

**Started on** Friday, 25 February 2022, 11:28 AM  
**State** Finished  
**Completed on** Friday, 25 February 2022, 11:38 AM  
**Time taken** 9 mins 58 secs  
**Marks** 6.50/10.00  
**Grade** 2.32 out of 3.57 (65%)

**Question 1**

Partially correct

Mark 0.50 out of 1.00

Given a shared channel with  $R$  bandwidth and  $M$  nodes that share this channel using TDMA protocol, which of the following desired MAC characteristics is/are satisfied?

- ☐ a. No synchronization of clocks
- ☒ b. when  $M$  nodes want to transmit, each can send at average rate  $R/M$  ✓
- ☒ c. when one node wants to transmit, it can send at rate  $R$  ✗

Your answer is partially correct.

You have selected too many options.

when  $M$  nodes want to transmit, each can send at average rate  $R/M$

The correct answer is:

when  $M$  nodes want to transmit, each can send at average rate  $R/M$

**Question 2**

Incorrect

Mark 0.00 out of 1.00

What is the size of the checksum for data field in IP packet?

- ☒ a. four bytes ✗
- ☐ b. 24 bits
- ☐ c. IP packet has no checksum for data field
- ☐ d. two bytes

Your answer is incorrect.

IP packet doesn't have checksum for data field. It has checksum for header only.

The correct answer is:

IP packet has no checksum for data field

## Question 3

Partially correct

Mark 0.67 out of 1.00

Select the channel partitioning-based MAC protocols. Choose all that apply.

- ☒ a. Polling-based multiple access ✖
- ☒ b. FDMA ✔
- ☐ c. CSMA
- ☐ d. Aloha
- ☒ e. TDMA ✔

Your answer is partially correct.

You have selected too many options.

TDMA and FDMA are the representatives of channel partitioning-based MAC protocols

The correct answers are:

TDMA ,

FDMA

## Question 4

Partially correct

Mark 0.33 out of 1.00

Match the following routing algorithm categories with their corresponding properties

Static routing	Routes change slowly over time, often by the human intervention	✔
Global routing algorithms	Router knows physically connected neighbors, link costs to neighbors	✖
Decentralized routing algorithms	All routers have information on complete topology and link costs	✖

Your answer is partially correct.

You have correctly selected 1.

- Global routing algorithms - All routers have information on complete topology and link costs
- Decentralized routing algorithms - Router knows physically connected neighbors, link costs to neighbors
- Static routing - Routes change slowly over time, often by the human intervention

The correct answer is:

Static routing → Routes change slowly over time, often by the human intervention,

Global routing algorithms → All routers have information on complete topology and link costs,

Decentralized routing algorithms → Router knows physically connected neighbors, link costs to neighbors

## Question 5

Correct

Mark 1.00 out of 1.00

Match the MAC protocol categories with their corresponding descriptions.

- channel not divided, allow collisions
- “recover” from collisions

Random access-based MAC protocols



- divide channel into smaller “pieces” (time slots, frequency, code)
- each node can for exclusive use

Channel partitioning-based MAC protocols



- Nodes take turns
- But nodes with more to send can take longer turns

“Taking turns”-based MAC protocols



Your answer is correct.

Channel partitioning-based MAC protocols

- divide channel into smaller “pieces” (time slots, frequency, code)
- each node can for exclusive use

Random access-based MAC protocols

- channel not divided, allow collisions
- “recover” from collisions

“Taking turns”-based MAC protocols

- Nodes take turns
- 
- But nodes with more to send can take longer turns

The correct answer is:

- channel not divided, allow collisions
- “recover” from collisions

→ Random access-based MAC protocols,

- divide channel into smaller “pieces” (time slots, frequency, code)
- each node can for exclusive use

→ Channel partitioning-based MAC protocols,

- Nodes take turns
- But nodes with more to send can take longer turns

→ “Taking turns”-based MAC protocols

## Question 6

Incorrect

Mark 0.00 out of 1.00

Given a shared channel with  $R$  bandwidth and  $M$  nodes that share this channel using **slotted Aloha** protocol, which of the following desired MAC characteristics is/are satisfied?

- ☐ a. when  $M$  nodes want to transmit, each can send at average rate  $R/M$
- ☐ b. when one node wants to transmit, it can send at rate  $R$
- ☒ c. no synchronization of clocks, slots ❌

Your answer is incorrect.

when one node wants to transmit, it can send at rate  $R$

The correct answer is:

when one node wants to transmit, it can send at rate  $R$

## Question 7

Correct

Mark 1.00 out of 1.00

Choose the True sentences about routing algorithms. Select all that apply.

- ☒ a. Link state routing protocol uses Dijkstra's algorithm to find the least-cost path ✔
- ☒ b. Distance vector routing protocol uses Bellman-Ford equation to find the least-cost path ✔
- ☐ c. Distance vector routing protocol uses Dijkstra's algorithm to find the least-cost path
- ☐ d. Link state routing protocol uses Bellman-Ford equation to find the least-cost path

Your answer is correct.

- Link state routing protocol uses Dijkstra's algorithm to find the least-cost path
- Distance vector routing protocol uses Bellman-Ford equation to find the least-cost path

The correct answers are:

Link state routing protocol uses Dijkstra's algorithm to find the least-cost path ,

Distance vector routing protocol uses Bellman-Ford equation to find the least-cost path

## Question 8

Correct

Mark 1.00 out of 1.00

Select the Random access-based MAC protocols. Choose all that apply.

- ☒ a. Aloha ✓
- ☒ b. CSMA ✓
- ☐ c. FDMA
- ☐ d. TDMA
- ☐ e. Polling-based multiple access

Your answer is correct.

Aloha and CSMA are the representatives of Random access based MAC protocols

The correct answers are:

Aloha,

CSMA

## Question 9

Correct

Mark 1.00 out of 1.00

Suppose a host is newly connected to the network. How it can dynamically get IP address assigned?

- ☐ a. using NAT
- ☒ b. using DHCP protocol ✓
- ☐ c. using DNS protocol

Your answer is correct.

The new host uses DHCP protocol to dynamically obtain an IP address.

The correct answer is:

using DHCP protocol

## Question 10

Correct

Mark 1.00 out of 1.00

Given the following subnet address and mask, how many IP addresses this subnet can offer to hosts?

**223.1.3.0 / 24**

- ☒ a. 254 ✓
- ☐ b. 256
- ☐ c. 126
- ☐ d. 8

Your answer is correct.

Subnet with **223.1.3.0 / 24** address and mask has IP numbers ranging from **223.1.3.0** to **223.1.3.255**. But the first address is subnet address and the last address is broadcast address, and thus only the addresses from **223.1.3.1** to **223.1.3.254** can be used. Thus, the subnet can offer up to 254 addresses.

The correct answer is:

254