Question **1**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. 1
- b. n
- c. n-1
- d. None of the other choices is correct

Feedback

The correct answer is: 1

Question **2**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 15
- b. 19
- c. 14
- d. None of the other choices is correct
- e. 16

Feedback

The correct answer is: 16

Question 3

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Which simple connected undirected graph is a tree?

Select one:

- a. 5 vertices and 5 edges
- b. 5 vertices and 4 edges
- c. 4 vertices and 5 edges

Feedback

The correct answer is: 5 vertices and 4 edges

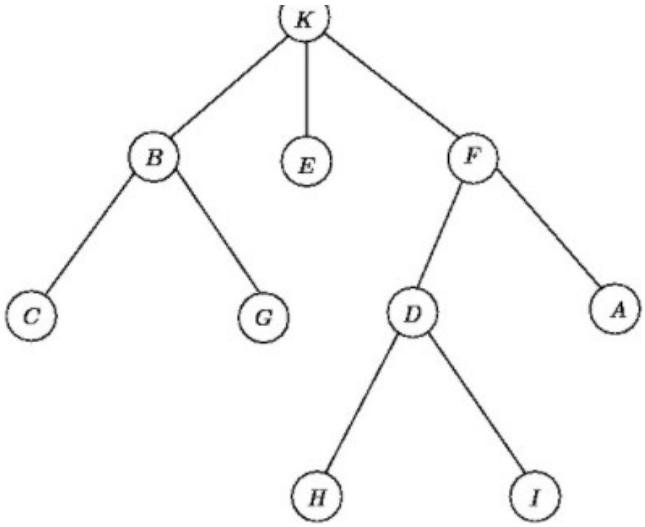
Question **4**

Complete

Mark 1.00 out of 1.00

Flag question

Question text



What is the position of the letter H when using pre-order traversal?

Answer: 8

Feedback

The correct answer is: 8

Question **5**

Complete

Mark 0.75 out of 1.00

Flag question

Question text

Determine if it is prefix code.

a → 0, b → 1, c → 00, d → 01, e → 10

Answer 1

False

False

a → 000, b → 001, c → 010, d → 011, e → 100

Answer 2

False

a → 00, b → 01, c → 10, d → 11, e → 110

Answer 3

False

a → 0, b → 10, c → 110, d → 1110, e → 11110

Answer 4

True

Feedback

The correct answer is: a → 0, b → 1, c → 00, d → 01, e → 10 → False, a → 000, b → 001, c → 010, d → 011, e → 100 → True, a → 00, b → 01, c → 10, d → 11, e → 110 → False, a → 0, b → 10, c → 110, d → 1110, e → 11110 → True

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

2 6 + 3 * 4 2 + 7 * - 2 /

Answer: -9

Feedback

The correct answer is: -9

Question 7

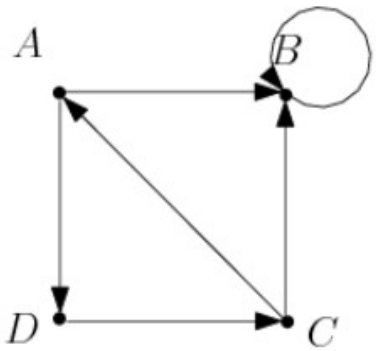
Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given the graph.



Determine of the statement is True.

The in-degree of B is 3	Answer 1: Yes
The graph has 7 edges	Answer 2: No
The out-degree of D is 1	Answer 3: Yes

Feedback

The correct answer is: The in-degree of B is 3 → Yes, The graph has 7 edges → No, The out-degree of D is 1 → Yes

Question **8**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

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

Determine if the statement is True.

Deg(C) = 3	Answer 1: No
There is a loop at A	Answer 2: Yes
B is adjacent to C	Answer 3: Yes

Feedback

The correct answer is: Deg(C) = 3 → No, There is a loop at A → Yes, B is adjacent to C → Yes

Question 9

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given two graphs. Choose the correct statement.

Select one:

- a. They are not isomorphic because they do not have the same number of connected components
- b. They are not isomorphic because they do not have the same number of circuits of length 4

c. They are not isomorphic because they do not have the same degrees

d. Thery are isomorphic

e. None of the other choices is correct

Feedback

The correct answer is: Thery are isomorphic

Question 10

Complete

Mark 0.00 out of 1.00

Flag question

Question text

How many strong connected components are there in this graph?

Answer: 6

Feedback

The correct answer is: 4

Question 11

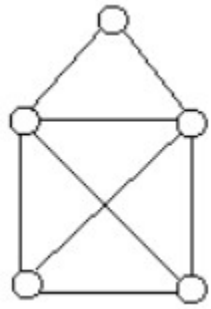
Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.



Select one:

- a. The graph does not have Hamilton paths
- b. The graph has Hamilton paths but no Hamilton circuits
- c. The graph has Hamilton circuits

Feedback

The correct answer is: The graph has Hamilton circuits

Question **12**

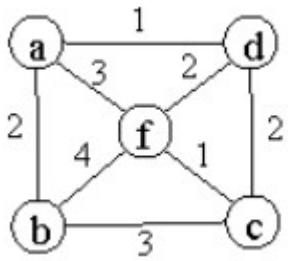
Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given a weighted graph. What is the next vertex to be chosen after choosing a and d when using Dijkstra algorithm to find the shortest path from a to c?



Select one:

- a. The vertex f

b. None of the other choices is correct

c. The vertex b

d. The vertex c

Feedback

The correct answer is: The vertex b

Question 13

Not answered
Marked out of 1.00

Flag question

Question text

Let T be full 4-ary tree for which all leaves are at level 3. Find the number of internal vertices of T.

Answer:

Feedback

The correct answer is: 21

Question 14

Complete
Mark 0.00 out of 1.00

Flag question

Question text

Draw a binary search tree for the sentence

co cong mai sat co ngay nen kim

Then find the number of comparisons needed to locate the word "kim"

Answer: 6

Feedback

The correct answer is: 4

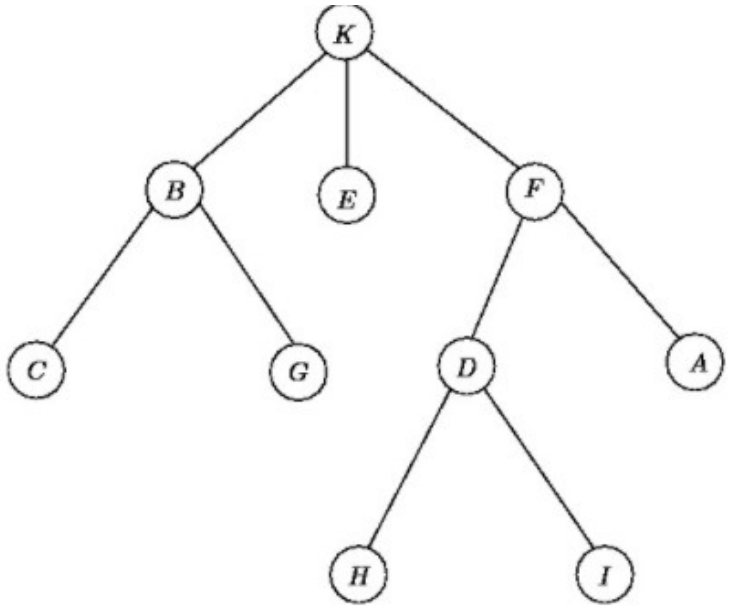
Question 15

Complete

Mark 1.00 out of 1.00

Flag question

Question text



Which vertex is visited right before the vertex E in pre-order traversal?

Select one:

- a. C
- b. G
- c. B
- d. K

Feedback

The correct answer is: G

Question 1

Complete

Mark 0.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. None of the other choices is correct
- b. n-1
- c. n
- d. 1

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 16
- b. None of the other choices is correct
- c. 15
- d. 19
- e. 14

Feedback

The correct answer is: 16

Question 3

Complete
Mark 1.00 out of 1.00

Flag question

Question text

100 people participate in a chess competition. How many games must be played to determine a champion?

Answer: 99

Feedback

The correct answer is: 99

Question 4

Complete
Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

2 2 4 + 3 2 ↑ + 5 3 + * −

Answer: -118

Feedback

The correct answer is: -118

Question **5**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Draw a binary search tree for the sentence

"cong cha nhu nui thai son".

Then find the number of comparisons needed to locate the word "son".

Answer: 5

Feedback

The correct answer is: 5

Question **6**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

1 2 + 4 ↑ 3 9 – 5 8 – * –

Answer: 63

Feedback

The correct answer is: 63

Question **7**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

1,2,1,2,1 Answer 1: No

1,0,1,2,4 Answer 2: No

1,2,1,3,1 Answer 3: Yes

Feedback

The correct answer is: 1,2,1,2,1 → No, 1,0,1,2,4 → No, 1,2,1,3,1 → Yes

Question 8

Complete

Mark 0.33 out of 1.00

Flag question

Question text

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 B is 3 Answer 1: True

The graph has 3 loops Answer 2: No

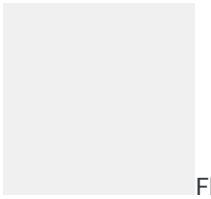
The in-degree of D is 5 Answer 3 True

Feedback

The correct answer is: The out-degree of B is 3 → No, The graph has 3 loops → True, The in-degree of D is 5 → True

Question 9

Complete
Mark 0.00 out of 1.00


Flag question

Question text

How many nonisomorphic simple undirected graphs are there with 4 vertices and 4 or 5 edges?

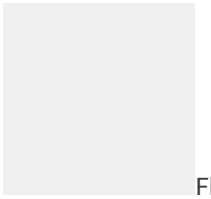
Answer: 0

Feedback

The correct answer is: 3

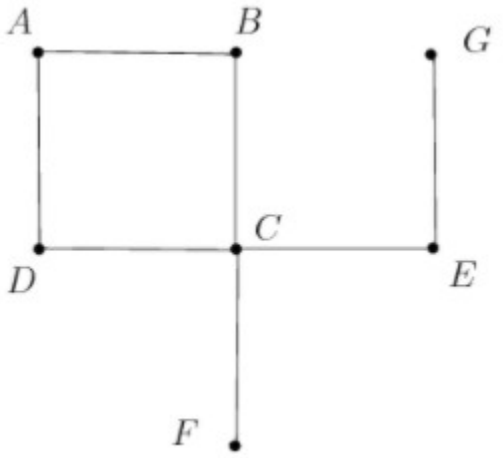
Question 10

Complete
Mark 1.00 out of 1.00


Flag question

Question text

Given the graph. Determine if the statement is correct.



CF is a cut edge	Answer 1: True
There are 4 cut vertices	Answer 2: False
BC is a cut edge	Answer 3: False

Feedback

The correct answer is: CF is a cut edge → True, There are 4 cut vertices → False, BC is a cut edge → False

Question 11

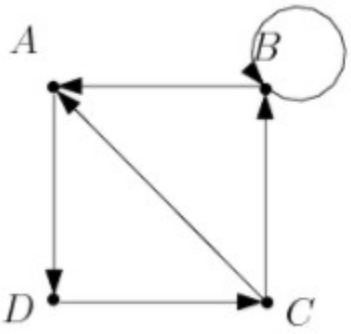
Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.



Select one:

- a. The graph has Euler circuits
- b. The graph does not have Euler paths
- c. The graph has Euler paths but no Euler circuits

Feedback

The correct answer is: The graph has Euler paths but no Euler circuits

Question 12

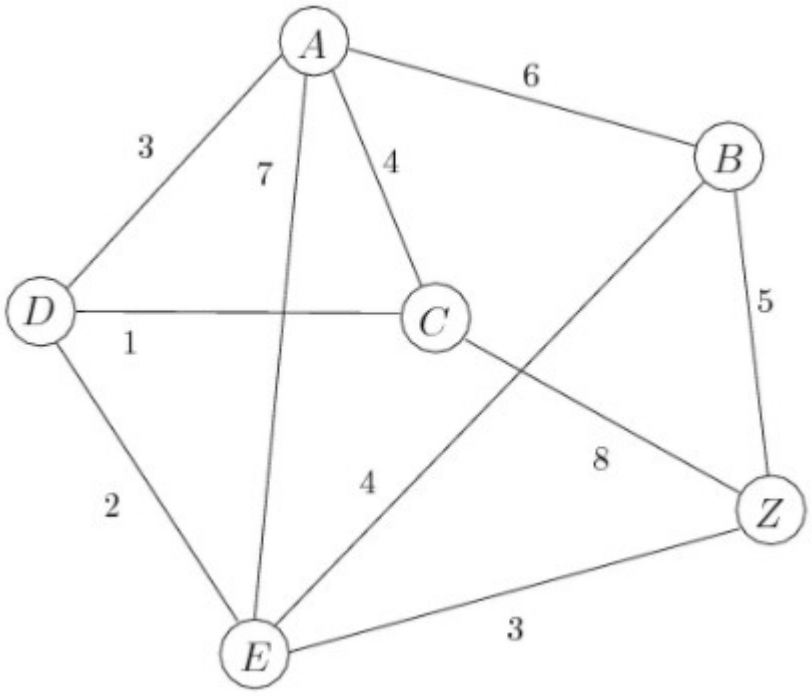
Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given a weighted graph. Which are the first 3 vertices chosen when using Dijkstra algorithm to find the shortest path from B to D?



Select one:

- a. B, Z, E
- b. B, E, A
- c. None of the other choices is correct
- d. B, E, D
- e. B, E, Z

Feedback

The correct answer is: B, E, Z

Question 13

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the maximum of the number of leaves of a full 3-ary tree of - *.

Answer: 27

Feedback

The correct answer is: 27

Question 14

Not answered
Marked out of 1.00

Flag question

Question text

There are 900 coins, one of them is a counterfeit coin which is lighter than the others. How many weighings of a balanced scale are needed to determine this counterfeit coin?

Answer:

Feedback

The correct answer is: 7

Question 15

Not answered
Marked out of 1.00

Flag question

Question text

Find the value of the prefix expression

*** + 3 3 * + 3 ↑3 3 – 3 3**

Answer:

Feedback

The correct answer is: 0

Question 1

Complete
Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. n
- b. 1
- c. n-1
- d. None of the other choices is correct

Feedback

The correct answer is: 1

Question **2**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 16
- b. 19
- c. None of the other choices is correct
- d. 14
- e. 15

Feedback

The correct answer is: 16

Question 3

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Find the maximum of the number of vertices in a binary tree of height 5.

Answer: 31

Feedback

The correct answer is: 63

Question 4

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Which vertex is visited right before the vertex E in post-order traversal?

Select one:

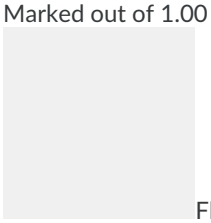
- a. G
- b. K
- c. B
- d. C

Feedback

The correct answer is: B

Question 5

Not answered
Marked out of 1.00



Flag question

Question text

Given a message 15 letters A, 17 letters B, 18 letters C, 20 letters D, 30 letters E. Find the length of the bit string when encoding this message by a Huffman coding.

Answer:

Feedback

The correct answer is: 232

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the position of the letter D when using in-order traversal?

Answer: 7

Feedback

The correct answer is: 7

Question 7

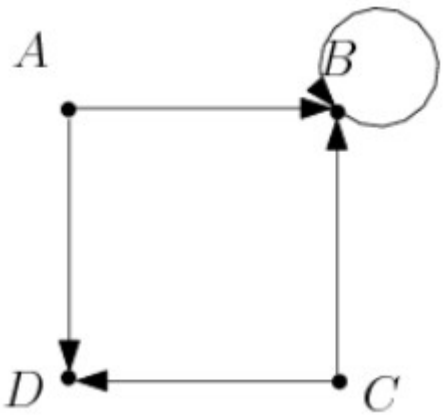
Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given the graph.



Determine if the statement is True.

The in-degree of C is 0	Answer 1: True
The out-degree of B is 2	Answer 2: False
This is a pseudo undirected graph.	Answer 3: False

Feedback

The correct answer is: The in-degree of C is 0 → True, The out-degree of B is 2 → False, This is a pseudo undirected graph. → False

Question 8

Not answered
Marked out of 1.00

Flag question

Question text

How many 1s are there in the adjacency matrix of $K_{3,4}$?

Answer:

Feedback

The correct answer is: 24

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given two graphs. Choose the correct statement.

Select one:

- a. They are not isomorphic because they do not have the same degrees
- b. None of the other choices is correct
- c. They are not isomorphic because they do not have the same number of circuits of length 4
- d. They are not isomorphic because they do not have the same number of connected components
- e. They are isomorphic

Feedback

The correct answer is: They are isomorphic

Question 10

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Choose correct statements:

(i) Any simple connected undirected graph has cut edges.

(ii) Vertices of degree 1 in an undirected graph cannot be a cut vertex.

Select one:

- a. None of the other choices is correct
- b. (i) and (ii)
- c. (ii)
- d. (i)

Feedback

The correct answer is: (ii)

Question 11

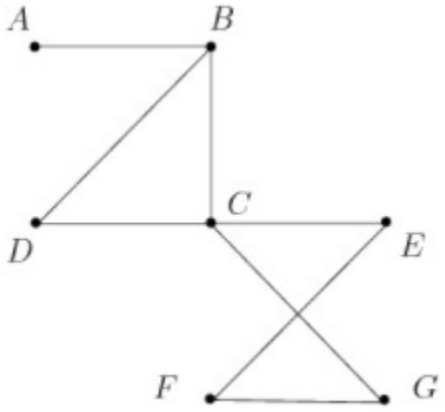
Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.



Select one:

- a. The graph does not have Hamilton paths
- b. The graph has Hamilton paths but no Hamilton circuits
- c. The graph has Hamilton circuits

Feedback

The correct answer is: The graph has Hamilton paths but no Hamilton circuits

Question **12**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given a weighted graph. Which are the first 3 vertices chosen when using Dijkstra algorithm to find the shortest path from A to Z?

Select one:

- a. A, D, C
- b. A, E, Z
- c. A, E, D
- d. None of the other choices is correct
- e. A, E, B

Feedback

The correct answer is: A, E, D

Question 13

Complete

Mark 1.00 out of 1.00

Flag question

Question text

200 people participate in a chess competition. How many games must be played to determine a champion?

Answer: 199

Feedback

The correct answer is: 199

Question **14**

Not answered

Marked out of 1.00

Flag question

Question text

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

Answer:

Feedback

The correct answer is: 19

Question **15**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the Polish notation for the expression
((x + y) ↑ 2) * (y - 3 / x) + 4

Select one:

- a. + * ↑ + x y 2 - y / 3 x 4
- b. * ↑ + x y 2 - y / 3 x + 4
- c. x y + 2 ↑ y 3 x / − * 4 +
- d. x + y ↑ 2 * y - 3 / x + 4

Feedback

The correct answer is: + * ↑ + x y 2 - y / 3 x 4

Question 1

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. n
- b. n-1
- c. 1
- d. None of the other choices is correct

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 16
- b. 15
- c. 14
- d. None of the other choices is correct
- e. 19

Feedback

The correct answer is: 16

Question 3

Complete

Mark 0.33 out of 1.00

Flag question

Question text

Fill in the blank.

A full 3-ary tree with 101 leaves has ... internal vertices Answer 1: 76

A full 4-ary tree with 101 vertices has ... leaves Answer 2: 50

A full 5-ary tree with 20 internal vertices has ... vertices Answer 3: 101

Feedback

The correct answer is: A full 3-ary tree with 101 leaves has ... internal vertices → 50, A full 4-ary tree with 101 vertices has ... leaves → 76, A full 5-ary tree with 20 internal vertices has ... vertices → 101

Question 4

Complete
Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

2 6 + 7 * 4 2 + 7 2 * - /

Answer: -7

Feedback

The correct answer is: -7

Question 5

Complete
Mark 1.00 out of 1.00

Flag question

Question text

Draw a binary search tree for the sentence

"cong cha nhu nui thai son".

Then find the number of comparisons needed to locate the word "nui".

Answer: 3

Feedback

The correct answer is: 3

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the position of the letter D when using post-order traversal?

Answer: 7

Feedback

The correct answer is: 7

Question 7

Complete

Mark 0.33 out of 1.00

Flag question

Question text

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

3, 0, 3, 0, 4	Answer 1: No
3, 1, 3, 2, 4	Answer 2: Yes
2, 1, 2, 1, 4	Answer 3: No

Feedback

The correct answer is: 3, 0, 3, 0, 4 → No, 3, 1, 3, 2, 4 → No, 2, 1, 2, 1, 4 → Yes

Question 8

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

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

Determine if the statement is True.

A is adjacent to C	Answer 1: No
Deg(B) = 2	Answer 2: True
The graph has no	Answer 3: No

loop. No

Feedback

The correct answer is: A is adjacent to C → No, Deg(B) = 2 → True, The graph has no loop. → No

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given two graphs. Choose the correct statement.

Select one:

- a. None of the other choices is correct
- b. They are not isomorphic because they do not have the same degrees
- c. They are not isomorphic because they do not have the same number of circuits of length 3
- d. Thery are isomorphic
- e. They are not isomorphic because they do not have the same number of connected components

Feedback

The correct answer is: Thery are isomorphic

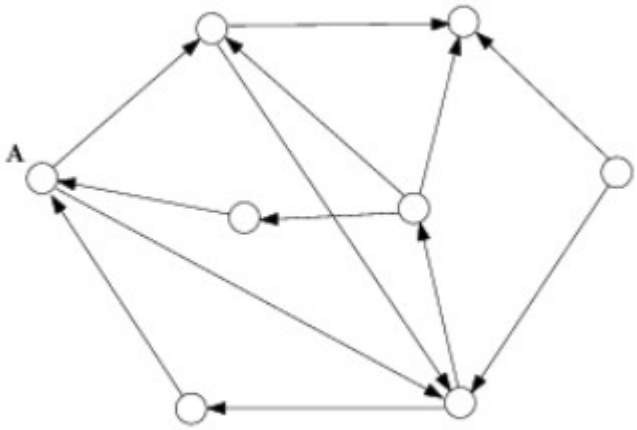
Question 10

Complete
Mark 0.00 out of 1.00

Flag question

Question text

How many vertices are there in the strong connected component containing A?



Answer: 2

Feedback

The correct answer is: 6

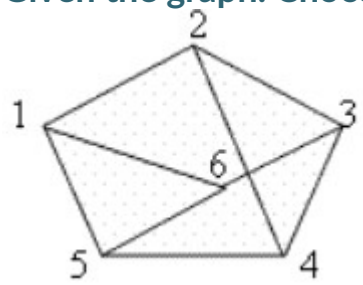
Question 11

Complete
Mark 0.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.



Select one:

- a. The graph does not have Euler paths
- b. The graph has Euler paths but no Euler circuits
- c. The graph has Euler circuits

Feedback

The correct answer is: The graph does not have Euler paths

Question **12**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given a weighted graph. Which are the first 3 vertices chosen when using Dijkstra algorithm to find the shortest path from E to C?

Select one:

- a. E, D, A
- b. None of the other choices is correct
- c. E, D, Z
- d. E, D, B
- e. E, D, C

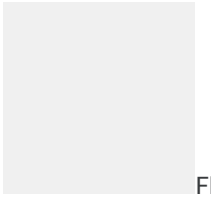
Feedback

The correct answers are: E, D, Z, E, D, C

Question 13

Complete

Mark 1.00 out of 1.00


Flag question

Question text

Determine if the statement is correct.

e has 3 children	Answer 1 True
f is a leaf	Answer 2 True
d is an ancestor of e	Answer 3 False

Feedback

The correct answer is: e has 3 children → True, f is a leaf → True, d is an ancestor of e → False

Question **14**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Draw a binary search tree for the sentence

co cong mai sat co ngay nen kim

Then find the number of comparisons needed to locate the word "nen"

Answer: 4

Feedback

The correct answer is: 6

Question **15**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

2 6 + 3 * 4 2 - 7 2 * - /

Answer: -2

Feedback

The correct answer is: -2

Question **1**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. None of the other choices is correct
- b. n-1
- c. 1
- d. n

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 15
- b. 16
- c. 19
- d. 14
- e. None of the other choices is correct

Feedback

The correct answer is: 16

Question 3

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Count the number of leaves in this tree.

Answer: 9

Feedback

The correct answer is: 9

Question 4

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the position of the letter D when using pre-order traversal?

Answer: 7

Feedback

The correct answer is: 7

Question **5**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Determine a Huffman coding for the characters

A: 0.45, B: 0.25, C: 0.2, D: 0.1

Select one:

- a. A := 1 B:= 01 C:= 000 D:= 001
- b. A := 0 B:= 11 C:= 110 D:= 111
- c. A := 0 B:= 1 C:= 10 D:= 11
- d. A := 0 B:= 11 C:= 01 D:= 00

Feedback

The correct answer is: A := 1 B:= 01 C:= 000 D:= 001

Question 6

Complete
Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

+ - * 4 3 5 2.

Answer: 9

Feedback

The correct answer is: 9

Question 7

Complete
Mark 1.00 out of 1.00

Flag question

Question text

Is Q_2 a wheel?

Select one:

True

False

Feedback

The correct answer is 'False'.

Question 8

Complete

Mark 0.33 out of 1.00

Flag question

Question text

Consider the undirected graph G with the incidence matrix (in the order of vertices A, B, C, D and of edges e1, e2, e3, e4, e5).

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

Determine if the statement is True.

There are no multiple edges	Answer 1: No
There are 2 loops	Answer 2: Yes
Deg(A) = 2	Answer 3: Yes

Feedback

The correct answer is: There are no multiple edges → Yes, There are 2 loops → Yes, Deg(A) = 2 → No

Question 9

Not answered

Marked out of 1.00

Flag question

Question text

How many nonisomorphic simple undirected graphs are there with 4 vertices and there are no vertices of degree 2?

Answer:

Feedback

The correct answer is: 5

Question 10

Complete

Mark 1.00 out of 1.00

Flag question

Question text

A directed graph has 5 vertices A, B, C, D, E with direction on the edges as follows:

A is adjacent to C

C is adjacent to B

D is adjacent to E

E is adjacent to A

B is adjacent to D

Is this graph strongly connected?

Select one:

- True
- False

Feedback

The correct answer is 'True'.

Question 11

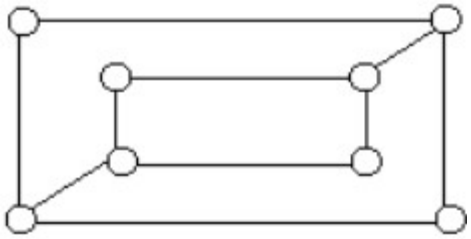
Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.



Select one:

a. The graph has Hamilton circuits

b. The graph has Hamilton paths but no Hamilton circuits

c. The graph does not have Hamilton paths

Feedback

The correct answer is: The graph has Hamilton paths but no Hamilton circuits

Question **12**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a weighted graph. Which are the first 3 vertices chosen when using Dijkstra algorithm to find the shortest path from A to F?

Select one:

- a. A, H, G
- b. H, B, G
- c. A, H, B
- d. A, B, F

Feedback

The correct answer is: A, H, B

Question **13**

Complete

Mark 0.33 out of 1.00

Flag question

Question text

Determine if the statement is correct.

There exists a full 4-ary tree with 10 internal vertices and 41 vertices

Answer 1: True

There exists a full 5-ary tree with 10 internal vertices and 41 leaves

Answer 2: No

There exists a full 3-ary tree with 10 internal vertices and 28 leaves.

Answer 3: True

Feedback

The correct answer is: There exists a full 4-ary tree with 10 internal vertices and 41 vertices → True, There exists a full 5-ary tree with 10 internal vertices and 41 leaves → True, There exists a full 3-ary tree with 10 internal vertices and 28 leaves. → No

Question 14

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Draw a binary search tree for the sentences

tram nam trong coi nguoi ta
chu tai chu menh kheo la ghet nhau.

Then find the number of comparisons needed to locate the word "tai"

Answer: 4

Feedback

The correct answer is: 5

Question 15

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

*** + 4 + 4 ↑ 2 + 4 4 2**

Answer: 528

Feedback

The correct answer is: 528

Question **1**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. None of the other choices is correct
- b. 1
- c. n
- d. n-1

Feedback

The correct answer is: 1

Question **2**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 16
- b. 19
- c. 15
- d. 14
- e. None of the other choices is correct

Feedback

The correct answer is: 16

Question 3

Complete

Mark 0.00 out of 1.00

Flag question

Question text

How many vertices are there in a full 10-ary tree with 10 internal vertices?

Answer: 100

Feedback

The correct answer is: 101

Question 4

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

*** - 4 * 4 ↑ 2 - 4 2 2**

Answer: -24

Feedback

The correct answer is: -24

Question 5

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given a message 5 letters A, 10 letters B, 15 letters C, 20 letters D, 50 letters E. Find the length of the bit string when encoding this message by a Huffman coding.

Answer: 160

Feedback

The correct answer is: 195

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

1 2 * 3 ↑4 5 – 6 7 – * –

Answer: 7

Feedback

The correct answer is: 7

Question 7

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Let G be the graph.

Choose the correct statement.

Select one:

- a. G is bipartite
- b. G is not bipartite
- c. G is a wheel

Feedback

The correct answer is: G is bipartite

Question 8

Complete

Mark 0.33 out of 1.00

Flag question

Question text

Consider the undirected graph G with the incidence matrix (in the order of vertices A, B, C, D and of edges e1, e2, e3, e4, e5).

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

Determine if the statement is True.

B is adjacent to C — Answer 1: Yes

Deg(D) = 3 — Answer 2: No

There are no loops at D — Answer 3: No

Feedback

The correct answer is: B is adjacent to C → No, Deg(D) = 3 → No, There are no loops at D → Yes

Question 9

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Choose correct statements:

(i) $K_{2,2}$ is isomorphic to K_4

(ii) $K_{2,2}$ is isomorphic to C_4

(iii) $K_{2,2}$ is isomorphic to Q_2

Select one:

- a. (i), (ii) and (iii) are NOT correct
- b. (ii) and (iii)
- c. (i) and (iii)
- d. (i) and (ii)
- e. None of the other choices is correct

Feedback

The correct answer is: (ii) and (iii)

Question 10

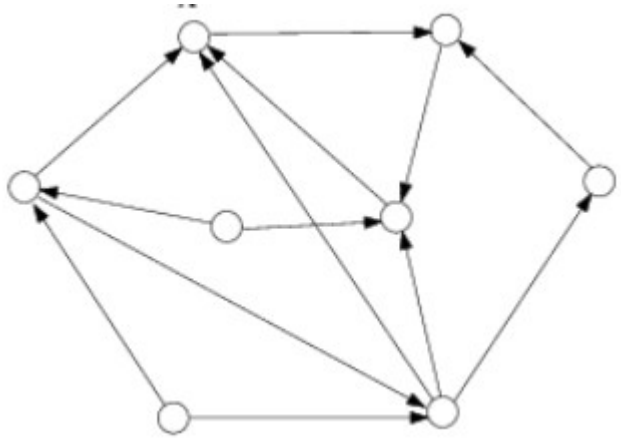
Complete

Mark 0.00 out of 1.00

Flag question

Question text

How many vertices are there in the strong connected component containing A?



Answer: 6

Feedback

The correct answer is: 3

Question 11

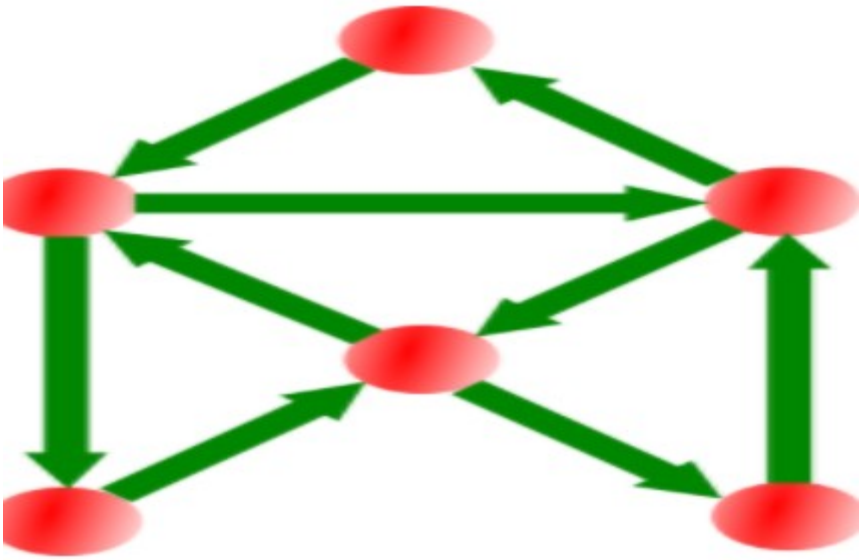
Complete

Mark 0.00 out of 1.00

Flag question

Question text

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

Feedback

The correct answer is: The graph has Euler circuits

Question **12**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given a weighted graph. Which are the first 3 vertices chosen when using Dijkstra algorithm to find the shortest path from D to Z?

Select one:

a. D, E, Z

b. D, E, C

c. None of the other choices is correct

d. D, C, E

e. D, C, A

Feedback

The correct answer is: D, C, E

Question 13

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Let T be a full 4-ary tree in which all leaves are at level 3. Find the number of vertices of T.

Answer: 21

Feedback

The correct answer is: 85

Question 14

Complete

Mark 0.00 out of 1.00

Flag question

Question text

How many leaves are there in a decision tree representing the sorting of a list of 5 elements?

Answer: 10

Feedback

The correct answer is: 120

Question 15

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the position of the letter H when using post-order traversal?

Answer: 5

Feedback

The correct answer is: 5

Question 1

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. 1
- b. None of the other choices is correct
- c. n-1
- d. n

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 16
- b. 15
- c. 19
- d. None of the other choices is correct
- e. 14

Feedback

The correct answer is: 16

Question 3

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Count the number of internal vertices in this tree.

Answer: 4

Feedback

The correct answer is: 4

Question 4

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

+ / * 4 3 - 5 7 + 3 2.

Answer: -1

Feedback

The correct answer is: -1

Question 5

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Draw a binary search tree for the sentence

"mot long tho me kinh cha".

Then find the number of comparisons needed to locate the word "me".

Answer: 3

Feedback

The correct answer is: 3

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

* + 4 + 4 ↑ 1 + 4 4 2

Answer: 18

Feedback

The correct answer is: 18

Question 7

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

1, 2, 2, 2, 5 Answer 1: No

2, 2, 2, 3, 3 Answer 2: Yes

3, 3, 3, 2, 2 Answer 3: No

Feedback

The correct answer is: 1, 2, 2, 2, 5 → No, 2, 2, 2, 3, 3 → Yes, 3, 3, 3, 2, 2 → No

Question 8

Complete

Mark 0.67 out of 1.00

Flag question

Question text

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 — Answer 1: No

There are loops at D — Answer 2: True

The in-degree of C is 3 — Answer 3: No

Feedback

The correct answer is: The out-degree of D is 3 → No, There are loops at D → True, The in-degree of C is 3 → True

Question 9

Complete

Mark 0.00 out of 1.00

Flag question

Question text

How many nonisomorphic simple undirected graphs are there with 4 vertices and there is at least a vertex of degree 3?

Answer: 10

Feedback

The correct answer is: 4

Question 10

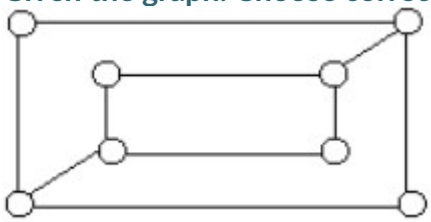
Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.



Select one:

- a. The graph has Euler circuits
- b. The graph does not have Euler paths
- c. The graph has Euler paths but no Euler circuits

Feedback

The correct answer is: The graph does not have Euler paths

Question 11

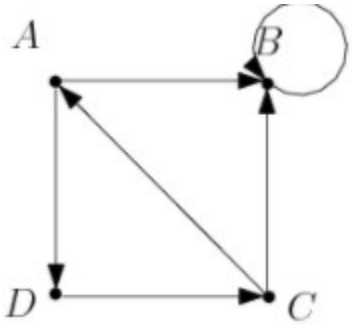
Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.



Select one:

a. The graph does not have Euler paths

b. The graph has Euler paths but no Euler circuits

c. The graph has Euler circuits

Feedback

The correct answer is: The graph does not have Euler paths

Question **12**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a weighted graph. Find the shortest distance from A to J.

Answer: 9

Feedback

The correct answer is: 9

Question 13

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many vertices are there in a full binary tree with 10 internal vertices?

Answer: 21

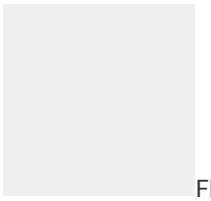
Feedback

The correct answer is: 21

Question 14

Complete

Mark 1.00 out of 1.00


Flag question

Question text

Draw a binary search tree for the list

"14, 20, 32, 19, 10, 13, 25, 11, 15".

Then find the number of comparisons needed to locate the number 15.

Answer: 4

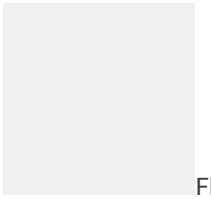
Feedback

The correct answer is: 4

Question 15

Complete

Mark 1.00 out of 1.00


Flag question

Question text

What is the position of the letter H when using in-order traversal?

Answer: 6

Feedback

The correct answer is: 6

Question 1

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. n-1
- b. 1
- c. n
- d. None of the other choices is correct

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 16
- b. 19
- c. None of the other choices is correct
- d. 15
- e. 14

Feedback

The correct answer is: 16

Question 3

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Find the least number of vertices of a full 3-ary tree of height 3.

Answer: 40

Feedback

The correct answer is: 10

Question 4

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

+ / - * 4 3 5 7 + 3 2.

Answer: 6

Feedback

The correct answer is: 6

Question 5

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many leaves are there in a decision tree representing the sorting of a list of 4 elements?

Answer: 24

Feedback

The correct answer is: 24

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

*** + 4 - 4 ↑ 3 / 4 2 3**

Answer: -3

Feedback

The correct answer is: -3

Question 7

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Determine if the statement is correct.

C_3 là đồ thị đầy đủ. Answer 1: Sai

$K_{3,3}$ là đồ thị đầy đủ. Answer 2: Đúng

K_4 là đồ thị phân đôi. Answer 3: Đúng

Feedback

The correct answer is: C_3 là đồ thị đầy đủ. → Đúng, $K_{3,3}$ là đồ thị đầy đủ. → Sai, K_4 là đồ thị phân đôi. → Sai

Question 8

Complete

Mark 0.67 out of 1.00

Flag question

Question text

Consider the undirected graph G with the incidence matrix (in the order of vertices A, B, C, D and of edges e1, e2, e3, e4, e5).

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

Determine if the statement is True.

There are loops at A — Answer 1: True

Deg(B) = 1 — Answer 2: False

There are no multiple edges — Answer 3: False

Feedback

The correct answer is: There are loops at A → True, Deg(B) = 1 → True, There are no multiple edges → False

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given two graphs. Choose the correct statement.

Select one:

- a. They are not isomorphic because they do not have the same number of connected components
- b. Thery are isomorphic
- c. They are not isomorphic because they do not have the same number of circuits of length 3
- d. None of the other choices is correct
- e. They are not isomorphic because they do not have the same degrees

Feedback

The correct answer is: Thery are isomorphic

Question 10

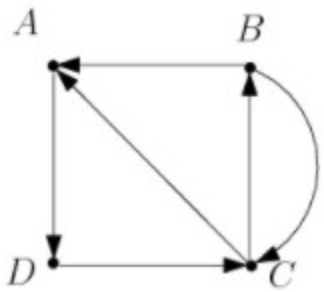
Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.



Select one:

- a. The graph has Euler paths but no Euler circuits
- b. The graph has Euler circuits
- c. The graph does not have Euler paths

Feedback

The correct answer is: The graph has Euler paths but no Euler circuits

Question 11

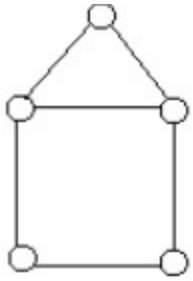
Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.



Select one:

- a. The graph has Hamilton circuits
- b. The graph does not have Hamilton paths
- c. The graph has Hamilton paths but no Hamilton circuits

Feedback

The correct answer is: The graph has Hamilton circuits

Question **12**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given a weighted graph. What is the next vertex to be chosen after choosing D, C, A when using Dijkstra algorithm to find the shortest path from D to B?

Select one:

- a. None of the other choices is correct
- b. E
- c. Z
- d. B

Feedback

The correct answer is: E

Question 13

Complete

Mark 0.50 out of 1.00

Flag question

Question text

Determine if the statement is correct.

level of g is 3	Answer 1: True
This is a 4-ary tree	Answer 2: False
This is a full 3-ary tree	Answer 3: True
height = 4	Answer 4: False

Feedback

The correct answer is: level of g is 3 → False, This is a 4-ary tree → True, This is a full 3-ary tree → True, height = 4 → False

Question 14

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a coding scheme

s : 1111, e : 110, i : 1110, a : 01, r : 0011, p : 000, d : 10

Decode the message 000010011011011101111110

Answer: paradise

Feedback

The correct answer is: paradise

Question 15

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

*** + 3+ 3 * 3 ↑3 – 3 3 3**

Answer: 27

Feedback

The correct answer is: 27

Question 1

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. n
- b. 1
- c. n-1
- d. None of the other choices is correct

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 16
- b. 14
- c. 19
- d. None of the other choices is correct
- e. 15

Feedback

The correct answer is: 16

Question 3

Complete

Mark 0.00 out of 1.00

Flag question

Question text

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

Answer: 27

Feedback

The correct answer is: 7

Question 4

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

2 2 4 + ↑ 3 2 + 5 7 + * –

Answer: 4

Feedback

The correct answer is: 4

Question 5

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Decode the message 110111010 encoded by the scheme

f: 10, p: 110, t: 1110.

Select one:

- a. fpt
- b. tpf
- c. ftp
- d. ptf

Feedback

The correct answer is: ptf

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Which vertex is visited before the vertex E in in-order traversal?

Select one:

- a. C
- b. G
- c. K
- d. B

Feedback

The correct answer is: K

Question 7

Complete

Mark 0.67 out of 1.00

Flag question

Question text

Given the graph.

Determine if the statement is correct.

B is adjacent to D	Answer 1: No
Deg(A) = 4	Answer 2: No
Deg(C) = Deg(D)	Answer 3: Yes

Feedback

The correct answer is: B is adjacent to D → No, Deg(A) = 4 → Yes, Deg(C) = Deg(D) → Yes

Question 8

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Consider the undirected graph G with the incidence matrix (in the order of vertices A, B, C, D and of edges e1, e2, e3, e4, e5).

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

Determine if the statement is True.

There are no loops at D — Answer 1: Yes

Deg(D) = 3 — Answer 2: No

B is adjacent to C — Answer 3: No

Feedback

The correct answer is: There are no loops at D → Yes, Deg(D) = 3 → No, B is adjacent to C → No

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many nonisomorphic simple undirected graphs are there with 4 vertices and there is at least a vertex of degree 3?

Answer: 4

Feedback

The correct answer is: 4

Question 10

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given the graph. Determine if the statement is correct.

C is a cut vertex	Answer 1: True
There are 4 cut edges	Answer 2: True
A is a cut vertex	Answer 3: False
CF is a cut edge	Answer 4: False

False

Feedback

The correct answer is: C is a cut vertex → True, There are 4 cut edges → True, A is a cut vertex → False, CF is a cut edge → False

Question 11

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.

Select one:

- a. The graph has Hamilton circuits
- b. The graph does not have Hamilton paths
- c. The graph has Hamilton paths but no Hamilton circuits

Feedback

The correct answer is: The graph has Hamilton paths but no Hamilton circuits

Question 12

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a weighted graph. What is the next vertex to be chosen after choosing a, b, f when using Dijkstra algorithm to find the shortest path from a to d?

Select one:

- a. The vertex c
- b. The vertex d
- c. None of the other choices is correct
- d. The vertex e

Feedback

The correct answer is: The vertex c

Question 13

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the maximum of the number of internal vertices of a full 3-ary tree of height 3.

Answer: 13

Feedback

The correct answer is: 13

Question 14

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many comparisons are needed to add the number 10 to the binary search tree?

Answer: 3

Feedback

The correct answer is: 3

Question 15

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

2 2 + 4 ↑ 3 9 + 5 8 + * –

Answer: 100

Feedback

The correct answer is: 100

Question 1

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. n
- b. None of the other choices is correct
- c. 1

d. n-1

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

a. None of the other choices is correct

b. 19

c. 16

d. 14

e. 15

Feedback

The correct answer is: 16

Question 3

Not answered

Marked out of 1.00

Flag question

Question text

Find the least number of leaves of a balanced full binary tree of height 10.

Answer:

Feedback

The correct answer is: 513

Question 4

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

*** + 3 2 * + 1 ↑3 2 – 3 2**

Answer: 50

Feedback

The correct answer is: 50

Question 5

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many comparisons are needed to add the number 25 to the binary search tree?

Answer: 3

Feedback

The correct answer is: 3

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the inverse Polish notation for the expression

((x + y) ↑ 2) * (y - 3/x) + 4

Select one:

- a. x y + 2 ↑ y 3 x / − * 4 +
- b. x y + 2 ↑ y 3 / x− * 4 +
- c. x + y 2 ↑ y 3 x / − * 4 +
- d. x y + 2 y ↑ 3 x / − * 4 +

Feedback

The correct answer is: x y + 2 ↑ y 3 x / − * 4 +

Question 7

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Does there exist a simple undirected graph with 7 vertices whose degrees are:

1, 2, 3, 4, 5, 6, 7

Select one:

- True
- False

Feedback

The correct answer is 'False'.

Question 8

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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 B is 3	Answer 1: No
The graph has 3 loops	Answer 2: True
The in-degree of D is 5	Answer 3: True

Feedback

The correct answer is: The out-degree of B is 3 → No, The graph has 3 loops → True, The in-degree of D is 5 → True

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given two graphs. Choose the correct statement.

Select one:

a. None of the other choices is correct

b. They are isomorphic

c. They are not isomorphic because they do not have the same number of circuits of length 4

d. They are not isomorphic because they do not have the same number of connected components

e. They are not isomorphic because they do not have the same degrees

Feedback

The correct answer is: They are isomorphic

Question 10

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Choose correct statement:

(i) Any undirected graph having Euler circuits does not have cut edges.

(ii) Any undirected graph having Hamilton circuits does not have cut vertices.

Select one:

- a. (i) and (ii)
- b. (i)
- c. (ii)
- d. None of the other choices is correct

Feedback

The correct answer is: (i) and (ii)

Question 11

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.

Select one:

a. The graph has Hamilton circuits

b. The graph has Hamilton paths but no Hamilton circuits

c. The graph does not have Hamilton paths

Feedback

The correct answer is: The graph does not have Hamilton paths

Question 12

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a weighted graph. What is the next vertex to be chosen after choosing C, D, A when using Dijkstra algorithm to find the shortest path from C to B?

Select one:

- a. Z
- b. E
- c. B
- d. None of the other choices is correct

Feedback

The correct answer is: E

Question 13

Complete

Mark 0.00 out of 1.00

Flag question

Question text

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

Answer: 64

Feedback

The correct answer is: 19

Question 14

Not answered

Marked out of 1.00

Flag question

Question text

Draw a binary search tree for the list

"14, 20, 32, 19, 10, 13, 25, 11, 15".

Then find the number of comparisons needed to locate the number 15.

Answer:

Feedback

The correct answer is: 4

Question 15

Not answered

Marked out of 1.00

Flag question

Question text

Find the value of the postfix expression

2 2 4 + 3 2 ↑ + 5 3 + * −

Answer:

Feedback

The correct answer is: -118

Question 1

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. 1
- b. n
- c. None of the other choices is correct
- d. n-1

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. None of the other choices is correct
- b. 19
- c. 14
- d. 15
- e. 16

Feedback

The correct answer is: 16

Question 3

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the height of a balanced full 4-ary tree with 125 leaves.

Answer: 4

Feedback

The correct answer is: 4

Question 4

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the position of the letter D when using post-order traversal?

Answer: 7

Feedback

The correct answer is: 7

Question 5

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many comparisons are needed to add the number 25 to the binary search tree?

Answer: 3

Feedback

The correct answer is: 3

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the Polish notation for the expression

((x + y) ↑ 2) * (y - 3 / x) + 4

Select one:

- a. x + y ↑ 2 * y - 3 / x + 4
- b. + * ↑ + x y 2 - y / 3 x 4
- c. x y + 2 ↑ y 3 x / − * 4 +
- d. * ↑ + x y 2 - y / 3 x + 4

Feedback

The correct answer is: + * ↑ + x y 2 - y / 3 x 4

Question 7

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Which graphs are bipartite?

Select one:

- a. Y
- b. X và Y
- c. X
- d. Không có đồ thị nào là phân đôi

Feedback

The correct answer is: X

Question 8

Complete

Mark 0.00 out of 1.00

Flag question

Question text

How many 1s are there in the adjacency matrix of $K_{3,4}$?

Answer: 5

Feedback

The correct answer is: 24

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Choose correct statements:

(i) $K_{2,2}$ is isomorphic to K_4

(ii) $K_{2,2}$ is isomorphic to C_4

(iii) $K_{2,2}$ is isomorphic to Q_2

Select one:

a. (i) and (ii)

- b. None of the other choices is correct
- c. (i), (ii) and (iii) are NOT correct
- d. (i) and (iii)
- e. (ii) and (iii)

Feedback

The correct answer is: (ii) and (iii)

Question 10

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given the graph. Determine if the statement is correct.

There is only 1 cut

Answer 1

False

vertex False

There are 3 cut edges Answer 2 True

AC is a cut edge Answer 3 False

Feedback

The correct answer is: There is only 1 cut vertex → False, There are 3 cut edges → True, AC is a cut edge → False

Question 11

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given the graph.

Which sequence of vertices forms a Hamilton circuits?

Select one:

- a. 1,2,4,3,6,1
- b. 1,5,4,3,2,1,6
- c. 1,6,5,4,3,2,1

Feedback

The correct answer is: 1,6,5,4,3,2,1

Question 12

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a weighted graph. What is the next vertex to be chosen after choosing a, b, f when using Dijkstra algorithm to find the shortest path from a to d?

Select one:

- a. The vertex c
- b. The vertex d
- c. None of the other choices is correct
- d. The vertex e

Feedback

The correct answer is: The vertex c

Question 13

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the height of a balanced full 4-ary tree with 52 leaves.

Answer: 3

Feedback

The correct answer is: 3

Question 14

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Determine a Huffman coding for the characters

A: 0.45, B: 0.25, C: 0.2, D: 0.1

Select one:

- a. A := 0 B:= 1 C:= 10 D:= 11
- b. A := 0 B:= 11 C:= 01 D:= 00
- c. A := 0 B:= 11 C:= 110 D:= 111
- d. A := 1 B:= 01 C:= 000 D:= 001

Feedback

The correct answer is: A := 1 B:= 01 C:= 000 D:= 001

Question 15

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

+ - * 4 3 5 2.

Answer: 9

Feedback

The correct answer is: 9

Question 1

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. n-1
- b. None of the other choices is correct
- c. 1
- d. n

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 19

b. None of the other choices is correct

c. 14

d. 15

e. 16

Feedback

The correct answer is: 16

Question 3

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Answer: 19

Feedback

The correct answer is: 19

Question 4

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

2 6 + 3 * 4 2 + 7 * - 2 /

Answer: -9

Feedback

The correct answer is: -9

Question 5

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Draw a binary search tree for the sentence

"cong cha nhu nui thai son".

Then find the number of comparisons needed to locate the word "nui".

Answer: 3

Feedback

The correct answer is: 3

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

2 2 4 + ↑ 3 2 + 5 7 + * –

Answer: 4

Feedback

The correct answer is: 4

Question 7

Complete

Mark 0.67 out of 1.00

Flag question

Question text

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

1,1,2,2,2 Answer 1: Yes

2,2,2,2,2 Answer 2: No

1,1,1,1,1 Answer 3: No

Feedback

The correct answer is: 1,1,2,2,2 → Yes, 2,2,2,2,2 → Yes, 1,1,1,1,1 → No

Question 8

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Consider the undirected graph G with the incidence matrix (in the order of vertices A, B, C, D and of edges e1, e2, e3, e4, e5).

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

Determine if the statement is True.

A is adjacent to C — Answer 1: Yes

There are multiple edges — Answer 2: Yes

Deg(B) = 1 — Answer 3: No

Feedback

The correct answer is: A is adjacent to C → Yes, There are multiple edges → Yes, Deg(B) = 1 → No

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many nonisomorphic simple undirected graphs are there with 4 vertices and there are no vertices of degree 2?

Answer: 5

Feedback

The correct answer is: 5

Question 10

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Choose correct statements.

(i) In an undirected graph, an edge is a cut edge if and only if it does not belong to any simple circuit.

(ii) Any non-empty undirected graph has cut vertices.

Select one:

- a. None of the other choices is correct
- b. (ii)
- c. (i)

d. (i) and (ii)

Feedback

The correct answer is: (i)

Question 11

Complete

Mark 0.00 out of 1.00

Flag question

Question text

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

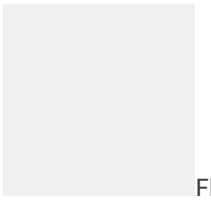
Feedback

The correct answer is: The graph has Euler paths but no Euler circuits

Question 12

Complete

Mark 1.00 out of 1.00


Flag question

Question text

Given a weighted graph. Which are the first 3 vertices chosen when using Dijkstra algorithm to find the shortest path from A to F?

Select one:

- a. A, H, B
- b. H, B, G
- c. A, B, F
- d. A, H, G

Feedback

The correct answer is: A, H, B

Question 13

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many ancestor are there of the vertex e?

Answer: 2

Feedback

The correct answer is: 2

Question 14

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Draw a binary search tree for the sentence

"mot long tho me kinh cha".

Then find the number of comparisons needed to locate the word "me".

Answer: 3

Feedback

The correct answer is: 3

Question 15

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

2 2 4 + 3 2 ↑ 6 3 - / * +

Answer: 20

Feedback

The correct answer is: 20

Question 1

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. 1
- b. None of the other choices is correct
- c. n
- d. n-1

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 16
- b. 19
- c. None of the other choices is correct
- d. 14
- e. 15

Feedback

The correct answer is: 16

Question 3

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the height of a balanced full 4-ary tree with 25 leaves.

Answer: 3

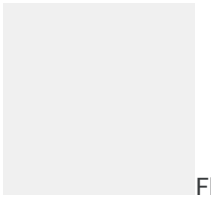
Feedback

The correct answer is: 3

Question 4

Complete

Mark 1.00 out of 1.00


Flag question

Question text

What is the position of the letter H when using pre-order traversal?

Answer: 8

Feedback

The correct answer is: 8

Question 5

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Answer: 19

Feedback

The correct answer is: 19

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

*** + 3+ 3 * 3 ↑3 – 3 3 3**

Answer: 27

Feedback

The correct answer is: 27

Question 7

Complete

Mark 0.67 out of 1.00

Flag question

Question text

Given the graph.

Determine if the statement is True.

Deg(A) = 4	Answer 1: True
Deg(B) = 3	Answer 2: False
This is an undirected multigraph.	Answer 3: True

Feedback

The correct answer is: Deg(A) = 4 → True, Deg(B) = 3 → False, This is an undirected multigraph. → False

Question 8

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Consider the undirected graph G with the incidence matrix (in the order of vertices A, B, C, D and of edges e1, e2, e3, e4, e5).

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

Determine if the statement is True.

Deg(A) = 2 — Answer 1: Yes

There are 2 loops — Answer 2: No

There are no multiple edges — Answer 3: No

Feedback

The correct answer is: Deg(A) = 2 → No, There are 2 loops → Yes, There are no multiple edges → Yes

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given two graphs. Choose the correct statement.

Select one:

- a. They are not isomorphic because they do not have the same degrees
- b. Thery are isomorphic
- c. They are not isomorphic because they do not have the same number of circuits of length 3
- d. None of the other choices is correct
- e. They are not isomorphic because they do not have the same number of connected components

Feedback

The correct answer is: Thery are isomorphic

Question 10

Complete

Mark 0.33 out of 1.00

Flag question

Question text

Given the graph. Determine if the statement is correct.

G is a cut vertex	Answer 1: True
C is a cut vertex	Answer 2: False
There are 2 cut edges	Answer 3: True

Feedback

The correct answer is: G is a cut vertex → False, C is a cut vertex → True, There are 2 cut edges → True

Question 11

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.

Select one:

a. The graph does not have Hamilton paths

b. The graph has Hamilton circuits

c. The graph has Hamilton paths but no Hamilton circuits

Feedback

The correct answer is: The graph has Hamilton paths but no Hamilton circuits

Question **12**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a weighted graph. Which are the first 3 vertices chosen when using Dijkstra algorithm to find the shortest path from B to D?

Select one:

- a. None of the other choices is correct
- b. B, E, Z
- c. B, E, A
- d. B, E, D
- e. B, Z, E

Feedback

The correct answer is: B, E, Z

Question 13

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Determine if the statement is correct.

There exists a full 3-ary tree with 20 leaves	Answer 1: True
There exists a full 3-ary tree with 20 internal vertices	Answer 2: No
There exists a full 4-ary tree with 20 vertices	Answer 3: True

Feedback

The correct answer is: There exists a full 3-ary tree with 20 leaves → No, There exists a full 3-ary tree with 20 internal vertices → True, There exists a full 4-ary tree with 20 vertices → No

Question 14

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Draw a binary search tree for the sentence

co cong mai sat co ngay nen kim

Then find the number of comparisons needed to locate the word "nen"

Answer: 6

Feedback

The correct answer is: 6

Question 15

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

*** + 4 + 4 ↑ 2 + 4 4 2**

Answer: 528

Feedback

The correct answer is: 528

Question 1

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. None of the other choices is correct
- b. n
- c. 1
- d. n-1

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 19
- b. 16
- c. 14
- d. None of the other choices is correct
- e. 15

Feedback

The correct answer is: 16

Question 3

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many edges are there in a tree with 15 vertices?

Answer: 14

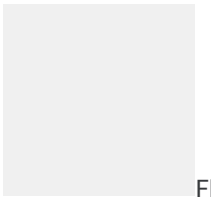
Feedback

The correct answer is: 14

Question 4

Complete

Mark 1.00 out of 1.00


Flag question

Question text

Which vertex is visited right before the vertex E in post-order traversal?

Select one:

a. K

b. B

c. G

d. C

Feedback

The correct answer is: B

Question 5

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Draw a binary search tree for the sentence

"mot long tho me kinh cha".

Then find the number of comparisons needed to locate the word "cha".

Answer: 3

Feedback

The correct answer is: 4

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

*** - 4 * 4 ↑ 2 - 4 2 2**

Answer: -24

Feedback

The correct answer is: -24

Question 7

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

2, 1, 2, 1, 2 Answer 1: Yes

2, 2, 3, 4, 2 Answer 2: No

1, 3, 4, 1, 5 Answer 3: No

Feedback

The correct answer is: 2, 1, 2, 1, 2 → Yes, 2, 2, 3, 4, 2 → No, 1, 3, 4, 1, 5 → No

Question 8

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Consider the undirected graph G with the incidence matrix (in the order of vertices A, B, C, D and of edges e1, e2, e3, e4, e5).

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

Determine if the statement is True.

There are no multiple edges — Answer 1: False

Deg(B) = 1 — Answer 2: True

There are loops at A — Answer 3: True

Feedback

The correct answer is: There are no multiple edges → False, Deg(B) = 1 → True, There are loops at A → True

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given two graphs. Choose the correct statement.

Select one:

- a. They are not isomorphic because they do not have the same number of circuits of length 4
- b. They are not isomorphic because they do not have the same degrees
- c. None of the other choices is correct
- d. Thery are isomorphic
- e. They are not isomorphic because they do not have the same number of connected components

Feedback

The correct answer is: Thery are isomorphic

Question 10

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given the graph. Determine if the statement is correct.

There is only 1 cut edge — Answer 1: No

A is a cut vertex — Answer 2: No

There are 2 cut vertices — Answer 3: Yes

Feedback

The correct answer is: There is only 1 cut edge → No, A is a cut vertex → No, There are 2 cut vertices → Yes

Question 11

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.

Select one:

- a. The graph has Euler circuits
- b. The graph has Euler paths but no Euler circuits
- c. The graph does not have Euler paths

Feedback

The correct answer is: The graph does not have Euler paths

Question 12

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a weighted graph. Find the shortest distance from A to J.

Answer: 9

Feedback

The correct answer is: 9

Question **13**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the height of a balanced full 4-ary tree with 52 leaves.

Answer: 3

Feedback

The correct answer is: 3

Question 14

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given a message 10 letters A, 13 letters B, 17 letters C, 30 letters D, 30 letters E. Find the length of the bit string when encoding this message by a Huffman coding.

Answer: 233

Feedback

The correct answer is: 223

Question 15

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

+ / * 4 3 - 5 7 + 3 2.

Answer: -1

Feedback

The correct answer is: -1

Question **1**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. n
- b. 1
- c. n-1

d. None of the other choices is correct

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

a. 19

b. 16

c. None of the other choices is correct

d. 14

e. 15

Feedback

The correct answer is: 16

Question 3

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the maximum of the number of vertices in a binary tree of height 5.

Answer: 63

Feedback

The correct answer is: 63

Question 4

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

*** + 4 - 4 ↑ 3 / 4 2 3**

Answer: -3

Feedback

The correct answer is: -3

Question 5

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many comparisons are needed to add the number 10 to the binary search tree?

Answer: 3

Feedback

The correct answer is: 3

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

2 6 + 3 * 4 2 - 7 2 * - /

Answer: -2

Feedback

The correct answer is: -2

Question 7

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Does there exist a peudograph with 7 vertices whose degrees are:

1, 2, 3, 4, 5, 6, 7

Select one:

- True
- False

Feedback

The correct answer is 'True'.

Question 8

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

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

Determine if the statement is True.

There is a loop at A — Answer 1: Yes

Deg(C) = 3 — Answer 2: No

B is adjacent to C — Answer 3: Yes

Feedback

The correct answer is: There is a loop at A → Yes, Deg(C) = 3 → No, B is adjacent to C → Yes

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many nonisomorphic simple undirected graphs are there with 4 vertices and 4 or 5 edges?

Answer: 3

Feedback

The correct answer is: 3

Question 10

Complete

Mark 0.00 out of 1.00

Flag question

Question text

How many strong connected components are there in this graph?

Answer: 4

Feedback

The correct answer is: 3

Question 11

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.

Select one:

a. The graph does not have Hamilton paths

b. The graph has Hamilton circuits

c. The graph has Hamilton paths but no Hamilton circuits

Feedback

The correct answer is: The graph has Hamilton circuits

Question 12

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a weighted graph. Which are the first 3 vertices chosen when using Dijkstra algorithm to find the shortest path from E to C?

Select one:

a. None of the other choices is correct

b. E, D, C

c. E, D, B

d. E, D, A

e. E, D, Z

Feedback

The correct answers are: E, D, Z, E, D, C

Question 13

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the height of a balanced full 4-ary tree with 125 leaves.

Answer: 4

Feedback

The correct answer is: 4

Question 14

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Determine if it is prefix code.

a → 0, b → 10, c → 110, d → 1110, e → 11110 Answer 1: True

a → 000, b → 001, c → 010, d → 011, e → 100 Answer 2: True

a → 0, b → 1, c → 00, d → 01, e → 10 Answer 3: False

a → 00, b → 01, c → 10, d → 11, e → 110 Answer 4: False

Feedback

The correct answer is: a → 0, b → 10, c → 110, d → 1110, e → 11110 → True, a → 000, b → 001, c → 010, d → 011, e → 100 → True, a → 0, b → 1, c → 00, d → 01, e → 10 → False, a → 00, b → 01, c → 10, d → 11, e → 110 → False

Question 15

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the position of the letter D when using in-order traversal?

Answer: 7

Feedback

The correct answer is: 7

Question 1

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. n
- b. 1
- c. n-1
- d. None of the other choices is correct

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. None of the other choices is correct
- b. 14
- c. 16
- d. 15
- e. 19

Feedback

The correct answer is: 16

Question 3

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Determine if the statement is correct.

There exists a full 3-ary tree with 20 internal vertices — Answer 1: True

There exists a full 4-ary tree with 20 vertices — Answer 2: No

There exists a full 3-ary tree with 20 leaves — Answer 3: No

Feedback

The correct answer is: There exists a full 3-ary tree with 20 internal vertices → True, There exists a full 4-ary tree with 20 vertices → No, There exists a full 3-ary tree with 20 leaves → No

Question 4

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

1 2 * 3 ↑4 5 – 6 7 – * –

Answer: 7

Feedback

The correct answer is: 7

Question 5

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Draw a binary search tree for the sentences

tram nam trong coi nguoi ta

chu tai chu menh kheo la ghet nhau.

Then find the number of comparisons needed to locate the word "tai"

Answer: 5

Feedback

The correct answer is: 5

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

List the vertices according to each method:

in-order Answer 1: d-b-e-a-f-c-g

post-order Answer 2: d-e-b-f-g-c-a

Pre-order Answer 3: a-b-d-e-c-f-g

Feedback

The correct answer is: in-order → d-b-e-a-f-c-g, post-order → d-e-b-f-g-c-a, Pre-order → a-b-d-e-c-f-g

Question 7

Complete

Mark 0.67 out of 1.00

Flag question

Question text

Given the graph.

Determine if the statement is True:

The graph has 7 edges	Answer 1: True
The in-degree of C is 3	Answer 2: No
The out-degree of A is 1	Answer 3: True

Feedback

The correct answer is: The graph has 7 edges → True, The in-degree of C is 3 → No, The out-degree of A is 1 → No

Question 8

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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.

There are loops at D	Answer 1: True
The in-degree of C is 3	Answer 2: True
The out-degree of D is 3	Answer 3: No

Feedback

The correct answer is: There are loops at D → True, The in-degree of C is 3 → True, The out-degree of D is 3 → No

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given two graphs. Choose the correct statement.

Select one:

- a. They are not isomorphic because they do not have the same degrees
- b. Thery are isomorphic
- c. They are not isomorphic because they do not have the same number of connected components
- d. They are not isomorphic because they do not have the same number of circuits of length 3
- e. None of the other choices is correct

Feedback

The correct answer is: Thery are isomorphic

Question 10

Complete

Mark 0.00 out of 1.00

Flag question

Question text

How many strong connected components are there in this graph?

Answer: 3

Feedback

The correct answer is: 6

Question 11

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.

Select one:

- a. The graph has Hamilton circuits
- b. The graph has Hamilton paths but no Hamilton circuits
- c. The graph does not have Hamilton paths

Feedback

The correct answer is: The graph does not have Hamilton paths

Question **12**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a weighted graph. Which are the first 3 vertices chosen when using Dijkstra algorithm to find the shortest path from D to Z?

Select one:

- a. D, C, E
- b. D, C, A
- c. D, E, C
- d. None of the other choices is correct
- e. D, E, Z

Feedback

The correct answer is: D, C, E

Question 13

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the maximum of the number of leaves of a full 3-ary tree of height 3.

Answer: 27

Feedback

The correct answer is: 27

Question 14

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Decode the message 110111010 encoded by the scheme

f: 10, p: 110, t: 1110.

Select one:

- a. ftp
- b. ptf
- c. fpt

d. tpf

Feedback

The correct answer is: ptf

Question 15

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

1 2 + 4 ↑ 3 9 – 5 8 – * –

Answer: 63

Feedback

The correct answer is: 63

Question 1

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. 1
- b. n
- c. None of the other choices is correct
- d. n-1

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 14

- b. 19
- c. 16
- d. 15
- e. None of the other choices is correct

Feedback

The correct answer is: 16

Question 3

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Which graph is a forest but not a tree?

Select one:

- a.
- b.
- c.
- d.

Feedback

The correct answer is:

Question 4

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

*** + 3 2 * + 1 ↑3 2 – 3 2**

Answer: 50

Feedback

The correct answer is: 50

Question 5

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many leaves are there in a decision tree representing the sorting of a list of 4 elements?

Answer: 24

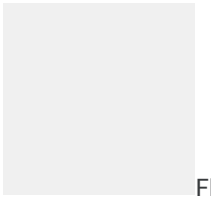
Feedback

The correct answer is: 24

Question 6

Complete

Mark 1.00 out of 1.00


Flag question

Question text

What is the position of the letter D when using pre-order traversal?

Answer: 7

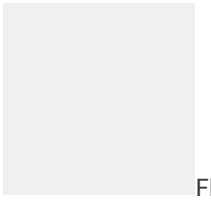
Feedback

The correct answer is: 7

Question 7

Complete

Mark 1.00 out of 1.00


Flag question

Question text

Given the graph.

Determine if the statement is True.

Deg(C)=5	Answer 1: False
This is a simple undirected graph.	Answer 2: False
This is a pseudo undirected graph.	Answer 3: True

Feedback

The correct answer is: Deg(C)=5 → False, This is a simple undirected graph. → False, This is a pseudo undirected graph. → True

Question 8

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

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

Determine if the statement is True.

A is adjacent to C	Answer 1: No
The graph has no loop.	Answer 2: No
Deg(B) = 2	Answer 3: True

Feedback

The correct answer is: A is adjacent to C → No, The graph has no loop. → No, Deg(B) = 2 → True

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many nonisomorphic simple undirected graphs are there with 4 vertices and there is at least a vertex of degree 3?

Answer: 4

Feedback

The correct answer is: 4

Question 10

Complete

Mark 0.67 out of 1.00

Flag question

Question text

Given the graph. Determine if the statement is correct.

There are at least 3 cut vertices — Answer 1: True

DF is a cut edge — Answer 2: True

AE is a cut edge

Answer 3

False

Feedback

The correct answer is: There are at least 3 cut vertices → False, DF is a cut edge → True, AE is a cut edge → False

Question 11

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.

Select one:

- a. The graph has Euler circuits
- b. The graph does not have Euler paths
- c. The graph has Euler paths but no Euler circuits

Feedback

The correct answer is: The graph has Euler paths but no Euler circuits

Question 12

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a weighted graph. Which are the first 3 vertices chosen when using Dijkstra algorithm to find the shortest path from A to Z?

Select one:

- a. None of the other choices is correct
- b. A, E, Z
- c. A, E, B
- d. A, E, D

e. A, D, C

Feedback

The correct answer is: A, E, D

Question 13

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many vertices are there in a full 10-ary tree with 10 internal vertices?

Answer: 101

Feedback

The correct answer is: 101

Question 14

Complete

Mark 1.00 out of 1.00

Flag question

Question text

There are 900 coins, one of them is a counterfeit coin which is lighter than the others. How many weighings of a balanced scale are needed to determine this counterfeit coin?

Answer: 7

Feedback

The correct answer is: 7

Question 15

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

2 6 + 7 * 4 2 + 7 2 * - /

Answer: -7

Feedback

The correct answer is: -7

Question 1

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. None of the other choices is correct
- b. n-1
- c. n
- d. 1

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. None of the other choices is correct
- b. 16
- c. 14
- d. 15
- e. 19

Feedback

The correct answer is: 16

Question 3

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the maximum of the number of internal vertices of a full 3-ary tree of height 3.

Answer: 13

Feedback

The correct answer is: 13

Question 4

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

6 2 + 3 * 4 2 / 7 * - 2 3 8 - * +

Answer: 0

Feedback

The correct answer is: 0

Question 5

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a message 5 letters A, 10 letters B, 15 letters C, 20 letters D, 50 letters E. Find the length of the bit string when encoding this message by a Huffman coding.

Answer: 195

Feedback

The correct answer is: 195

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

*** + 4 + 4 ↑ 1 + 4 4 2**

Answer: 18

Feedback

The correct answer is: 18

Question 7

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Which graph are bipartite?

Select one:

- a. Y
- b. X and Y
- c. None of the other choices is correct
- d. X

Feedback

The correct answer is: X and Y

Question **8**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Consider the undirected graph G with the incidence matrix (in the order of vertices A, B, C, D and of edges e1, e2, e3, e4, e5).

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

Determine if the statement is True.

There are multiple edges — Answer 1: Yes

A is adjacent to C — Answer 2: Yes

Deg(B) = 1 — Answer 3: No

Feedback

The correct answer is: There are multiple edges → Yes, A is adjacent to C → Yes, Deg(B) = 1 → No

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many nonisomorphic simple undirected graphs are there with 4 vertices and there are no vertices of degree 2?

Answer: 5

Feedback

The correct answer is: 5

Question 10

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given the undirected graph whose adjacency matrix is

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

How many connected components are there?

Answer: 2

Feedback

The correct answer is: 2

Question 11

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given the graph.

Which sequence of vertices forms a Hamilton circuits?

Select one:

- a. 1,6,5,4,3,2,1
- b. 1,2,4,3,6,1
- c. 1,5,4,3,2,1,6

Feedback

The correct answer is: 1,6,5,4,3,2,1

Question 12

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a weighted graph. What is the next vertex to be chosen after choosing a and d when using Dijkstra algorithm to find the shortest path from a to c?

Select one:

a. The vertex c

b. The vertex b

c. None of the other choices is correct

d. The vertex f

Feedback

The correct answer is: The vertex b

Question 13

Complete

Mark 1.00 out of 1.00

Flag question

Question text

200 people participate in a chess competition. How many games must be played to determine a champion?

Answer: 199

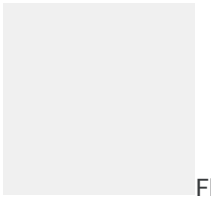
Feedback

The correct answer is: 199

Question 14

Complete

Mark 1.00 out of 1.00


Flag question

Question text

Given a message 15 letters A, 17 letters B, 18 letters C, 20 letters D, 30 letters E. Find the length of the bit string when encoding this message by a Huffman coding.

Answer: 232

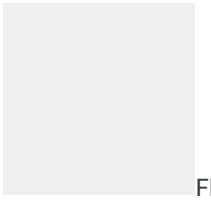
Feedback

The correct answer is: 232

Question 15

Complete

Mark 1.00 out of 1.00


Flag question

Question text

What is the position of the letter H when using post-order traversal?

Answer: 5

Feedback

The correct answer is: 5

Question 1

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. n-1
- b. None of the other choices is correct
- c. n
- d. 1

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 14
- b. 16
- c. None of the other choices is correct
- d. 15
- e. 19

Feedback

The correct answer is: 16

Question 3

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many edges are there in a tree with 15 vertices?

Answer: 14

Feedback

The correct answer is: 14

Question 4

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

*** + 3 3 * + 3 ↑3 3 – 3 3**

Answer: 0

Feedback

The correct answer is: 0

Question 5

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many leaves are there in a decision tree representing the sorting of a list of 5 elements?

Answer: 120

Feedback

The correct answer is: 120

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the postfix expression

2 2 + 4 ↑ 3 9 + 5 8 + * –

Answer: 100

Feedback

The correct answer is: 100

Question 7

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Determine the type of this graph.

Select one:

a. Undirected multigraph

b. Pseudograph

c. Simple undirected graph

Feedback

The correct answer is: Pseudograph

Question 8

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Consider the undirected graph G with the incidence matrix (in the order of vertices A, B, C, D and of edges e1, e2, e3, e4, e5).

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

Determine if the statement is True.

There are loops at A — Answer 1: True

Deg(B) = 1 — Answer 2: True

There are no multiple edges — Answer 3: False

Feedback

The correct answer is: There are loops at A → True, Deg(B) = 1 → True, There are no multiple edges → False

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Choose correct statements:

(i) $K_{2,2}$ is isomorphic to K_4

(ii) $K_{2,2}$ is isomorphic to C_4

(iii) $K_{2,2}$ is isomorphic to Q_2

Select one:

- a. (i) and (iii)
- b. (i) and (ii)
- c. None of the other choices is correct
- d. (i), (ii) and (iii) are NOT correct
- e. (ii) and (iii)

Feedback

The correct answer is: (ii) and (iii)

Question 10

Complete

Mark 0.75 out of 1.00

Flag question

Question text

Given the graph. Determine if the statement is correct.

AB is a cut edge	Answer 1: Yes
A is a cut vertex	Answer 2: No
There is only 1 cut edge	Answer 3: No
C is a cut vertex	Answer 4: Yes

Feedback

The correct answer is: AB is a cut edge → Yes, A is a cut vertex → No, There is only 1 cut edge → Yes, C is a cut vertex → Yes

Question 11

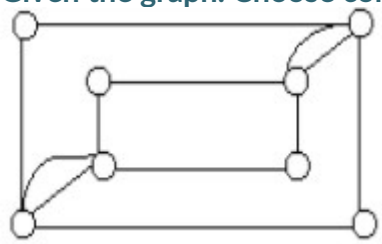
Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.



Select one:

- a. The graph has Euler circuits
- b. The graph does not have Euler paths
- c. The graph has Euler paths but no Euler circuits

Feedback

The correct answer is: The graph has Euler circuits

Question 12

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a weighted graph. Which are the first 3 vertices chosen when using Dijkstra algorithm to find the shortest path from D to Z?

Select one:

- a. D, C, E
- b. D, E, C
- c. None of the other choices is correct
- d. D, C, A
- e. D, E, Z

Feedback

The correct answer is: D, C, E

Question 13

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the least number of vertices of a full 3-ary tree of height 3.

Answer: 10

Feedback

The correct answer is: 10

Question **14**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

Draw a binary search tree for the sentence

co cong mai sat co ngay nen kim

Then find the number of comparisons needed to locate the word "kim"

Answer: 6

Feedback

The correct answer is: 4

Question 15

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the inverse Polish notation for the expression

((x + y) ↑ 2) * (y - 3/x) + 4

Select one:

a. x + y 2 ↑ y 3 x / − * 4 +

b. x y + 2 y ↑ 3 x / − * 4 +

c. x y + 2 ↑ y 3 x / − * 4 +

d. x y + 2 ↑ y 3 / x− * 4 +

Feedback

The correct answer is: x y + 2 ↑ y 3 x / − * 4 +

uestion 1

Complete

Mark 1.00 out of 1.00

Flag question

Question text

What is the height of spanning tree obtained from W_n by the breadth-first search, starting at the central vertex of W_n?

Select one:

- a. None of the other choices is correct
- b. 1
- c. n
- d. n-1

Feedback

The correct answer is: 1

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Question text

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

Select one:

- a. 19
- b. 14
- c. None of the other choices is correct
- d. 15
- e. 16

Feedback

The correct answer is: 16

Question 3

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many ancestor are there of the vertex e?

Answer: 2

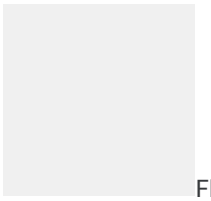
Feedback

The correct answer is: 2

Question 4

Complete

Mark 1.00 out of 1.00


Flag question

Question text

What is the position of the letter H when using in-order traversal?

Answer: 6

Feedback

The correct answer is: 6

Question 5

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Draw a binary search tree for the list

"14, 20, 32, 19, 10, 13, 25, 11, 15".

Then find the number of comparisons needed to locate the number 15.

Answer: 4

Feedback

The correct answer is: 4

Question 6

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

*** + 4 + 4 ↑ 2 + 4 4 2**

Answer: 528

Feedback

The correct answer is: 528

Question 7

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Which graphs are bipartite?

Select one:

- a. X and Y
- b. X
- c. Y
- d. None of the other choices is correct

Feedback

The correct answer is: Y

Question 8

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Consider the undirected graph G with the incidence matrix (in the order of vertices A, B, C, D and of edges e1, e2, e3, e4, e5).

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

Determine if the statement is True.

There are 2 loops — Answer 1: Yes

There are no multiple edges — Answer 2: Yes

Deg(A) = 2 — Answer 3: No

Feedback

The correct answer is: There are 2 loops → Yes, There are no multiple edges → Yes, Deg(A) = 2 → No

Question 9

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given two graphs. Choose the correct statement.

Select one:

a. They are not isomorphic because they do not have the same degrees

b. None of the other choices is correct

c. They are not isomorphic because they do not have the same number of connected components

d. They are not isomorphic because they do not have the same number of circuits of length 4

e. They are isomorphic

Feedback

The correct answer is: They are isomorphic

Question 10

Complete

Mark 1.00 out of 1.00

Flag question

Question text

How many vertices are there in the strong connected component containing A?

Answer: 6

Feedback

The correct answer is: 6

Question 11

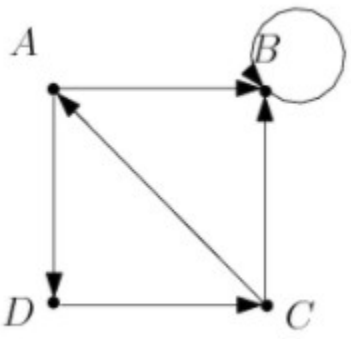
Complete

Mark 0.00 out of 1.00

Flag question

Question text

Given the graph. Choose correct statement.



Select one:

a. The graph has Euler circuits

b. The graph has Euler paths but no Euler circuits

c. The graph does not have Euler paths

Feedback

The correct answer is: The graph does not have Euler paths

Question 12

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Given a weighted graph. Find the shortest distance from A to J.

Answer: 9

Feedback

The correct answer is: 9

Question 13

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Let T be full 4-ary tree for which all leaves are at level 3. Find the number of internal vertices of T.

Answer: 21

Feedback

The correct answer is: 21

Question 14

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Draw a binary search tree for the sentence

"cong cha nhu nui thai son".

Then find the number of comparisons needed to locate the word "son".

Answer: 5

Feedback

The correct answer is: 5

Question 15

Complete

Mark 1.00 out of 1.00

Flag question

Question text

Find the value of the prefix expression

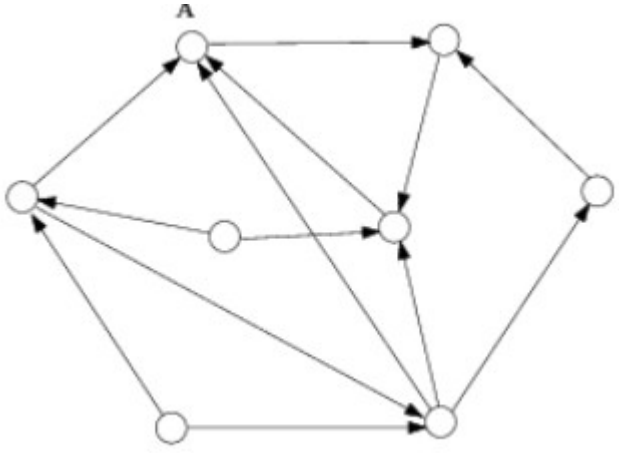
*** + 3 3 * + 3 ↑3 3 – 3 3**

Answer: 0

Feedback

The correct answer is: 0

How many strong connected components are there in this graph?

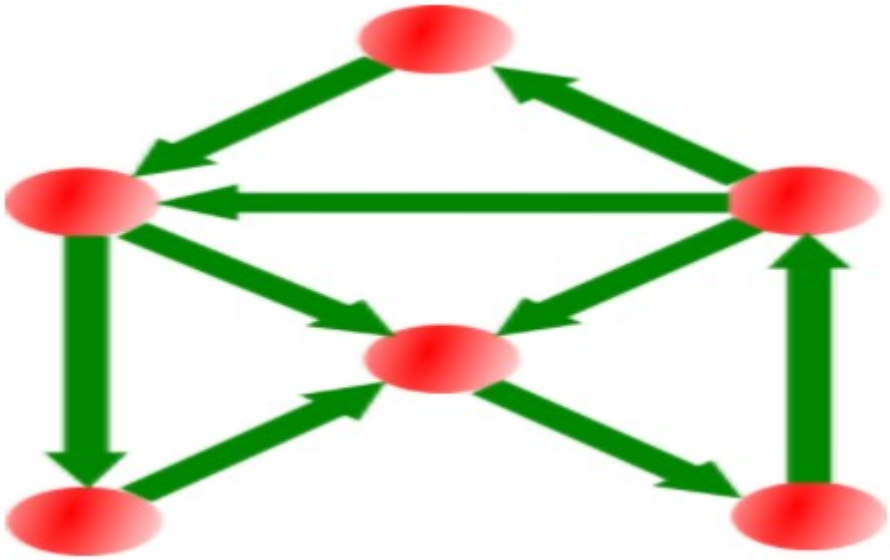


Answer: 4

Feedback

The correct answer is: 6

Given the graph. Choose correct statement.



Select one:

- a. The graph has Euler circuits
- b. The graph does not have Euler paths
- c. The graph has Euler paths but no Euler circuits

Feedback

The correct answer is: The graph does not have Euler paths