Started on	Friday, 19 May 2023, 9:17 AM
State	Finished
Completed on	Friday, 19 May 2023, 9:27 AM
Time taken	10 mins 1 sec
Grade	**5.00** out of 10.00 (**50**%)

Question 1

Correct

Mark 1.00 out of 1.00

If a graph has 'n' edges, its minimum spanning tree will always have exactly 'n-1' vertices. (True/False)
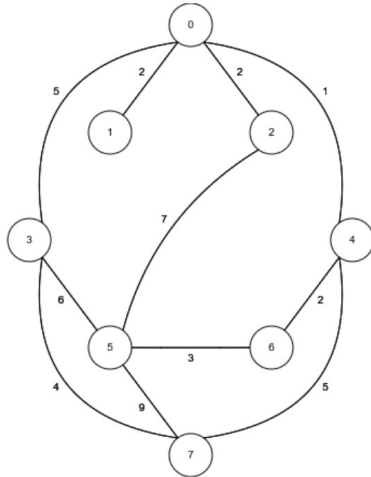
Select one:

○ True

◉ False ✔

The correct answer is 'False'.

Question 2

Correct

Mark 1.00 out of 1.00

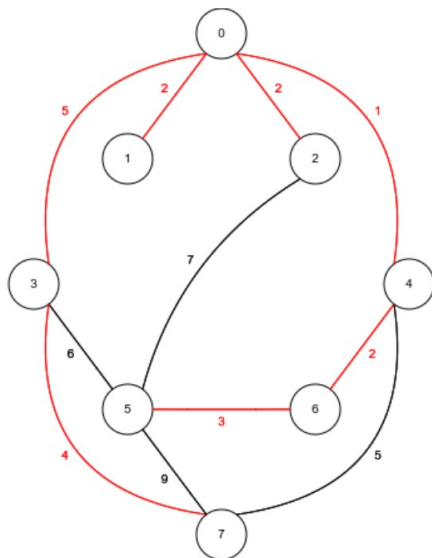What is the sum of all the weights of the edges in the MST of this graph?

Answer: | 19 | ✔

MST is as follows

The correct answer is: 19

Question 3

Incorrect

Mark 0.00 out of 1.00

Which of the following is true about Prim's algorithm initialization?

Select one:

- ○ a.   It initializes with a vertex
- ○ b.   It initializes with an edge
- ◉ c.   It initializes with a vertex which has the smallest edge ✖
- ○ d.   None of the statements statements are true

Your answer is incorrect.

The correct answer is: It initializes with a vertex

Question 4

Correct

Mark 1.00 out of 1.00

In Prim's algorithm, which pair of data structures are most suitable to select the next vertex with the minimum key value?

- ○ a.   Priority Queue, Linked List
- ○ b.   Array, Heap
- ○ c.   Stack, Heap
- ◉ d.   Priority Queue, Heap ✔

Your answer is correct.

The correct answer is:
Priority Queue, Heap

Question 5

Incorrect

Mark 0.00 out of 1.00

State True/False.

MST for a given graph is unique.

Select one:

- ◉ True ✖
- ○ False

The correct answer is 'False'.

Question 6

Incorrect

Mark 0.00 out of 1.00

Consider a complete undirected graph with vertex set {0, 1, 2, 3, 4}. W_{ij} entry in the matrix W below is the weight of the edge {i, j}. What is the minimum possible weight of a spanning tree T in this graph such that vertex 0 is a leaf node in the tree T?

$$W = \begin{pmatrix} 0 & 1 & 8 & 1 & 4 \\ 1 & 0 & 12 & 4 & 9 \\ 8 & 12 & 0 & 7 & 3 \\ 1 & 4 & 7 & 0 & 2 \\ 4 & 9 & 3 & 2 & 0 \end{pmatrix}$$
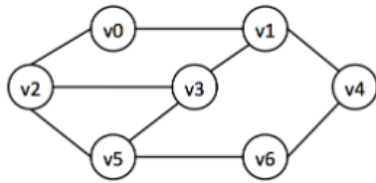
Select one:

○ a. 7 ✗

○ b. 10

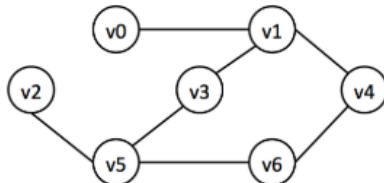○ c. 8

○ d. 9

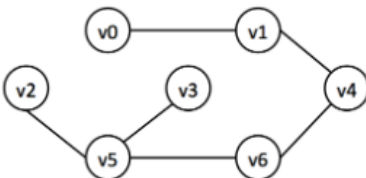The correct answer is: 10

Question 7

Incorrect

Mark 0.00 out of 1.00
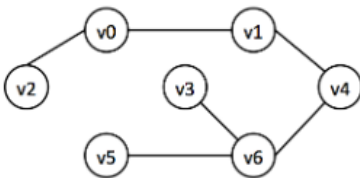
Select all valid **spanning trees** of the graph below

A)

B)

C)

Select one:

○ a.   It depends on the weight of the edges

○ b.   All A,B and C

◉ c.   Both B and C ✖

○ d.   B only

Your answer is incorrect.

The correct answer is: B only

Question 8

Incorrect

Mark 0.00 out of 1.00

Take a complete graph G with 5 vertices. Each edge is of the same weight. Then how many minimum spanning trees are there for graph G?

Answer: 6 ✖

A complete graph with n vertices has $n^{(n-2)}$ spanning trees.

The correct answer is: 125

Question 9

Correct

Mark 1.00 out of 1.00

Select the correct answers regarding statement A and statement B

A) A directed graph is acyclic if DFS yields no back edges

B) DFS yields no back edges if a directed graph is acyclic

Select one:

- a. Only statement A is true
- b. *Both statements are false*
- c. Both Statements are true ✔
- d. Only statement B is true

Your answer is correct.

The correct answer is: Both Statements are true

Question 10

Correct

Mark 1.00 out of 1.00

MST can be either acyclic or cyclic depending on the original graph

Select one:

- True
- False ✔

The correct answer is 'False'.