas menggunakan channel yang berbeda dengan access point WiFi milik cafe (hotspot Bagas pada channel 1 dan access point cafe pada channel 11). Pada kasus ini, gawai Adi dan Bagas akan saling interferensi jika mereka transmit ke access point masing-masing pada saat bersamaan.

Select one:

- True
- False ✓

Both of them are not interfering to each other when transmitting at the same time because they are operating in different channel.

The correct answer is 'False'.

Question 5

Correct

Mark 1.00 out of 1.00

Atenuasi pada signal wireless terjadi karena noise dari sumber internal dan external.

Select one:

- True
- False ✓

Signal attenuation happens due to longer distance or obstacles between transmitter and receiver, while noise contributes to the SNR value (denominator to the signal power).

The correct answer is 'False'.

Question 6

Correct Mark 1.00 out of 1.00

Standard WiFi berikut tidak bekerja pada frequency band 2.4 GHz:

Select one:

- a. 802.11n
- b. 802.11ac ✓
- c. 802.11ax
- d. 802.11g

Your answer is correct.

The correct answer is: 802.11ac

Question 7

Correct Mark 1.00 out of 1.00

Proses enkripsi atau dekripsi menggunakan asymmetric cryptography lebih lambat daripada symmetric.

Select one:

- True ✓
- False

The correct answer is 'True'.

Question 8

Correct Mark 1.00 out of 1.00

Algoritma enkripsi DES membutuhkan public dan private keys, dan algoritma RSA hanya dapat digunakan untuk enkripsi

Select one:

- True
- False ✓

DES adalah symmetric key, jadi tidak memiliki public-private key pair. RSA juga dapat digunakan untuk digital signature

The correct answer is 'False'.

Question 9

Correct

Mark 1.00 out of 1.00

Sistem smart home menggunakan teknologi Zigbee untuk mengendalikan perangkat rumah tangga secara wireless (seperti remote control). Selain itu, sistem tersebut juga menggunakan multi-hop routing sehingga remote control dapat menggapai perangkat yang tidak berada dalam jangkauannya. Contoh tersebut masuk dalam kategori wireless dalam mode multi-hop dan infrastructure.

Select one:

- True
- False ✓

It is an adhoc multi-hop mode, because it only wants to control the appliances within the home, not through internet.

The correct answer is 'False'.

Question 10

Correct

Mark 5.00 out of 5.00

Cocokkanlah tujuan dari solusi cryptography berikut dengan notasi cryptography yang sesuai. Definisi dari notasi cryptography adalah sebagai berikut:

- m = message
- Ks = Symmetric key
- Ks+ = Sender's public key
- Ks- = Sender's private key
- Kr+ = Receiver's public key
- Kr- = Receiver's private key
- H(m) = hashed of a message
- MAC = Message Authentication Code

Menjamin

integritas dan

authenticity

sebuah message

Sender: $m, Ks-(H(m))$; Receiver: $H(m)$, verify($H(m) = Ks+(Ks-(H(m)))$)

dengan message



digest dan

public key

cryptography

Menjamin

integritas dan

authenticity

sebuah message

Sender: $m, Ks-(m)$; Receiver: verify($m = Ks+(Ks-(m))$)

menggunakan



public key

cryptography

Menjamin

kerahasiaan

sebuah message

Sender: $Ks(m), Kr+(Ks)$; Receiver: $Kr-(Kr+(Ks)), Ks(Ks(m))$

menggunakan



kombinasi

symmetric dan

public key

cryptography

Menjamin

kerahasiaan,

integritas dan

authenticity

sebuah message

Sender: $Ks(m, Ks-(H(m))), Kr+(Ks)$; Receiver: $Kr-(Kr+(Ks)), Ks(Ks(m, Ks-(m))), H(m)$, verify($m = Ks+(Ks-(m))$)

menggunakan



message digest

serta kombinasi

symmetric dan

public key

cryptography

Menjamin

kerahasiaan

sebuah message

Sender: $Kr+(m)$; Receiver: $Kr-(Kr+(m))$

menggunakan

public key

cryptography



Menjamin

kerahasiaan,

integritas dan

authenticity

sebuah message

Sender: $Ks(m, Ks-(m))$, $Kr+(Ks)$; Receiver: $Kr-(Kr+(Ks))$, $Ks(Ks(m, Ks-(m)))$, verify($m = Ks+(Ks-(m))$)

menggunakan



kombinasi

symmetric dan

public key

cryptography

Menjamin

integritas dan

authenticity

sebuah message

MAC(Ks, m)



menggunakan

symmetric key

cryptography

Your answer is correct.

The correct answer is: Menjamin integritas dan authenticity sebuah message dengan message digest dan public key cryptography → Sender: $m, Ks-(H(m))$; Receiver: $H(m)$, verify($H(m) = Ks+(Ks-(H(m)))$), Menjamin integritas dan

authenticity sebuah message menggunakan public key cryptography → Sender: $m, Ks-(m)$; Receiver: verify($m = Ks+(Ks-(m))$), Menjamin kerahasiaan sebuah message menggunakan kombinasi symmetric dan public key cryptography

→ Sender: $Ks(m), Kr+(Ks)$; Receiver: $Kr-(Kr+(Ks))$, $Ks(Ks(m))$, Menjamin kerahasiaan, integritas dan authenticity sebuah message menggunakan message digest serta kombinasi symmetric dan public key cryptography → Sender: $Ks(m, Ks-(H(m)))$, $Kr+(Ks)$; Receiver: $Kr-(Kr+(Ks))$, $Ks(Ks(m, Ks-(m)))$, $H(m)$, verify($m = Ks+(Ks-(m))$), Menjamin kerahasiaan sebuah message menggunakan public key cryptography → Sender: $Kr+(m)$; Receiver: $Kr-(Kr+(m))$, Menjamin kerahasiaan,

integritas dan authenticity sebuah message menggunakan kombinasi symmetric dan public key cryptography → Sender: $Ks(m, Ks-(m))$, $Kr+(Ks)$; Receiver: $Kr-(Kr+(Ks))$, $Ks(Ks(m, Ks-(m)))$, verify($m = Ks+(Ks-(m))$), Menjamin integritas

dan authenticity sebuah message menggunakan symmetric key cryptography → MAC(Ks, m)

Question 11

Incorrect

Mark 0.00 out of 1.00

Adi dan Bagas sedang nongkrong di sebuah cafe dan keduanya ingin mengakses internet menggunakan WiFi. Adi ingin menggunakan WiFi yang disediakan oleh cafe, sedangkan Bagas ingin menggunakan WiFi hotspot nya sendiri (e.g. modem 4G WiFi). Hotspot yang disetup Bagas menggunakan channel yang berbeda dengan access point WiFi milik cafe (hotspot Bagas pada channel 1 dan access point cafe pada channel 11). Pada kasus ini, akan terjadi collision jika kedua gawai Adi dan Bagas transmit ke access point masing-masing secara bersamaan.

Select one:

- True ✗
- False

Both of them can transmit at the same time because they are operating in different channel, thus no collision.

The correct answer is 'False'.

Question 12

Correct

Mark 1.00 out of 1.00

Agar client yang menggunakan SSL dapat di authentikasi, client tersebut harus memberikan certificate nya ke server.

Select one:

- True ✓
- False

The correct answer is 'True'.

Question 13

Incorrect

Mark 0.00 out of 1.00

Radio Network Controller (RNC) pada jaringan 3G mengendalikan atau melayani beberapa BTS, dan juga memisahkan traffic voice dan traffic data.

Select one:

- True
- False ✗

The correct answer is 'True'.

Question 14

Correct Mark 1.00 out of 1.00

Untuk meng-autentikasi client dengan SSL, sebuah client harus memberikan sertifikat digital nya ke server

Select one:

- True ✓
- False

The correct answer is 'True'.

Question 15

Correct Mark 1.00 out of 1.00

Sebuah stateful packet filter firewall memfilter sebuah packet berdasarkan field header packet tersebut dan *connection state table*.

Select one:

- True ✓
- False

The correct answer is 'True'.

Question 16

Correct Mark 1.00 out of 1.00

Sebuah stateful packet filter firewall akan meloloskan sebuah packet yang memiliki field header yang valid walaupun koneksi TCP yang terkait dengan packet tersebut telah ditutup.

Select one:

- True
- False ✓

Stateful firewall checks the header fields as well as connection status, so it blocks a packet if the packet has valid header but the connection has been closed or is never established at all.

The correct answer is 'False'.



Started on Friday, 3 December 2021, 9:00 AM

State Finished

Completed on Friday, 3 December 2021, 9:50 AM

Time taken 50 mins 1 sec

Marks 31.49/35.00

Grade 89.97 out of 100.00

Question 1

Correct Mark 5.00 out of 5.00

Suppose five nodes -- A, B, C, D and E -- are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot with probability p . The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.

- What is the probability of node C succeeds for the first time in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication)
 ✓
- What is the probability of the first success in slot 5? (NOTE: do not use space and use dot (".") sign to express multiplication)
 ✓
- Find value p^* that maximizes the efficiency? (HINT: use first derivative from the equation)
 ✓

The probability of node C succeeds for the first time in slot 4: probability of C fails in the first 3 slots and succeeds in the 4th slot. The probability of C succeed in a slot (p_C): $p(1-p)^4$, thus the probability of C fails to transmit in a slot: $1-p_C = 1 - p(1-p)^4$. Now, the probability of C succeeds for the first time in slot 4: $p_C(1-p_C)^3 = p(1-p)^4(1-p(1-p)^4)^3$

The probability of the first success in slot 5: the probability of any node fails in the first 4 slots and succeeds in the 5th slot. The probability of any node succeed in a slot (p_{any}): $5p(1-p)^4$, thus the probability of any node fails to transmit in a slot: $1-p_{any} = 1-5p(1-p)^4$. Now, the probability of any node succeeds for the first time in slot 5: $p_{any}(1-p_{any})^4 = 5p(1-p)^4(1-5p(1-p)^4)^4$

Efficiency of 5 nodes system: $5p(1-p)^4$

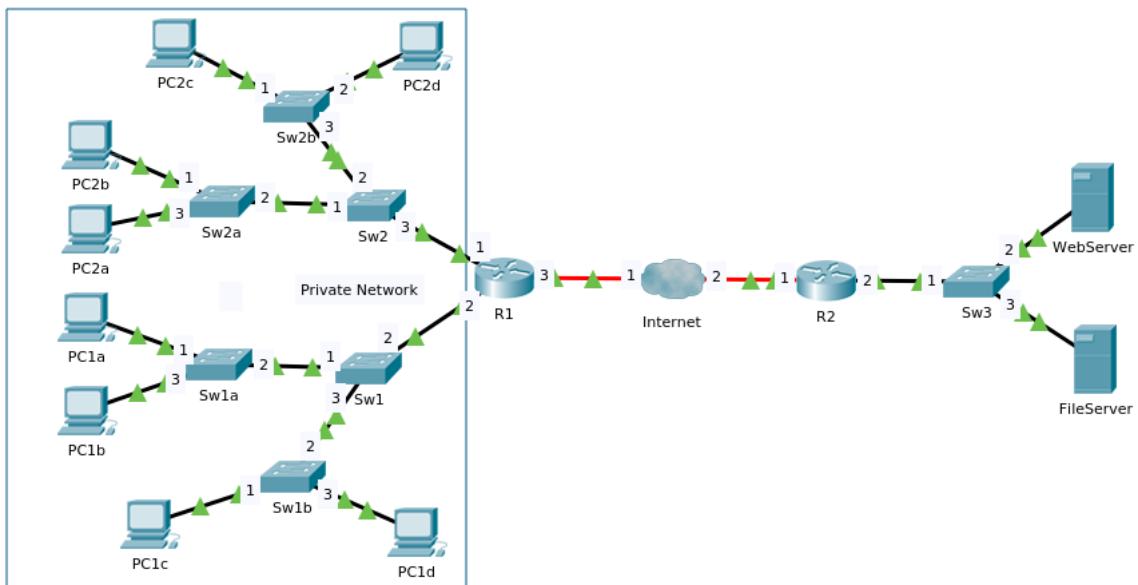
The first derivative: $5(1-p)^4 - 5p(4)(1-p)^3 = 5(1-p)^3(1-p - 4p) \rightarrow$ to get optimum solution it should be equals to 0 $\rightarrow 1-5p = 0 \rightarrow p = 1/5 = 0.2$



Question 2

Partially correct

Mark 26.49 out of 30.00



Consider the network above. Please **NOTE** that the network inside blue rectangle is a **private network** (i.e. private IP addresses are used by its hosts) and R1 is a **NAT enabled router**. Suppose that, initially the **ARP table** in all hosts and routers are **empty**, and all **Switch tables** are **empty** too. Then, the following transmissions happen in chronological order:

1. PC2b sends a ping command to PC2d
2. PC2a sends a ping command to PC1b
3. PC1d accesses a web page from WebServer

After the last packet transmission, please fill in the **ARP tables** in each host and router, as well as the **Switch tables**, by completing the tables below:

NOTE:

- Router is written with the interface number separated by '-'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
- Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an **ARP** or a **Switch** table, fill the table based on the chronological order.
- In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables

Vdah jawaban dibenarkan

PC1a		PC1b		PC1c		PC1d		PC2a		PC2b		PC2c		PC2d	
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
-	-	R1-2	R1-2	-	-	R1-2	R1-2	R1-1	R1-1	PC2d	PC2d	-	-	PC2b	PC2b
✓	✓	✗	✓	✓	✓	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓
WebServer		FileServer		R1-1		R1-2		R1-3		R2-1		R2-2			
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
R2-2	R2-2	-	-	PC2a	PC2a	PC1b	PC1b	Internet-1	Internet-1	Internet-2	Internet-2	WebServer	WebServer		
✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
						PC1d	PC1d								
						✓	✓								

Switch tables

Sw1		Sw1a		Sw1b		Sw2		Sw2a		Sw2b		Sw3	
MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port
R1-2	Sw1-2	R1-2	Sw1a-2	PC1d	Sw1b-3	PC2b	Sw2-1	PC2b	Sw2a-1	PC2b	Sw2b-3	R2-2	✗
✗	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PC1b	Sw1-1	PC1b	Sw1a-3	R1-2	Sw1b-2	PC2d	Sw2-2	PC2d	Sw2a-2	PC2d	Sw2b-2	WebServer	Sw3-2
✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
PC1d	Sw1-3					PC2a	Sw2-1	PC2a	Sw2a-3				
✓	✓					✓	✓	✓	✓				
						R1-1	Sw2-3	R1-1	Sw2a-2				
						✗	✓	✗	✓				



When PC1d accesses a web page from WebServer, an HTTP request message is sent from PC1d to WebServer, and an HTTP response in the opposite direction. Please complete the information about **source** and **destination** of IP Address and MAC Address, during this communication process at various locations:

Location	Source MAC	Destination MAC	Source IP	Destination IP
PC1d --> R1	PC1d ✓	R1-2 ✓	PC1d ✓	WebServer ✓
R1 --> Internet	R1-3 ✓	Internet-1 ✓	R1-3 ✓	WebServer ✓
R2 --> WebServer	R2-2 ✓	WebServer ✓	R1-3 ✓	WebServer ✓
WebServer --> R2	WebServer ✓	R2-2 ✓	WebServer ✓	R1-3 ✓
Internet --> R1	Internet-1 ✓	R1-3 ✓	WebServer ✓	R1-3 ✓
R1 --> PC1d	R1-2 ✓	PC1d ✓	WebServer ✓	PC1d ✓





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Started on Tuesday, 14 December 2021, 9:05 AM

State Finished

Completed on Tuesday, 14 December 2021, 10:44 AM

Time taken 1 hour 39 mins

Question 1 Correct Mark 1.00 out of 1.00

Which of the following functions is performed at the MAC (Medium Access Control) sublayer of the link layer?

Select one:

- a. Places information in the frame that identifies which network layer protocol is being used for the frame.
- b. Integrates various physical technologies. ✓
- c. Adds Layer 2 control information to network protocol data.
- d. Enables IPv4 and IPv6 to utilize the same network interface and media.

The correct answer is: Integrates various physical technologies.

Question 2 Correct Mark 1.00 out of 1.00

Which LAN topology provides path redundancy and robustness to link failure?

Select one:

- a. star
- b. bus
- c. ring
- d. mesh ✓

The correct answer is: mesh

Question 3 Correct Mark 1.00 out of 1.00

When a router makes a routing decision for a packet that is received from one network and destined to another, which portion of the packet does it replace?

Select one:

- a. Network layer's IP address
- b. Application's layer session
- c. Transport layer's ports
- d. Link layer's frame header and trailer ✓

The correct answer is: Link layer's frame header and trailer

Question 4

Correct Mark 1.00 out of 1.00

Which statement is true about the service provided by the data link layer?

Select one:

- a. It defines the end-to-end delivery addressing scheme.
- b. It maintains the path between the source and destination devices during the data transmission.
- c. It manages the access of frames to the transmission medium. ✓
- d. It provides reliable delivery through link establishment and flow control.

The correct answer is: It manages the access of frames to the transmission medium.

Question 5

Correct Mark 1.00 out of 1.00

A researcher deploys large numbers of wireless sensor network nodes to monitor forest fires. The sensor nodes need to communicate to each other before reaching an internet gateway. Which type of wireless network taxonomy is most suitable with this description?

Select one:

- a. ad-hoc multi hops
- b. infrastructure single hop
- c. infrastructure multi hops ✓
- d. ad-hoc single hop

The correct answer is: infrastructure multi hops

Question 6

Correct Mark 1.00 out of 1.00

Below is a compact version of ARP table in the Router1.

Address	Hardware address	Interface
192.168.20.5	00:00:0c:07:f8:92	FastEthernet0/0
192.168.60.5	00:00:0c:07:ac:00	FastEthernet0/1
192.168.20.1	00:0c:63:ae:45	FastEthernet0/0
192.168.40.5	00:0c:07:43:20	FastEthernet0/2
192.168.40.1	00:0c:63:13:00	FastEthernet0/2
192.168.60.1	00:0c:36:69:65	FastEthernet0/1

What will Router1 do when it receives the data frame shown below?

Source MAC	Source IP	Destination MAC	Destination IP
00:00:0c:07:f8:92	192.168.20.5	00:00:0c:63:ae:45	192.168.40.5

Select one:

- a. Router1 will remove the source IP address and replace it with the IP address 192.168.40.1
- b. Router1 will remove the destination MAC address and replace it with the MAC address 00:00:0c:07:43:20 ✓
- c. Router1 will forward the data packet out interface FastEthernet0/0
- d. Router1 will remove the destination MAC address and replace it with the MAC address 00:00:0c:63:13:00

The correct answer is: Router1 will remove the destination MAC address and replace it with the MAC address 00:00:0c:07:43:20

Question 7

Incorrect Mark 0.00 out of 1.00

Adi dan Bagas hang out bersama di sebuah cafe. Keduanya ingin mengakses internet melalui jaringan WiFi. Adi menggunakan jaringan WiFi yang disediakan cafe, sedangkan Bagas menggunakan WiFi hotspot nya sendiri (dengan modem 4G WiFi). Hotspot yang dikonfigurasi Bagas menggunakan channel yang berbeda dari WiFi access point di cafe (Hotspot Bagas di channel 1 sedangkan access point Cafe di channel 11). Maka, akan ada collision jika gawai Adi dan Bagas transmit ke access point mereka masing-masing pada saat bersamaan.

Select one:

- True ✗
 False

Both of them can transmit at the same time because they are operating in different channel, thus no collision.

The correct answer is 'False'.

Question 8

Correct Mark 1.00 out of 1.00

Packet marking perlu dilakukan terlebih dahulu pada mekanisme packet scheduling dalam mendukung support jaringan multimedia.

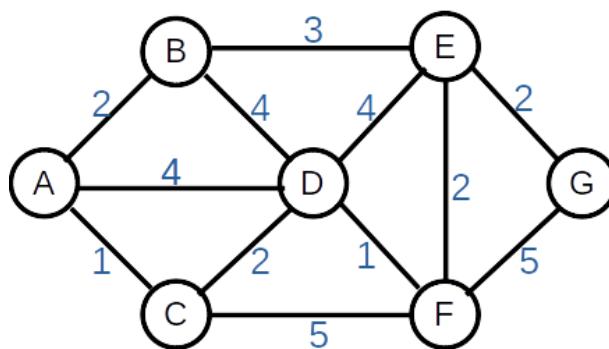
Select one:

- True
 False ✓

The correct answer is 'False'.

Question 9

Correct Mark 5.00 out of 5.00



Consider the above network. With the indicated link costs, use Link State routing algorithm to compute the shortest path from G to all network nodes.

Show how the algorithm works by computing a table in the following format:

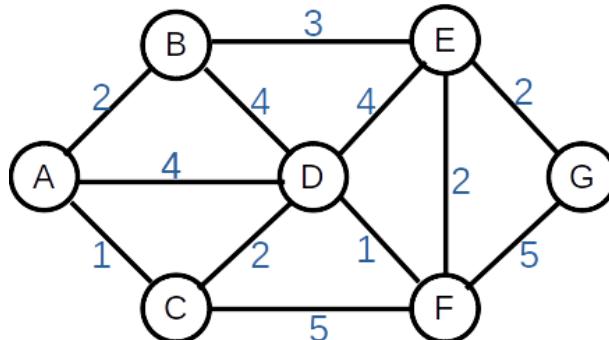
NOTE:

- Do not give space between $D(x)$ and $p(x)$, while the node is case insensitive, e.g. 3,A or 4,b or 5,c etc
- For infinity link cost, you can simply write inf.
- If there is any tie in least cost path calculation to some nodes, take left most node first, and then go to the right. For example: $D(A) = 3$, $D(C) = 3$, $D(E) = 3$, then you take $D(A)$ first, then $D(C)$, and finally $D(E)$.

Step	N'	$D(A), p(A)$	$D(B), p(B)$	$D(C), p(C)$	$D(D), p(D)$	$D(E), p(E)$	$D(F), p(F)$
0	G	inf ✓	inf ✓	inf ✓	inf ✓	2,G ✓	5,G ✓
1	GE ✓	inf ✓	5,E ✓	inf ✓	6,E ✓	- ✓	4,E ✓
2	GEF ✓	inf ✓	5,E ✓	9,F ✓	5,F ✓	- ✓	- ✓
3	GEFB ✓	7,B ✓	- ✓	9,F ✓	5,F ✓	- ✓	- ✓
4	GEFBDA ✓	7,B ✓	- ✓	7,D ✓	- ✓	- ✓	- ✓
5	GEFBDA ✓	- ✓	- ✓	7,D ✓	- ✓	- ✓	- ✓
6	GEFBDAC ✓						

Question 10

Partially correct Mark 4.17 out of 5.00



Consider the network shown above, and assume that each node initially knows the costs to each of its neighbors. Consider the distance-vector algorithm. Show the distance table entries at node A after the first iteration!

NOTE:

- It is case insensitive
- If the cost = infinity, you can simply write inf and the corresponding next hop can be written as '-' (without quote)
- If there are more than one paths with similar minimum cost, choose only one possible next hop (don't write all possible next hops)

	B	C	D	E	F	G
Cost	2 ✓	1 ✓	3 ✓	5 ✓	6 ✗	inf ✓
Next hop	B ✓	C ✓	C ✓	B ✓	C ✗	- ✓

Question 11

Correct Mark 1.00 out of 1.00

When the store-and-forward method of switching is in use, what part of the Ethernet frame is used to perform an error check?

Select one:

- a. protocol type in the header
- b. destination MAC address in the header
- c. CRC in the trailer ✓
- d. source MAC address in the header

Your answer is correct.

The correct answer is: CRC in the trailer

Question 12

Correct Mark 1.00 out of 1.00

Seorang teknisi melakukan konfigurasi WiFi router agar menggunakan channel 1, 6, atau 11. Apa tujuan mengatur channel tersebut?

Select one:

- a. untuk mode security yang lebih kuat.
- b. agar SSID tidak bisa di broadcast.
- c. agar compatible dengan berbagai standar 802.11 yang berbeda.
- d. untuk mencegah interferensi dengan perangkat wireless yang ada di sekitar. ✓

The correct answer is: untuk mencegah interferensi dengan perangkat wireless yang ada di sekitar.

Question 13

Correct Mark 1.00 out of 1.00

Interference pada wireless berasal dari transmisi dari wireless node lain yang menggunakan frequency band yang sama dan berada di jangkauan range transmisinya.

Select one:

- True ✓
- False

The correct answer is 'True'.

Question 14

Correct Mark 1.00 out of 1.00

Which LAN topology provides exactly two possible paths from a node to every destinations?

Select one:

- a. star
- b. mesh
- c. bus
- d. ring ✓

The correct answer is: ring

Question 15

Correct Mark 1.00 out of 1.00

Which statement about a router on a stick is true?

Select one:

- a. It uses multiple subinterfaces of a single interface to encapsulate traffic for different VLANs on the same subnet
- b. Its date plane router traffic for a single VLAN over two or more switches.
- c. It uses multiple subinterfaces of a single interface to encapsulate traffic for different VLANs. ✓
- d. It requires the native VLAN to be disabled.

The correct answer is: It uses multiple subinterfaces of a single interface to encapsulate traffic for different VLANs.

Question 16

Correct Mark 1.00 out of 1.00

Suatu cara untuk memulai eksekusi file tanpa harus melakukan download keseluruhan file tersebut merupakan definisi dari.

Select one:

- a. Sending
- b. Storing
- c. Downloading
- d. Conversation
- e. Streaming ✓

Your answer is correct.

The correct answer is: Streaming

Question 17

Correct Mark 1.00 out of 1.00

Which medium access protocol sets a random timer for retransmission?

Select one:

- a. CSMA/CD ✓
- b. Token ring
- c. IEEE 802.1x
- d. TDMA

The correct answer is: CSMA/CD

Question 18

Correct Mark 1.00 out of 1.00

Which destination address is used in an ARP request frame?

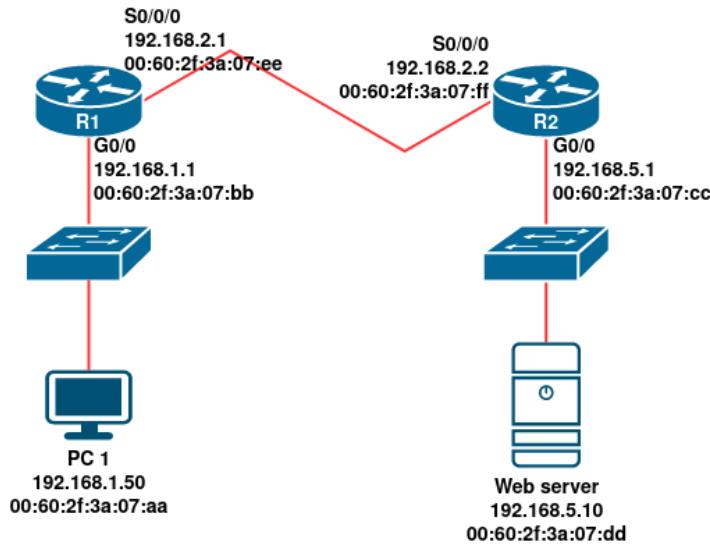
Select one:

- a. 255.255.255.255
- b. AA:AA:AA:AA:AA:AA
- c. FF:FF:FF:FF:FF:FF ✓
- d. the physical address of the destination host

The correct answer is: FF:FF:FF:FF:FF:FF

Question 19

Correct Mark 1.00 out of 1.00



PC1 attempts to connect to Web server and sends an ARP request to obtain a destination MAC address. Which MAC address will PC1 receive in the ARP reply?

Select one:

- a. 00:60:2F:3A:07:BB ✓
- b. 00:60:2F:3A:07:FF
- c. FF:FF:FF:FF:FF:FF
- d. 00:60:2F:3A:07:DD

The correct answer is: 00:60:2F:3A:07:BB

Question 20

Correct Mark 1.00 out of 1.00

Attenuation (pelemanan) pada sinyal wireless dapat terjadi karena adanya noise yang berasal dari sumber internal maupun external.

Select one:

- True
- False ✓

Attenuation pada sinyal wireless terjadi karena jarak yang jauh atau obyek yang menghalangi antara transmitter dan receiver, sedangkan noise berkontribusi ke nilai SNR (denominator dari signal power).

The correct answer is 'False'.

Question 21

Incorrect Mark 0.00 out of 1.00

A data D that consists of bit-stream 1110010101 is sent out using CRC error detection with generator G = 1010. Determine the value of R that is sent out together with the data D!

Answer: 1110010101



The correct answer is: 000

Question 22

Correct Mark 1.00 out of 1.00

Melakukan sinkronisasi stream media adalah tugas RTCP Real-Time Control Protocol

Select one:

- True ✓
- False

The correct answer is 'True'.

Question 23

Correct Mark 1.00 out of 1.00

What property of ARP forces all Ethernet NICs to process an ARP request?

Select one:

- a. The type field 0x806 appears in the header of the Ethernet frame.
- b. The destination MAC address FF-FF-FF-FF-FF-FF appears in the header of the Ethernet frame. ✓
- c. ARP replies are broadcast on the network when a host receives an ARP request.
- d. The source MAC address appears in the header of the Ethernet frame.

The correct answer is: The destination MAC address FF-FF-FF-FF-FF-FF appears in the header of the Ethernet frame.

Question 24

Correct Mark 1.00 out of 1.00

Which LAN topology requires each node to listen before transmit to avoid collision?

Select one:

- a. mesh
- b. bus ✓
- c. ring
- d. star

The correct answer is: bus

Question 25

Correct Mark 1.00 out of 1.00

A network contains multiple VLANs spanning multiple switches. What happens when a device in VLAN 20 sends a broadcast Ethernet frame?

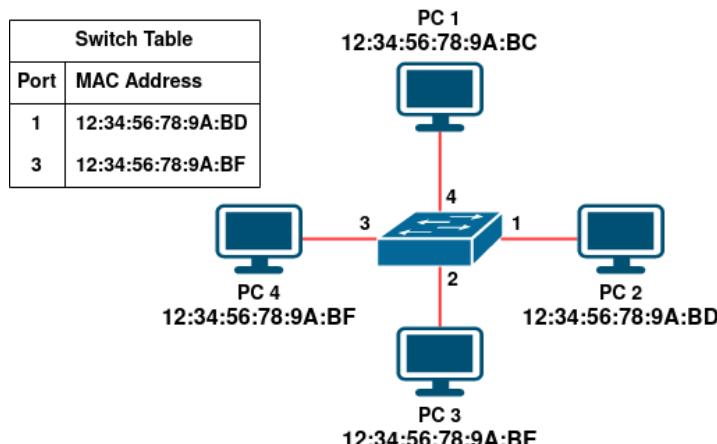
Select one:

- a. Only devices in VLAN 20 see the frame. ✓
- b. Devices in VLAN 20 and the management VLAN see the frame.
- c. All devices in all VLANs see the frame.
- d. Only devices that are connected to the local switch see the frame.

The correct answer is: Only devices in VLAN 20 see the frame.

Question 26

Correct Mark 1.00 out of 1.00



The figure shows a small switched network and the contents of the Switch table. PC1 sends a frame to PC3. What will the switch do with the frame?

Select one:

- a. The switch will add PC1 MAC address to its table and forward the frame to all ports except port 4. ✓
- b. The switch will only forward the frame to all ports except port 4.
- c. The switch will only forward the frame to port 2.
- d. The switch will discard the frame.

The correct answer is: The switch will add PC1 MAC address to its table and forward the frame to all ports except port 4.

Question 27

Correct Mark 1.00 out of 1.00

Which of the following is the advantage of Layer 2 Ethernet switches over hubs?

Select one:

- a. increasing the maximum length of UTP cabling between devices
- b. allowing simultaneous frame transmissions ✓
- c. increasing the size of broadcast domains
- d. decreasing the number of collision domains

The correct answer is: allowing simultaneous frame transmissions

Question 28

Correct Mark 1.00 out of 1.00

Below is a compact version of ARP table in the Router1.

Address	Hardware address	Interface
192.168.20.5	00:00:0c:07:f8:92	FastEthernet0/0
192.168.60.5	00:00:0c:07:ac:00	FastEthernet0/1
192.168.20.1	00:00:0c:63:ae:45	FastEthernet0/0
192.168.40.5	00:00:0c:07:43:20	FastEthernet0/2
192.168.40.1	00:00:0c:63:13:00	FastEthernet0/2
192.168.60.1	00:00:0c:36:69:65	FastEthernet0/1

What will Router1 do when it receives the data frame shown below?

Source MAC	Source IP	Destination MAC	Destination IP
00:00:0c:07:f8:92	192.168.20.5	00:00:0c:63:ae:45	192.168.60.5

Select one:

- a. Router1 will forward the data packet out interface FastEthernet0/0
- b. Router1 will remove the destination MAC address and replace it with the MAC address 00:00:0c:07:ac:00 ✓
- c. Router1 will remove the destination MAC address and replace it with the MAC address 00:00:0c:63:13:00
- d. Router1 will remove the source IP address and replace it with the IP address 192.168.40.1

The correct answer is: Router1 will remove the destination MAC address and replace it with the MAC address 00:00:0c:07:ac:00

Question 29

Correct Mark 1.00 out of 1.00

A worker is wants to connect his PC to some peripherals, e.g. headset, keyboard and mouse, wirelessly by using Bluetooth. Which type of wireless network taxonomy is most suitable with this description?

Select one:

- a. ad-hoc multi hops
- b. infrastructure single hop
- c. infrastructure multi hops
- d. ad-hoc single hop ✓

The correct answer is: ad-hoc single hop

Question 30

Correct Mark 1.00 out of 1.00

Two hosts are attached to a switch with the default configuration. Which of the following statements is true?

Select one:

- a. The two hosts are in different broadcast domain.
- b. The two hosts can communicate without any routing. ✓
- c. The switch must be configured with a VLAN to allow the two hosts to communicate.
- d. The two hosts need to communicate via default gateway.

The correct answer is: The two hosts can communicate without any routing.

Question 31

Correct Mark 1.00 out of 1.00

Which type of wireless network is based on the 802.11 standard and a 2.4-GHz or 5-GHz radio frequency?

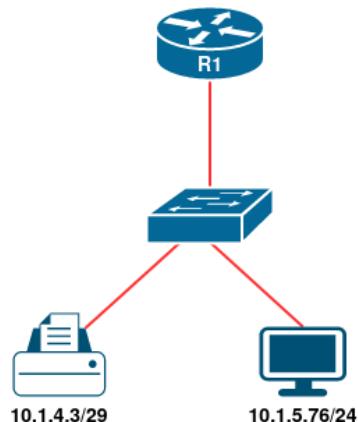
Select one:

- a. wireless wide-area network
- b. wireless personal-area network
- c. wireless metropolitan-area network
- d. wireless local-area network ✓

The correct answer is: wireless local-area network

Question 32

Incorrect Mark 0.00 out of 1.00



A network administrator needs to configure router-on-a-stick for the networks that are shown above. How many sub-interfaces will have to be created on the router if each VLAN that is shown is to be routed and each VLAN has its own sub-interface?

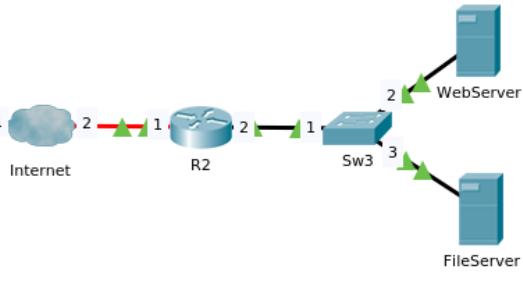
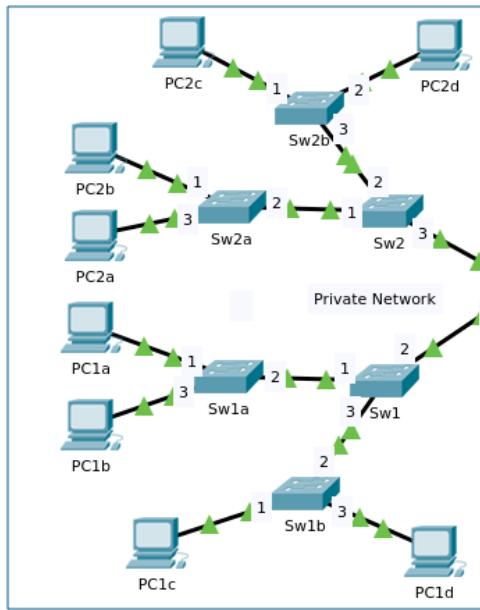
Select one:

- a. 4
- b. 2
- c. 3 ✗
- d. 1

The correct answer is: 2

Question 33

Partially correct Mark 0.85 out of 10.00



Consider the network above. Please NOTE that the network inside blue rectangle is a private network (i.e. private IP addresses are used by its hosts) and R1 is a NAT enabled router. Suppose that, initially the ARP table in all hosts and routers are empty, and all Switch tables are empty too. Then, the following transmissions happen in chronological order:

1. PC1b sends a ping command to PC1d
2. PC1c sends a ping command to PC2d
3. PC2b accesses a file from FileServer

After the last packet transmission, please fill in the ARP tables in each host and router, as well as the Switch tables, by completing the tables below:

NOTE:

- Router is written with the interface number separated by '-'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
- Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an ARP or a Switch table, fill the table based on the chronological order.
- In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables

PC1a		PC1b		PC1c		PC1d		PC2a		PC2b		PC2c		PC2d	
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
-	-							-	-			-	-		
✓	✓	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✓	✓	✗	✗
WebServer		FileServer		R1-1		R1-2		R1-3		R2-1		R2-2			
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
-	-														
✓	✓	✗	✗	✗	✗	✗	✗	✗		✗	✗	✗	✗	✗	✗
				✗	✗										

Switch tables

Sw1		Sw1a		Sw1b		Sw2		Sw2a		Sw2b		Sw3	
MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port
✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗



When PC2b accesses a file from FileServer, an FTP request message is sent from PC2b to FileServer, and an FTP response in the opposite direction. Please complete the information about source and destination of IP Address and MAC Address , during this communication process at various locations:

Location	Source MAC	Destination MAC	Source IP	Destination IP
PC2b --> R1	X	X	X	X
R1 --> Internet	X	X	X	X
R2 --> FileServer	X	X	X	X
FileServer --> R2	X	X	X	X
Internet --> R1	X	X	X	X
R1 --> PC2b	X	X	X	X

Question 34

Correct Mark 1.00 out of 1.00

Call setup dilakukan dengan RTP (Real Time Protocol) sebelum SIP (Session Initialization Protocol) berjalan

Select one:

- True
- False ✓

The correct answer is 'False'.

Question 35

Correct Mark 1.00 out of 1.00

A WiFi terminal (with *Collision Avoidance* mechanism) would sense the medium first before transmitting a frame. If the medium is idle continuously for a certain period, only then it transmits the packet.

Select one:

- True
- False ✓

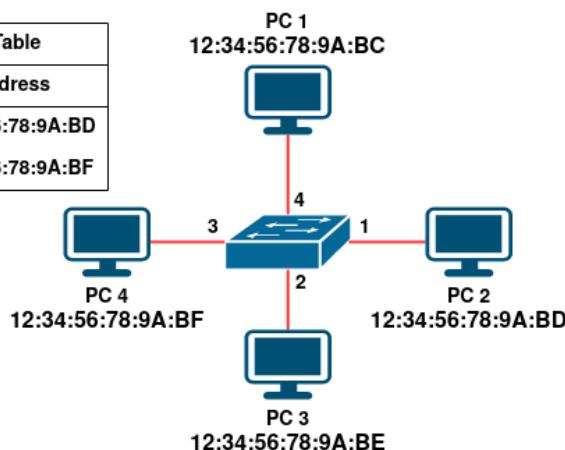
WiFi with collision avoidance will first make sure that there is no hidden terminal by using RTS-CTS mechanism

The correct answer is 'False'.

Question 36

Correct Mark 1.00 out of 1.00

Switch Table	
Port	MAC Address
1	12:34:56:78:9A:BD
3	12:34:56:78:9A:BF



The figure shows a small switched network and the contents of the Switch table. PC2 sends a frame to PC4. What will the switch do with the frame?

Select one:

- a. The switch will add PC2 MAC address to its table and forward the frame to port 3.
- b. The switch will add PC2 MAC address to its table and forward the frame to all ports except port 4.
- c. The switch will only forward the frame to port 3. ✓
- d. The switch will only forward the frame to all ports except port 4.

The correct answer is: The switch will only forward the frame to port 3.

Question 37

Correct Mark 1.00 out of 1.00

OSPF routing protocol calculates the least cost path route based on Djikstra algorithm

Select one:

- True ✓
- False

OSPF is the implementation of link state algorithm which is based on Djikstra algorithm

The correct answer is 'True'.

Question 38

Correct Mark 1.00 out of 1.00

Prinsip kerja dari protocol Skype adalah mekanisme client-server

Select one:

- True
- False ✓

The correct answer is 'False'.

Question 39

Correct Mark 1.00 out of 1.00

What is the function of the CRC value in a frame's trailer?

Select one:

- a. to compute the checksum header for the data field in the frame
- b. to verify the physical address in the frame
- c. to verify the logical address in the frame
- d. to verify the integrity of the received frame ✓

The correct answer is: to verify the integrity of the received frame

Question 40

Correct Mark 1.00 out of 1.00

What a host will do when it receives a frame with a destination MAC address of FF:FF:FF:FF:FF:FF?

Select one:

- a. The host sends the frame to the switch to update the MAC address table.
- b. The host forwards the frame to the router.
- c. The host will process the frame. ✓
- d. The host forwards the frame to all other hosts.

The correct answer is: The host will process the frame.

Question 41

Correct Mark 1.00 out of 1.00

Suppose the information content of a packet is the bit pattern 0001 0110 0111 0101 and an EVEN parity scheme is being used. What would the value of the field containing the parity bits for the case of two-dimensional parity scheme?

Please fill in your answer in the following matrix!

bits	parity
0001	1 ✓
0110	0 ✓
0111	1 ✓
0101	0 ✓
parity	0101 ✓ 0 ✓

Question 42

Correct Mark 1.00 out of 1.00

Which type of wireless network uses transmitters to provide coverage over an extensive geographic area, such as cellular network?

Select one:

- a. wireless personal-area network
- b. wireless metropolitan-area network
- c. wireless wide-area network ✓
- d. wireless local-area network

The correct answer is: wireless wide-area network

Question 43

Correct Mark 1.00 out of 1.00

In logically centralized based control plane, both data plane and control plane are implemented within the same device.

Select one:

- True
- False ✓

In logically centralized based control plan, control plane is located in a central controller while data plane is in the data-plane switches

The correct answer is 'False'.

Question 44

Correct Mark 1.00 out of 1.00

Adi dan Bagas hang out bersama di sebuah cafe. Keduanya ingin mengakses internet melalui jaringan WiFi. Adi menggunakan jaringan WiFi yang disediakan cafe, sedangkan Bagas menggunakan WiFi hotspot nya sendiri (dengan modem 4G WiFi). Secara tidak sengaja, hotspot yang dikonfigurasi Bagas menggunakan channel yang sama dengan WiFi access point di cafe. Maka, akan ada collision jika gawai Adi dan Bagas transmit ke access point mereka masing-masing pada saat bersamaan.

Select one:

- True ✓
- False

The correct answer is 'True'.

Question 45

Correct Mark 1.00 out of 1.00

A router receives a packet from the Gigabit 0/0 interface and determines that the packet needs to be forwarded out the Gigabit 0/1 interface. What will the router do next?

Select one:

- a. look into the routing table to determine if the destination network is in the routing table
- b. route the packet out the Gigabit 0/1 interface
- c. look into the ARP cache to determine the destination IP address
- d. create a new Layer 2 Ethernet frame to be sent to the destination ✓

The correct answer is: create a new Layer 2 Ethernet frame to be sent to the destination

Question 46

Correct Mark 1.00 out of 1.00

Dalam RTP (Real Time Protocol) paket memiliki sender dan receiver report

Select one:

- True
- False ✓

The correct answer is 'False'.

Question 47

Correct Mark 1.00 out of 1.00

Which medium access protocol requires each node to receive a ticket passed by other node before transmit?

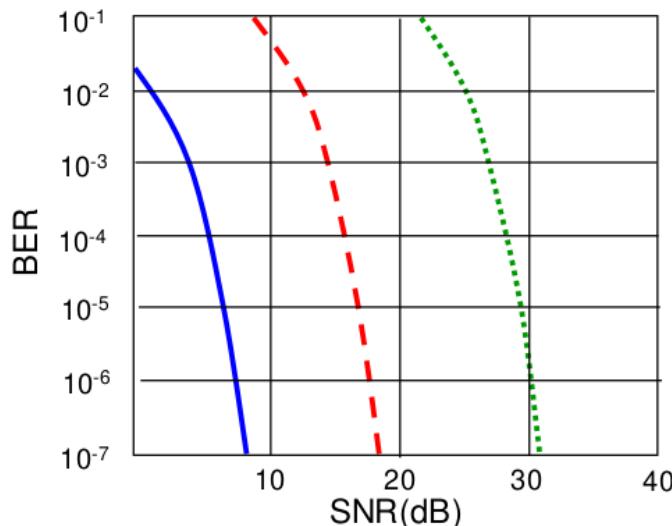
Select one:

- a. CSMA/CD
- b. TDMA
- c. Aloha
- d. Token ring ✓

The correct answer is: Token ring

Question 48

Correct Mark 1.00 out of 1.00



- QAM256 (8 Mbps)
- - - QAM16 (4 Mbps)
- BPSK (1 Mbps)

Pernyataan mana yang benar terkait kurva SNR vs BER di atas?

Select one:

- a. Pada kondisi tertentu BPSK menghasilkan throughput lebih tinggi dari modulasi yang lain
- b. Jika SNR semakin tinggi, kita dapat memilih modulasi dengan throughput yang tinggi dan tetap memenuhi syarat BER minimum ✓
- c. Jika BER semakin tinggi, kita dapat memilih modulasi yang dapat menghasilkan SNR yang tinggi
- d. SNR semakin rendah maka BER juga semakin rendah

The correct answer is: Jika SNR semakin tinggi, kita dapat memilih modulasi dengan throughput yang tinggi dan tetap memenuhi syarat BER minimum

Question 49

Incorrect Mark 0.00 out of 1.00

Two hosts are attached to a switch with the default configuration. Which of the following statements is true?

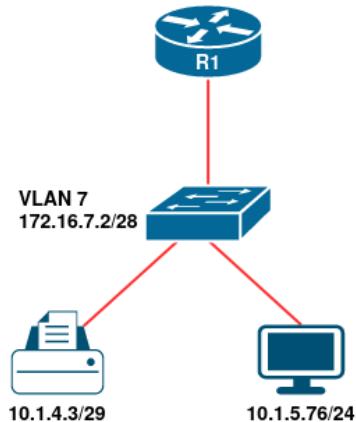
Select one:

- a. The two hosts can send and receive packets at the same time.
- b. If one host sends a packet, the other should wait to avoid collision. ✗
- c. IP routing must be enabled to allow the two hosts to communicate.
- d. The two hosts are in different broadcast domain.

The correct answer is: The two hosts can send and receive packets at the same time.

Question 50

Correct Mark 1.00 out of 1.00



A network administrator needs to configure router-on-a-stick for the networks that are shown. How many subinterfaces will have to be created on the router if each VLAN that is shown is to be routed and each VLAN has its own subinterface?

Select one:

- a. 1
- b. 2
- c. 4
- d. 3 ✓

The correct answer is: 3

Question 51

Correct Mark 1.00 out of 1.00

Salah satu cara untuk mencocokkan waktu pada saat melakukan streaming video adalah dengan melakukan inisialisasi protokol SIP Session Initialization Protocol

Select one:

- True
- False ✓

The correct answer is 'False'.

Question 52

Incorrect Mark 0.00 out of 1.00

A computer has to send a packet to a destination host in the same LAN. How will the packet be sent?

Select one:

- a. The packet will be sent directly to the destination host.
- b. The packet will be sent only to the default gateway.
- c. The packet will be sent to the default gateway first, and then, depending on the response from the gateway, it may be sent to the destination host. X
- d. The packet will first be sent to the default gateway, and then from the default gateway it will be sent directly to the destination host.

The correct answer is: The packet will be sent directly to the destination host.

Question 53

Incorrect Mark 0.00 out of 1.00

IGRP and IS-IS are two examples of intra-AS routing protocols.

Select one:

- True
- False X

The correct answer is 'True'.

Question 54

Correct Mark 1.00 out of 1.00

What property of ARP causes a reply only to the source sending an ARP request?

Select one:

- a. The destination MAC address FF-FF-FF-FF-FF-FF appears in the header of the Ethernet frame.
- b. ARP replies are broadcast on the network when a host receives an ARP request.
- c. The type field 0x806 appears in the header of the Ethernet frame.
- d. The source MAC address appears in the header of the Ethernet frame. ✓

The correct answer is: The source MAC address appears in the header of the Ethernet frame.

Question 55

Correct Mark 1.00 out of 1.00

FEC (Forward Error Correction) merupakan mekanisme untuk melakukan recovery packet loss dengan menggunakan error check (CRC)

Select one:

- True
- False ✓

The correct answer is 'False'.



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Started on Tuesday, 14 December 2021, 9:07 AM

State Finished

Completed on Tuesday, 14 December 2021, 10:46 AM

Time taken 1 hour 39 mins

Marks 54.89/72.00

Grade 76.24 out of 100.00

Question 1

Incorrect Mark 0.00 out of 1.00

Two hosts are attached to a switch with the default configuration. Which of the following statements is true?

Select one:

- a. The two hosts can send and receive packets at the same time.
- b. The two hosts are in different broadcast domain.
- c. IP routing must be enabled to allow the two hosts to communicate.
- d. If one host sends a packet, the other should wait to avoid collision. ✗

The correct answer is: The two hosts can send and receive packets at the same time.

Question 2

Correct Mark 1.00 out of 1.00

Two hosts are attached to a switch with the default configuration. Which of the following statements is true?

Select one:

- a. The two hosts are in the same broadcast domain. ✓
- b. Port security prevents the hosts from connecting to the switch.
- c. The switch must be configured with a VLAN to allow the two hosts to communicate.
- d. IP routing must be enabled to allow the two hosts to communicate.

The correct answer is: The two hosts are in the same broadcast domain.

Question 3

Incorrect Mark 0.00 out of 1.00

A data D that consists of bit-stream 1101111101 is sent out using CRC error detection with generator G = 1010. Determine the value of R that is sent out together with the data D!

Answer: 1101111101110 ✗

The correct answer is: 110

Question 4

Correct Mark 1.00 out of 1.00

Seorang teknisi melakukan konfigurasi WiFi router agar menggunakan channel 1, 6. atau 11. Apa tujuan mengatur channel tersebut?

Select one:

- a. untuk mencegah interferensi dengan perangkat wireless yang ada di sekitar. ✓
- b. agar compatible dengan berbagai standar 802.11 yang berbeda.
- c. agar SSID tidak bisa di broadcast.
- d. untuk mode security yang lebih kuat.

The correct answer is: untuk mencegah interferensi dengan perangkat wireless yang ada di sekitar.

Question 5

Correct Mark 1.00 out of 1.00

During the encapsulation process, what occurs at the data link layer for a PC connected to an Ethernet network?

Select one:

- a. An IP address is added.
- b. The process port number is added.
- c. The physical address is added. ✓
- d. The logical address is added.

The correct answer is: The physical address is added.

Question 6

Incorrect Mark 0.00 out of 1.00

A WiFi terminal (with *Collision Avoidance* mechanism) would sense the medium first before transmitting a frame. If the medium is idle continuously for a certain period, only then it transmits the packet.

Select one:

- True ✗
- False

WiFi with collision avoidance will first make sure that there is no hidden terminal by using RTS-CTS mechanism

The correct answer is 'False'.

Question 7

Correct Mark 1.00 out of 1.00

Suppose the information content of a packet is the bit pattern 0100 1100 1001 1110 and an EVEN parity scheme is being used. What would the value of the field containing the parity bits for the case of two-dimensional parity scheme?

Please fill in your answer in the following matrix!

bits	parity
0100	1 ✓
1100	0 ✓
1001	0 ✓
1110	1 ✓
parity	1111 ✓ 0 ✓

Question 8

Correct Mark 1.00 out of 1.00

Which medium access protocol sets a random timer for retransmission?

Select one:

- a. TDMA
- b. IEEE 802.1x
- c. Token ring
- d. CSMA/CD ✓

The correct answer is: CSMA/CD

Question 9

Correct Mark 1.00 out of 1.00

What property of ARP causes the request to be flooded out all ports of a switch except for the port receiving the ARP request?

Select one:

- a. ARP replies are broadcast on the network when a host receives an ARP request.
- b. The destination MAC address FF-FF-FF-FF-FF-FF appears in the header of the Ethernet frame. ✓
- c. The type field 0x806 appears in the header of the Ethernet frame.
- d. Entries in an ARP table are time-stamped and are purged after the timeout expires.

The correct answer is: The destination MAC address FF-FF-FF-FF-FF-FF appears in the header of the Ethernet frame.

Question 10

Correct Mark 1.00 out of 1.00

Which type of wireless network is based on the 802.11 standard and a 2.4-GHz or 5-GHz radio frequency?

Select one:

- a. wireless personal-area network
- b. wireless local-area network ✓
- c. wireless wide-area network
- d. wireless metropolitan-area network

The correct answer is: wireless local-area network

Question 11

Correct Mark 1.00 out of 1.00

Which LAN topology requires each node to listen before transmit to avoid collision?

Select one:

- a. ring
- b. mesh
- c. bus ✓
- d. star

The correct answer is: bus

Question 12

Incorrect Mark 0.00 out of 1.00

In per-router based control plane, a router only has forwarding function.

Select one:

- True X
- False

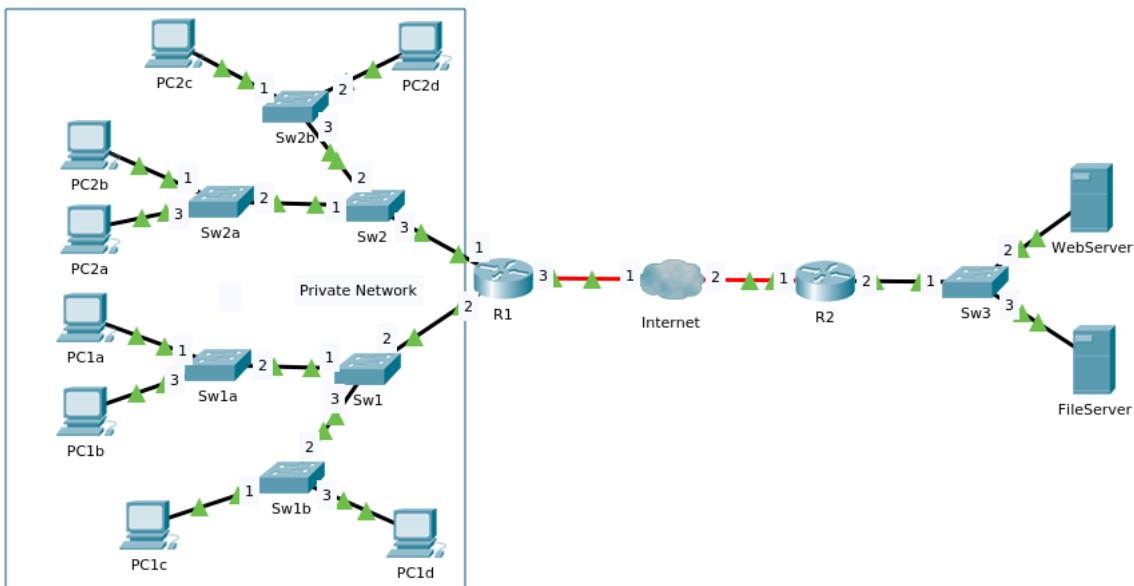
Per router control plane has both control plane (routing function) and data plane (forwarding function) in the router.

The correct answer is 'False'.

Question 13

Partially correct

Mark 8.30 out of 10.00



Consider the network above. Please **NOTE** that the network inside blue rectangle is a **private network** (i.e. private IP addresses are used by its hosts) and R1 is a **NAT enabled router**. Suppose that, initially the **ARP table** in all hosts and routers are **empty**, and all **Switch tables** are **empty** too. Then, the following transmissions happen in chronological order:

1. PC1b sends a ping command to PC1d
2. PC1c sends a ping command to PC2d
3. PC2b accesses a file from FileServer

After the last packet transmission, please fill in the **ARP tables** in each host and router, as well as the **Switch tables**, by completing the tables below:

NOTE:

- Router is written with the interface number separated by '-'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
- Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an **ARP** or a **Switch** table, fill the table based on the chronological order.
- In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables

PC1a		PC1b		PC1c		PC1d		PC2a		PC2b		PC2c		PC2d	
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
-	-	PC1d	PC1d	R1-2	R1-2	PC1b	PC1b	-	-	R1-1	R1-1	-	-	R1-1	R1-1
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WebServer FileServer R1-1 R1-2 R1-3 R2-1 R2-2															
IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC
-	-	R2-2	R2-2	PC2d	PC2d	PC1c	PC1c	Internet-1	Internet-1	Internet-2	Internet-2	FileServer	FileServer	-	-
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
				PC2b	PC2b										
				✓	✓										

Switch tables

Sw1		Sw1a		Sw1b		Sw2		Sw2a		Sw2b			
MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port
PC1b	Sw1-1	PC1b	Sw1a-3	PC1d	PC1d	R1-1	Sw2-3	FileServer	FileServer	R1-1	Sw2b-3	R2-2	
✓	✓	✓	✓	✗	✗	✓	✓	✗	✗	✓	✓	✓	
Sw1b-2	Sw1b-2	Sw1a-2	Sw1a-2	Sw1b-2	Sw1b-2	PC2d	Sw2-2	Sw2a-2	Sw2a-2	PC2d	Sw2b-2	FileServer	
✗	✗	✗	✓	✗	✗	✓	✓	✗	✗	✓	✓	✓	
PC1c	Sw1-3			Sw1b-1	Sw1b-1	PC2b	Sw2-1						
✓	✓			✗	✓	✓	✓						
PC1c	PC1c			Sw1b-2	Sw1b-2								
✗	✗			✗	✓								

When PC2b accesses a file from FileServer, an FTP request message is sent from PC2b to FileServer, and an FTP response in the opposite direction.

Please complete the information about **source** and **destination** of **IP Address** and **MAC Address**, during this communication process at various locations:

Location	Source MAC	Destination MAC	Source IP	Destination IP

PC2b --> R1	PC2b	✓	R1-1	✓	PC2b	✓	FileServer	✓
R1 --> Internet	R1-3	✓	Internet-1	✓	R1-3	✓	FileServer	✓
R2 --> FileServer	R2-2	✓	FileServer	✓	R1-3	✓	FileServer	✓
FileServer --> R2	FileServer	✓	R2-2	✓	FileServer	✓	R1-3	✓
Internet --> R1	Internet-1	✓	R1-3	✓	FileServer	✓	R1-3	✓
R1 --> PC2b	R1-3	✗	PC2b	✓	FileServer	✓	PC2b	✓

Question 14

Correct Mark 1.00 out of 1.00

Which type of wireless network uses low powered transmitters for a short-range network, usually up to 10 meters?

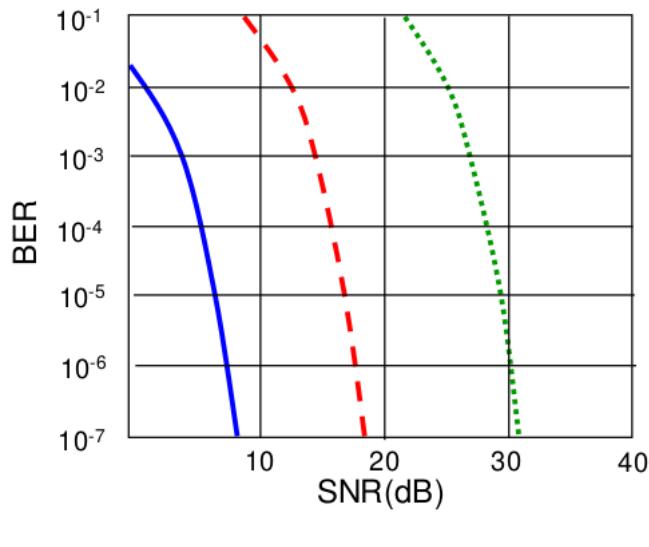
Select one:

- a. wireless personal-area network ✓
- b. wireless wide-area network
- c. wireless metropolitan-area network
- d. wireless local-area network

The correct answer is: wireless personal-area network

Question 15

Correct Mark 1.00 out of 1.00



- QAM256 (8 Mbps)
- - - QAM16 (4 Mbps)
- BPSK (1 Mbps)

Pernyataan mana yang benar terkait kurva SNR vs BER di atas?

Select one:

- a. Pada kondisi tertentu QAM256 menghasilkan throughput lebih rendah dari modulasi yang lain
- b. Jika SNR semakin rendah, kita harus memilih modulasi yang dapat memenuhi syarat BER minimum. ✓
- c. Jika BER semakin rendah, kita harus memilih modulasi yang dapat memenuhi syarat SNR minimum.
- d. SNR semakin tinggi maka BER juga semakin tinggi.

The correct answer is: Jika SNR semakin rendah, kita harus memilih modulasi yang dapat memenuhi syarat BER minimum.

Question 16

Incorrect Mark 0.00 out of 1.00

Which medium access protocol requires each node to receive a ticket passed by other node before transmit?

Select one:

- a. Token ring
- b. TDMA
- c. CSMA/CD
- d. Aloha ✗

The correct answer is: Token ring

Question 17

Correct Mark 1.00 out of 1.00

Which LAN topology provides exactly two possible paths from a node to every destinations?

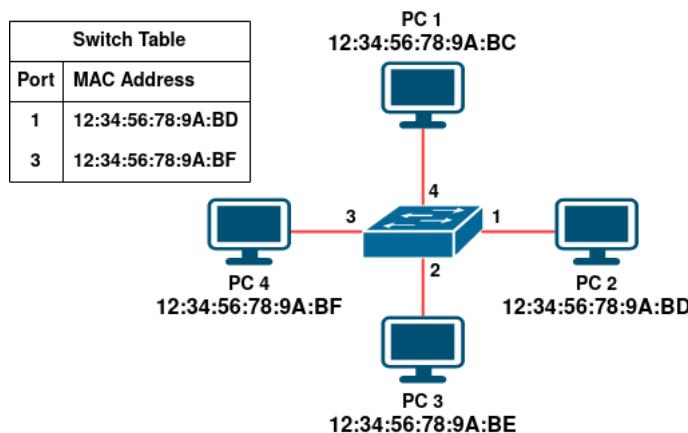
Select one:

- a. star
- b. bus
- c. ring ✓
- d. mesh

The correct answer is: ring

Question 18

Correct Mark 1.00 out of 1.00



The figure shows a small switched network and the contents of the Switch table. PC1 sends a frame to PC3. What will the switch do with the frame?

Select one:

- a. The switch will only forward the frame to all ports except port 4.
- b. The switch will discard the frame.
- c. The switch will add PC1 MAC address to its table and forward the frame to all ports except port 4. ✓
- d. The switch will only forward the frame to port 2.

The correct answer is: The switch will add PC1 MAC address to its table and forward the frame to all ports except port 4.

Question 19

Correct Mark 1.00 out of 1.00

Which statement about a router on a stick is true?

Select one:

- a. It uses multiple subinterfaces of a single interface to encapsulate traffic for different VLANs. ✓
- b. It requires the native VLAN to be disabled.
- c. It uses multiple subinterfaces of a single interface to encapsulate traffic for different VLANs on the same subnet
- d. Its date plane router traffic for a single VLAN over two or more switches.

The correct answer is: It uses multiple subinterfaces of a single interface to encapsulate traffic for different VLANs.

Question 20

Correct Mark 1.00 out of 1.00

FEC (Forward Error Correction) merupakan mekanisme untuk melakukan recovery packet loss dengan menggunakan error check (parity)

Select one:

- True
- False ✓

The correct answer is 'False'.

Question 21

Correct Mark 1.00 out of 1.00

Multipath propagation di dalam kanal wireless terjadi karena gelombang electromagnetic dipantulkan oleh berbagai objek atau permukaan antara transmitter dan receiver, yang mengakibatkan receiver menerima sinyal dengan versi yang berbeda-beda dalam hal power dan waktu diterimanya.

Select one:

- True ✓
- False

The correct answer is 'True'.

Question 22

Correct Mark 1.00 out of 1.00

Which LAN topology allows all traffic to flow through a central hub?

Select one:

- a. bus
- b. ring
- c. star ✓
- d. mesh

The correct answer is: star

Question 23

Correct Mark 1.00 out of 1.00

Below is a compact version of ARP table in the Router1.

Address	Hardware address	Interface
192.168.20.5	00:00:0c:07:f8:92	FastEthernet0/0
192.168.60.5	00:00:0c:07:ac:00	FastEthernet0/1
192.168.20.1	00:00:0c:63:ae:45	FastEthernet0/0
192.168.40.5	00:00:0c:07:43:20	FastEthernet0/2
192.168.40.1	00:00:0c:63:13:00	FastEthernet0/2
192.168.60.1	00:00:0c:36:69:65	FastEthernet0/1

What will Router1 do when it receives the data frame shown below?

Source MAC	Source IP	Destination MAC	Destination IP
00:00:0c:07:f8:92	192.168.20.5	00:00:0c:63:ae:45	192.168.60.5

Select one:

- a. Router1 will forward the data packet out interface FastEthernet0/0
- b. Router1 will remove the source IP address and replace it with the IP address 192.168.40.1
- c. Router1 will remove the destination MAC address and replace it with the MAC address 00:00:0c:63:13:00
- d. Router1 will remove the destination MAC address and replace it with the MAC address 00:00:0c:07:ac:00 ✓

The correct answer is: Router1 will remove the destination MAC address and replace it with the MAC address 00:00:0c:07:ac:00

Question 24

Correct Mark 1.00 out of 1.00

A researcher deploys large numbers of wireless sensor network nodes to monitor forest fires. The sensor nodes need to communicate to each other before reaching an internet gateway. Which type of wireless network taxonomy is most suitable with this description?

Select one:

- a. ad-hoc multi hops
- b. ad-hoc single hop
- c. infrastructure single hop
- d. infrastructure multi hops ✓

The correct answer is: infrastructure multi hops

Question 25

Correct Mark 1.00 out of 1.00

Which statement is true about the service provided by the data link layer?

Select one:

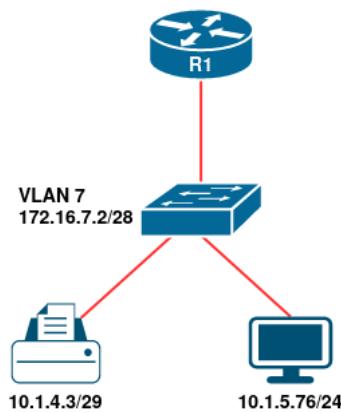
- a. It packages various Layer 3 PDUs into a frame format that is compatible with the network interface. ✓
- b. It provides reliable delivery through link establishment and flow control.
- c. It maintains the path between the source and destination devices during the data transmission.
- d. It ensures that application data will be transmitted according to the prioritization.

The correct answer is: It packages various Layer 3 PDUs into a frame format that is compatible with the network interface.

Question 26

Incorrect

Mark 0.00 out of 1.00



A network administrator needs to configure router-on-a-stick for the networks that are shown. How many subinterfaces will have to be created on the router if each VLAN that is shown is to be routed and each VLAN has its own subinterface?

Select one:

- a. 3
- b. 2
- c. 4 ✗
- d. 1

The correct answer is: 3

Question 27

Correct

Mark 1.00 out of 1.00

When the store-and-forward method of switching is in use, what part of the Ethernet frame is used to perform an error check?

Select one:

- a. CRC in the trailer ✓
- b. protocol type in the header
- c. destination MAC address in the header
- d. source MAC address in the header

Your answer is correct.

The correct answer is: CRC in the trailer

Question 28

Correct

Mark 1.00 out of 1.00

Adi dan Bagas hang out bersama di sebuah cafe. Keduanya ingin mengakses internet melalui jaringan WiFi. Adi menggunakan jaringan WiFi yang disediakan cafe, sedangkan Bagas menggunakan WiFi hotspot nya sendiri (dengan modem 4G WiFi). Hotspot yang dikonfigurasi Bagas menggunakan channel yang berbeda dari WiFi access point di cafe (Hotspot Bagas di channel 1 sedangkan access point Cafe di channel 11). Maka, akan ada collision jika gawai Adi dan Bagas transmit ke access point mereka masing-masing pada saat bersamaan.

Select one:

- True
- False ✓

Both of them can transmit at the same time because they are operating in different channel, thus no collision.

The correct answer is 'False'.

Question 29

Correct Mark 1.00 out of 1.00

A router receives a packet from the Gigabit 0/0 interface and determines that the packet needs to be forwarded out the Gigabit 0/1 interface. What will the router do next?

Select one:

- a. look into the routing table to determine if the destination network is in the routing table
- b. look into the ARP cache to determine the destination IP address
- c. create a new Layer 2 Ethernet frame to be sent to the destination ✓
- d. route the packet out the Gigabit 0/1 interface

The correct answer is: create a new Layer 2 Ethernet frame to be sent to the destination

Question 30

Correct Mark 1.00 out of 1.00

On a corporate network, hosts on the same VLAN can communicate with each other, but they are unable to communicate with hosts on different VLANs. What is needed to allow communication between the VLANs?

Select one:

- a. a switch with an access link that is configured between the switches
- b. a switch with a trunk link that is configured between the switches
- c. a router with an IP address on the physical interface connected to the switch
- d. a router with subinterfaces configured on the physical interface that is connected to the switch ✓

The correct answer is: a router with subinterfaces configured on the physical interface that is connected to the switch

Question 31

Correct Mark 1.00 out of 1.00

What property of ARP causes a reply only to the source sending an ARP request?

Select one:

- a. The destination MAC address FF-FF-FF-FF-FF-FF appears in the header of the Ethernet frame.
- b. The type field 0x806 appears in the header of the Ethernet frame.
- c. ARP replies are broadcast on the network when a host receives an ARP request.
- d. The source MAC address appears in the header of the Ethernet frame. ✓

The correct answer is: The source MAC address appears in the header of the Ethernet frame.

Question 32

Correct Mark 1.00 out of 1.00

Real Time Protocol diimplementasi dalam IP Datagram (Network Layer)

Select one:

- True
- False ✓

The correct answer is 'False'.

Question 33

Correct Mark 1.00 out of 1.00

RIP routing protocol may experience count to infinity problem.

Select one:

- True ✓
 False

As RIP is based on distance vector routing algorithm, it may experience count to infinity problem

The correct answer is 'True'.

Question 34

Correct Mark 1.00 out of 1.00

Prinsip kerja dari protocol Skype adalah mekanisme client-server

Select one:

- True
 False ✓

The correct answer is 'False'.

Question 35

Correct Mark 1.00 out of 1.00

Below is a compact version of ARP table in the Router1.

Address	Hardware address	Interface
192.168.20.5	00:00:0c:07:f8:92	FastEthernet0/0
192.168.60.5	00:00:0c:07:ac:00	FastEthernet0/1
192.168.20.1	00:00:0c:63:ae:45	FastEthernet0/0
192.168.40.5	00:00:0c:07:43:20	FastEthernet0/2
192.168.40.1	00:00:0c:63:13:00	FastEthernet0/2
192.168.60.1	00:00:0c:36:69:65	FastEthernet0/1

What will Router1 do when it receives the data frame shown below?

Source MAC	Source IP	Destination MAC	Destination IP
00:00:0c:07:f8:92	192.168.20.5	00:00:0c:63:ae:45	192.168.60.5

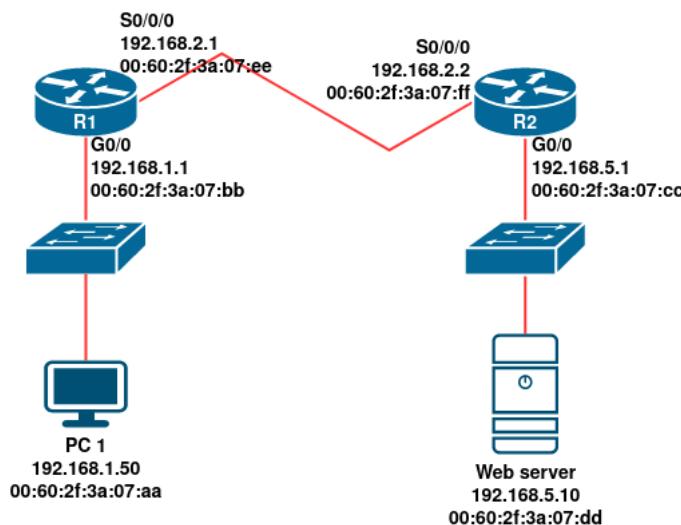
Select one:

- a. Router1 will forward the data packet out interface FastEthernet0/0
 b. Router1 will remove the source IP address and replace it with the IP address 192.168.40.1
 c. Router1 will remove the destination MAC address and replace it with the MAC address 00:00:0c:63:13:00
 d. Router1 will forward the data packet out interface FastEthernet0/1 ✓

The correct answer is: Router1 will forward the data packet out interface FastEthernet0/1

Question 36

Correct Mark 1.00 out of 1.00



Web server attempts to response the TCP SYN to PC1 and sends an ARP request to obtain a destination MAC address. Which MAC address will the web server receive in the ARP reply?

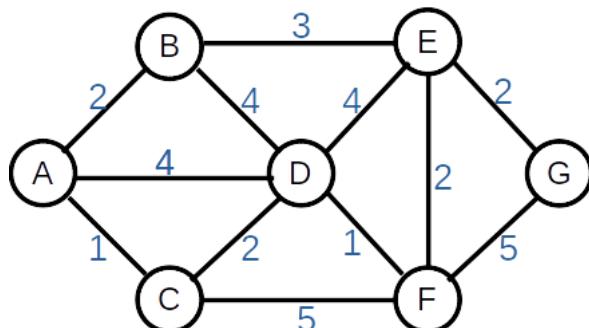
Select one:

- a. 00:60:2F:3A:07:EE
- b. FF:FF:FF:FF:FF:FF
- c. 00:60:2F:3A:07:AA
- d. 00:60:2F:3A:07:CC ✓

The correct answer is: 00:60:2F:3A:07:CC

Question 37

Partially correct Mark 0.83 out of 5.00



Consider the network shown above, and assume that each node initially knows the costs to each of its neighbors. Consider the distance-vector algorithm. Show the distance table entries at node D after the first iteration!

NOTE:

- It is case insensitive
- If the cost = infinity, you can simply write **inf** and the corresponding next hop can be written as '-' (without quote)
- If there are more than one paths with similar minimum cost, choose only one possible next hop (don't write all possible next hops)

	A	B	C	D	E	F
Cost	5	5	7	-	2	4
Next hop	C	A	C	C	C	C

Question 38

Correct Mark 1.00 out of 1.00

Adi dan Bagas hang out bersama di sebuah cafe. Keduanya ingin mengakses internet melalui jaringan WiFi. Adi menggunakan jaringan WiFi yang disediakan cafe, sedangkan Bagas menggunakan WiFi hotspot nya sendiri (dengan modem 4G WiFi). Kebetulan, hotspot yang dikonfigurasi Bagas menggunakan channel yang sama dengan WiFi access point di cafe. Maka, gawai Adi dan Bagas tidak dapat terasosiasi dan berkomunikasi dengan access point tujuan mereka. (asumsi mereka tidak transmit bersamaan)

Select one:

- True
- False ✓

Both of them can still associate to different access points although the access points operate in the same channel/frequency. They can also communicate with their respective access point, as long as they are not transmitting at the same time (concurrent transmission in the same channel leads to collision).

The correct answer is 'False'.

Question 39

Correct Mark 1.00 out of 1.00

Which of the following is the advantage of Layer 2 Ethernet switches over hubs?

Select one:

- a. increasing the size of broadcast domains
- b. decreasing the number of collision domains
- c. increasing the maximum length of UTP cabling between devices
- d. filtering frames based on MAC addresses ✓

The correct answer is: filtering frames based on MAC addresses

Question 40

Correct Mark 1.00 out of 1.00

Suatu cara untuk memulai eksekusi file tanpa harus melakukan download keseluruhan file tersebut merupakan definisi dari.

Select one:

- a. Sending
- b. Streaming ✓
- c. Downloading
- d. Storing
- e. Conversation

Your answer is correct.

The correct answer is: Streaming

Question 41

Correct Mark 1.00 out of 1.00

Under which of the following circumstances will a switch flood a frame out of every port except the port that the frame was received on?

Select one:

- a. The destination address in the frame is a known unicast address.
- b. The source address in the frame header is a known unicast address.
- c. The frame has the broadcast address as the destination address. ✓
- d. The source address in the frame is unknown to the switch

The correct answer is: The frame has the broadcast address as the destination address.

Question 42

Correct Mark 1.00 out of 1.00

Packet marking perlu dilakukan terlebih dahulu pada mekanisme packet scheduling dalam mendukung support jaringan multimedia.

Select one:

- True
- False ✓

The correct answer is 'False'.

Question 43

Correct Mark 1.00 out of 1.00

What is the function of the CRC value in a frame's trailer?

Select one:

- a. to verify the MAC address in the frame
- b. to detect any error in the received frame ✓
- c. to compute the checksum header for the data field in the frame
- d. to verify the IP address in the frame

The correct answer is: to detect any error in the received frame

Question 44

Correct Mark 1.00 out of 1.00

What a host will do when it receives a frame with a destination MAC address of FF:FF:FF:FF:FF:FF?

Select one:

- a. The host forwards the frame to the router.
- b. The host forwards the frame to all other hosts.
- c. The host will process the frame. ✓
- d. The host sends the frame to the switch to update the MAC address table.

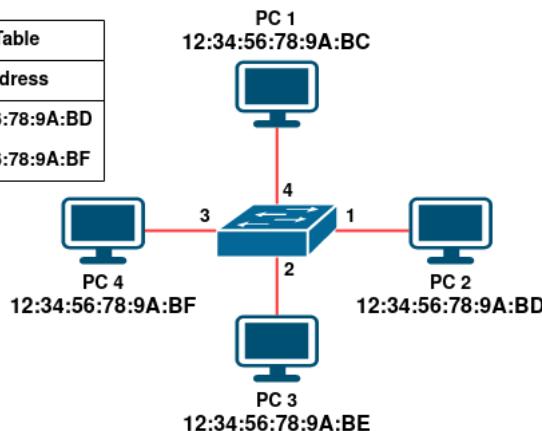
The correct answer is: The host will process the frame.

Question 45

Incorrect

Mark 0.00 out of 1.00

Switch Table	
Port	MAC Address
1	12:34:56:78:9A:BD
3	12:34:56:78:9A:BF



The figure shows a small switched network and the contents of the Switch table. PC2 sends a frame to PC3. What will the switch do with the frame?

Select one:

- a. The switch will only forward the frame to port 2.
- b. The switch will add PC2 MAC address to its table and forward the frame to all ports except port 1. X
- c. The switch will discard the frame.
- d. The switch will only forward the frame to all ports except port 1.

The correct answer is: The switch will only forward the frame to all ports except port 1.

Question 46

Incorrect

Mark 0.00 out of 1.00

Setiap client yang tergabung dalam RTP Real-Time Control Protocol melakukan control dengan RTP

Select one:

- a. True X
- b. False

The correct answer is 'False'.

Question 47

Correct

Mark 1.00 out of 1.00

Attenuation (pelemanahan) pada sinyal wireless dapat terjadi karena adanya noise yang berasal dari sumber internal maupun external.

Select one:

- a. True
- b. False ✓

Attenuation pada sinyal wireless terjadi karena jarak yang jauh atau obyek yang menghalangi antara transmitter dan receiver, sedangkan noise berkontribusi ke nilai SNR (denominator dari signal power).

The correct answer is 'False'.

Question 48

Correct Mark 1.00 out of 1.00

A network engineer is working to provide a wireless network for an entire company building. Which type of wireless network taxonomy is most suitable with this description?

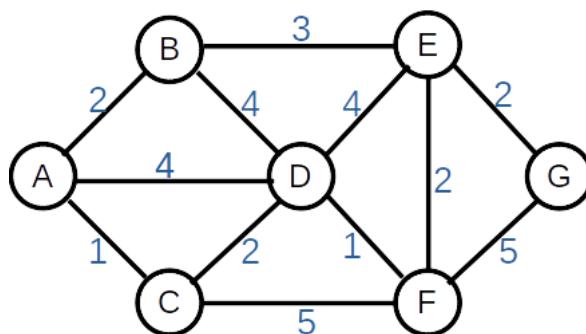
Select one:

- a. infrastructure single hop ✓
- b. ad-hoc single hop
- c. infrastructure multi hops
- d. ad-hoc multi hops

The correct answer is: infrastructure single hop

Question 49

Partially correct Mark 4.76 out of 5.00



Consider the above network. With the indicated link costs, use Link State routing algorithm to compute the shortest path from G to all network nodes.

Show how the algorithm works by computing a table in the following format:

NOTE:

- Do not give space between $D(x)$ and $p(x)$, while the node is case insensitive, e.g. 3,A or 4,b or 5,c etc
- For infinity link cost, you can simply write **inf**.
- If there is any tie in least cost path calculation to some nodes, take left most node first, and then go to the right. For example: $D(A) = 3$, $D(C) = 3$, $D(E) = 3$, then you take $D(A)$ first, then $D(C)$, and finally $D(E)$.

Step	N*	$D(A), p(A)$	$D(B), p(B)$	$D(C), p(C)$	$D(D), p(D)$	$D(E), p(E)$	$D(F), p(F)$
0	G	inf ✓	inf ✓	inf ✓	inf ✓	2,G ✓	5,G ✓
1	GE ✓	inf ✓	5,E ✓	inf ✓	6,E ✓	2,G ✓	4,E ✓
2	GEF ✓	inf ✓	5,E ✓	10,F ✗	5,F ✓	2,G ✓	4,E ✓
3	GEFB ✓	7,B ✓	5,E ✓	10,F ✗	5,F ✓	2,G ✓	4,E ✓
4	GEFBD ✓	7,B ✓	5,E ✓	7,D ✓	5,F ✓	2,G ✓	4,E ✓
5	GEFBDA ✓	7,B ✓	5,E ✓	7,D ✓	5,F ✓	2,G ✓	4,E ✓
6	GEFBDAC ✓						

Question 50

Incorrect Mark 0.00 out of 1.00

Which of the following functions is performed at the MAC (Medium Access Control) sublayer of the link layer?

Select one:

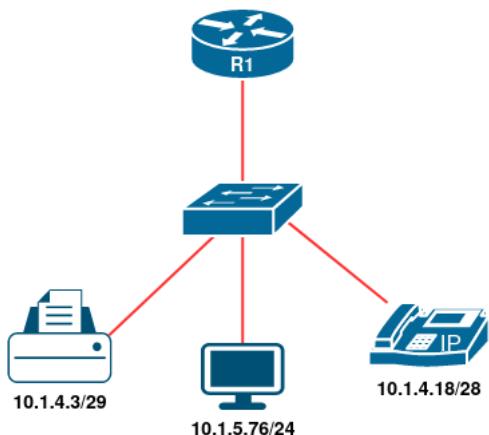
- a. Adds Layer 2 control information to network protocol data.
- b. Provides a mechanism to allow multiple devices to communicate over a shared medium.
- c. Enables IPv4 and IPv6 to utilize the same network interface and media. ✗
- d. Communicates between the networking software at the upper layers and the device hardware at the lower layers.

The correct answer is: Provides a mechanism to allow multiple devices to communicate over a shared medium.

Question 51

Incorrect

Mark 0.00 out of 1.00



A network administrator needs to configure router-on-a-stick for the networks that are shown. How many subinterfaces will have to be created on the router if each VLAN that is shown is to be routed and each VLAN has its own subinterface?

Select one:

- a. 3
- b. 1
- c. 4 X
- d. 2

The correct answer is: 3

Question 52

Incorrect

Mark 0.00 out of 1.00

Call setup dilakukan dengan RTP (Real Time Protocol) sebelum SIP (Session Initialization Protocol) berjalan

Select one:

- True X
- False

The correct answer is 'False'.

Question 53

Correct

Mark 1.00 out of 1.00

FEC (Forward Error Correction) merupakan mekanisme untuk melakukan recovery packet loss dengan menggunakan error check (CRC)

Select one:

- True
- False ✓

The correct answer is 'False'.

Question 54

Correct

Mark 1.00 out of 1.00

IGRP and IS-IS are two examples of intra-AS routing protocols.

Select one:

- True ✓
- False

The correct answer is 'True'.

Question 55

Correct Mark 1.00 out of 1.00

A computer has to send a packet to a destination host in the same LAN. How will the packet be sent?

Select one:

- a. The packet will be sent only to the default gateway.
- b. The packet will be sent directly to the destination host. ✓
- c. The packet will first be sent to the default gateway, and then from the default gateway it will be sent directly to the destination host.
- d. The packet will be sent to the default gateway first, and then, depending on the response from the gateway, it may be sent to the destination host.

The correct answer is: The packet will be sent directly to the destination host.