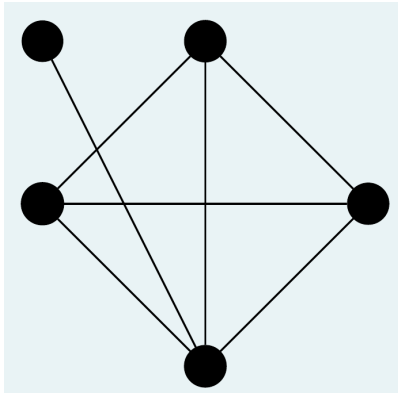
Started on	Thursday, 9 November 2023, 7:20 AM
State	Finished
Completed on	Thursday, 9 November 2023, 7:49 AM
Time taken	29 mins 5 secs
Marks	12.67/15.00
Grade	**8.44** out of 10.00 (**84**%)
Feedback	Great work! 🥉

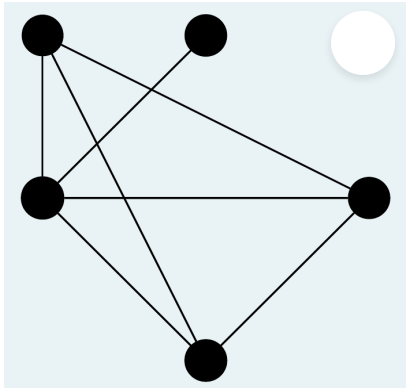
Question **1**

Complete

Mark 1.00 out of 1.00

Given two graphs. Are they isomorphic?





Select one:

- True
- False

Question **2**

Complete

Mark 1.00 out of 1.00

Which graphs are bipartite?

$G = (\{a, b, c, d, e\},\ \{(a, b), (b, c), (c, d), (d, a), (a, e), (e, c)\})$ Yes

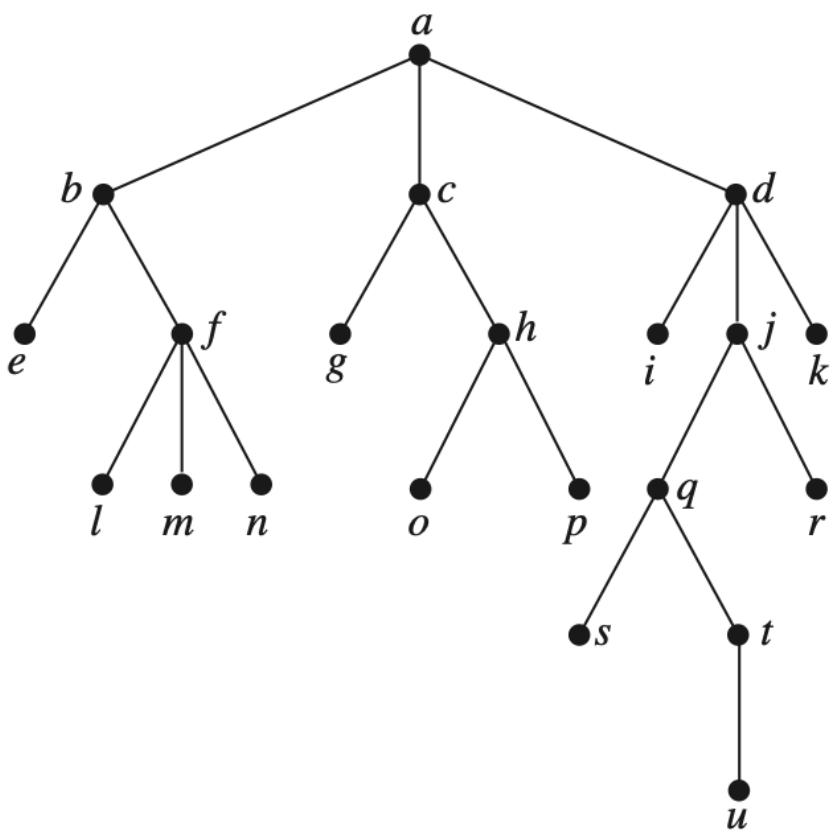
$G = (\{a, b, c, d, e, f\},\ \{(a, c), (a, f), (b, f), (b, c), (c, d), (f, d), (f, e), (c, e)\})$ Yes

Question **3**

Complete

Mark 1.00 out of 1.00

Given the rooted tree root a.



How many descendants of the vertex b?

Select one:

- a. 3
- b. 4
- c. 1
- d. 2
- e. 5

Question **4**

Complete

Mark 0.67 out of 1.00

Consider the directed graph G with the adjacency matrix (in the order of vertices A, B, C, D)

$$\begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 3 \\ 0 & 2 & 1 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}$$

Determine if the statement is True.

The out-degree of D is 3	No
The in-degree of C is 3	No
There are loops at D	True

Question **5**

Complete

Mark 1.00 out of 1.00

Consider the directed graph G with the adjacency matrix (in the order of vertices A, B, C, D)

$$\begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 3 \\ 0 & 2 & 1 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}$$

How many paths of length 3 from B to C?

Select one:

- a. 5
- b. 6
- c. 10
- d. 12
- e. None of the other choices is correct

Question **6**

Complete

Mark 1.00 out of 1.00

Find the length of the bit string when encoding the message $abcbcdcdd$ by a Huffman coding.

Select one:

- a. 15
- b. 18
- c. 19
- d. 16
- e. 17

Question **7**

Complete

Mark 0.00 out of 1.00

Find the least number of leaves in a balanced full 4-ary tree of height 3.

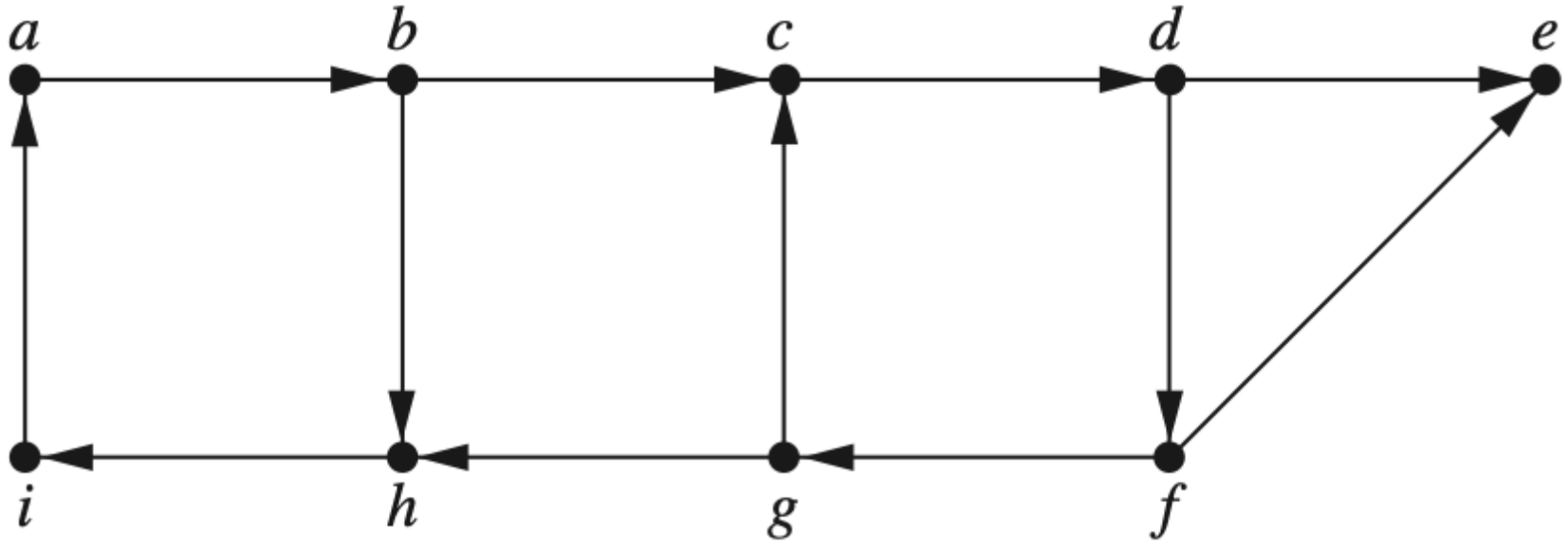
Answer: 11

Question **8**

Complete

Mark 1.00 out of 1.00

Find the strongly connected components of the following graphs.



Select one:

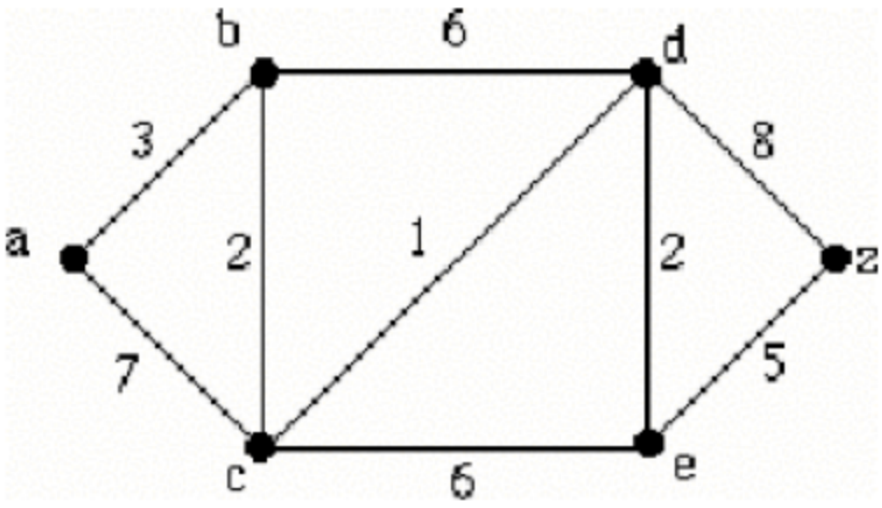
- a. 2
- b. 3
- c. 1
- d. 4

Question **9**

Complete

Mark 1.00 out of 1.00

Find the length of a shortest path between a and z in the given weighted graph.



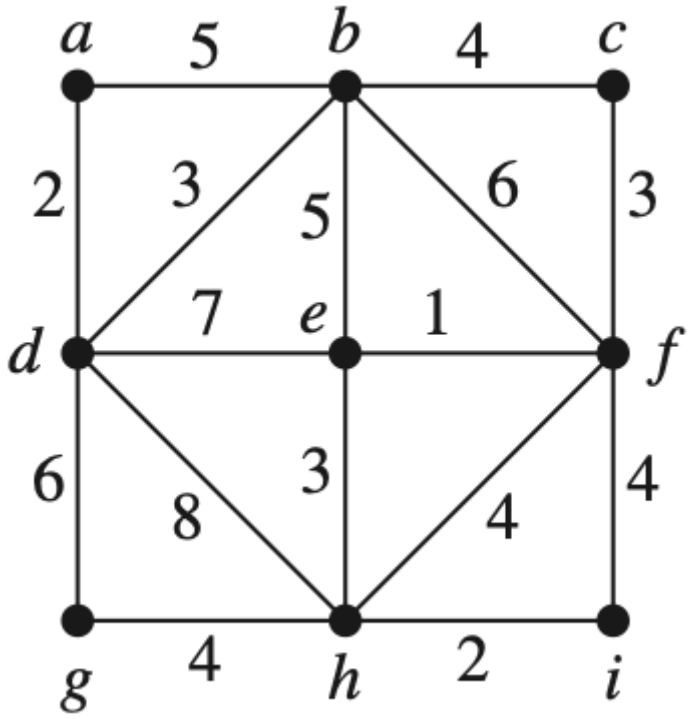
Answer: 13

Question **10**

Complete

Mark 1.00 out of 1.00

What is the total weight of the minimum spanning tree produced by the graph below:



Answer: 22

Question **11**

Complete

Mark 1.00 out of 1.00

How many edges do you have to remove from the n_Cube graph Q_3 to destroy all Hamilton cycles?

Select one:

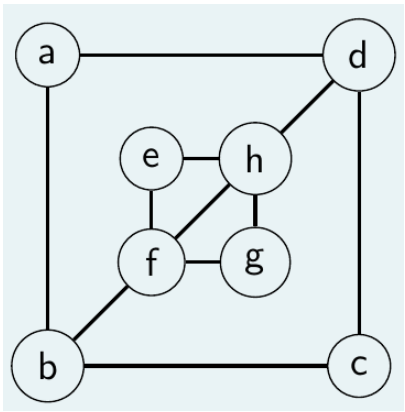
- a. 4
- b. None of the other choices is correct.
- c. 2
- d. 3

Question **12**

Complete

Mark 1.00 out of 1.00

Given the graph. Choose correct statement.



Select one:

- a. The graph has Euler paths but no Euler circuits
- b. The graph does not have Euler paths
- c. The graph has Euler circuits
- d. None of the other choices is correct

Question **13**

Complete

Mark 1.00 out of 1.00

Find the value of the postfix expression

2 2 4 + 3 2 ↑ + 5 3 + * –

Answer: -118

Question **14**

Complete

Mark 0.00 out of 1.00

Does there exist a simple graph with 5 vertices whose degrees are

4, 4, 3, 2, 1 ?

Select one:

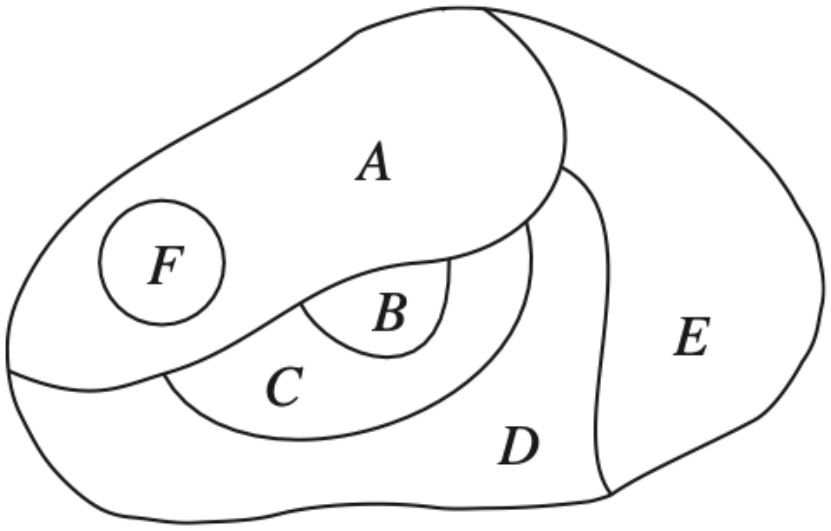
- True
- False

Question **15**

Complete

Mark 1.00 out of 1.00

Find the number of colors needed to color the map so that no two adjacent regions have the same color.



Select one:

- a. 3
- b. 4
- c. 2
- d. 5