

# NCEES

## FE-Electrical-and-Computer

### 1202 FE Electrical and Computer

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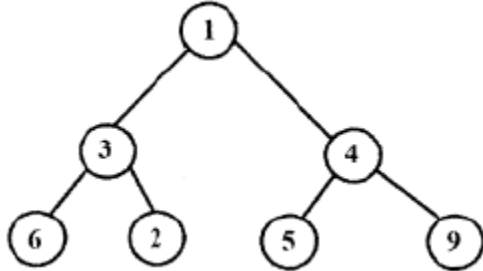
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# Latest Version: 6.0

## Question: 1

Select the option that correctly identifies pre-order traversal for given tree.



- A. 6,2,3,5,9,4,1
- B. 1,3,6,2,4,5,9
- C. 6,3,2,1,5,4,9
- D. None of the above

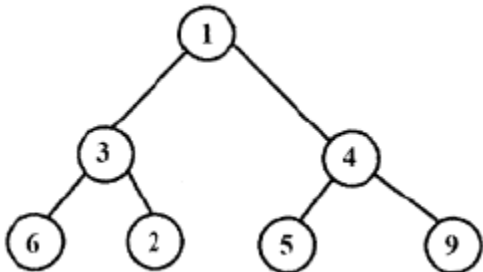
**Answer: B**

Explanation:

According to pre-order tree traversal algorithm, we are required to visit the current (root) node, then traverse left sub-tree and finally traverse the right sub-tree at the end. Therefore, pre-order tree traversal Of given binary tree will be as follows: 1, 3, 6, 2, 4, 5 and 9.

## Question: 2

Select the option that correctly identifies post-order traversal for given tree.



- A. 6,2,3,5,9,4,1
- B. 1,3,6,2,4,5,9
- C. 6,3,2,1,5,4,9
- D. None of the above

**Answer: A**

Explanation:

According to post-order tree traversal algorithm, we are required to traverse left sub-tree, then right sub-tree and finally visit the current (root) node. Therefore, post-order tree traversal of given binary tree will be as follows: 6, 2, 3, 5, 9, 4 and 1.

### Question: 3

Graphs can be represented using \_\_\_\_\_ method(s).

- A. Adjacency matrix
- B. Adjacency list
- C. Incidence matrix
- D. All of the above

**Answer: D**

Explanation:

Graphs allow arbitrary relationships between any two vertices (nodes). Tree is a special (structured) type of graph. A graph 'G' is defined as  $G = (V, E)$  where V is the set of all vertices and E is the set of all edges.

A graph can be represented as adjacency matrix, adjacency list or an incidence matrix.

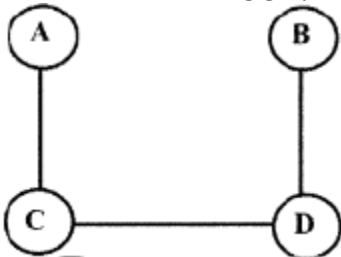
Adjacency matrix — Represents graph in the form of a  $n \times n$  matrix where n is the number of vertices.

Adjacency list — Represents graph in the form of a  $n \times 1$  array of pointers where each element points to a linked list of edges that are found on vertices.

Incidence matrix — Represents  $n \times m$  matrix where n is the number of vertices and m is the number of edges.

### Question: 4

Consider the following graph for problems 17.4 h) and 17.4 i).



The size of adjacency matrix required to represent this graph is \_\_\_\_\_.

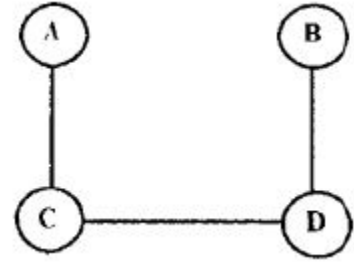
- A. Answer in Explanation

**Answer: A**

Explanation:

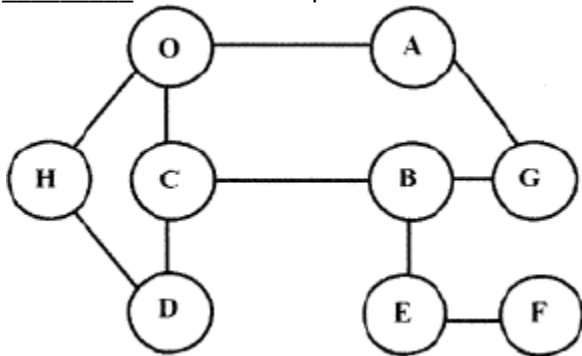
Since there are 4 vertices, we require a 4 x 4 adjacency matrix as shown below. Matrix entries for adjacent vertices are set to 1. For example,  $A - C = 1$ ,  $C - A = 1$  but  $A - B = 0$ .

	A	B	C	D
A	0	0	1	0
B	0	0	0	1
C	1	0	0	1
D	0	1	1	0



### Question: 5

\_\_\_\_\_ will be the output of breadth first search (BFS) algorithm on this graph.



- A. O A G B E F C D H
- B. O A C H G B D E F
- C. O A H C D B E F G
- D. O A G B C D H E F

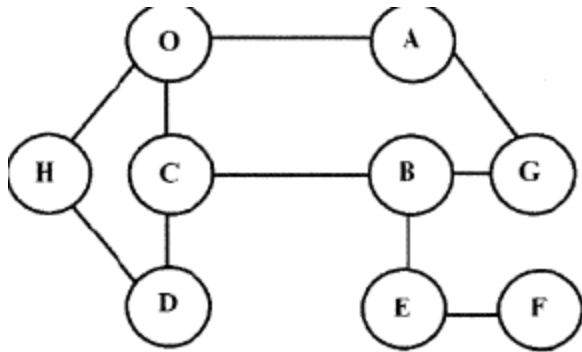
**Answer: B**

Explanation:

As explained in previous solution, there are 6 non-zero entries in the adjacency matrix of given graph.

### Question: 6

Consider the following graph for problems 17.4 j) and 17.4 k).



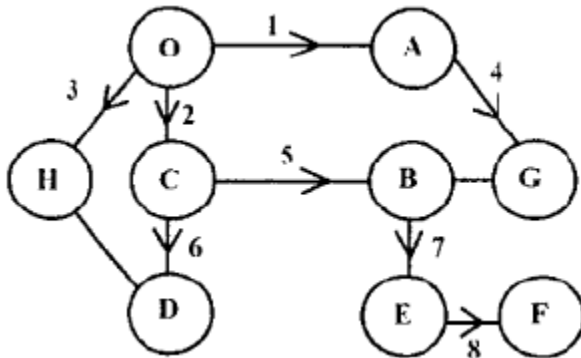
\_\_\_\_\_ will be the output of breadth first search (BFS) algorithm on this graph.

- A. O A C B E F C D H
- B. O A C H G B D E F
- C. O A H C D B E F G
- D. O A G B C D H E F

**Answer: B**

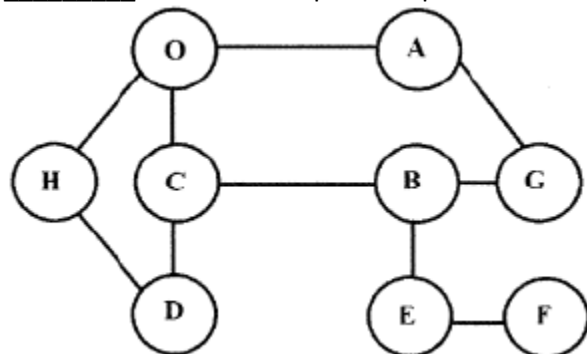
Explanation:

Breadth first search (BFS) algorithm is used for traversing a graph (and sometimes trees). It requires visiting all the unvisited nodes adjacent to starting node. This process is repeated for each visited node as shown in the figure on right.



**Question: 7**

\_\_\_\_\_ will be the output of depth first search (DFS) algorithm on this graph.

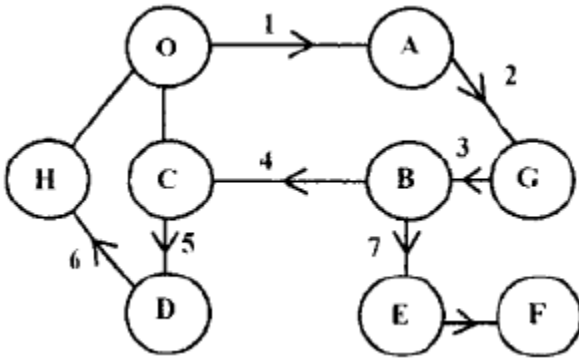


- A. O A G B E F C D H
- B. O A C H G B D E F
- C. O A H C D B E F G
- D. O A G B C D H E F

**Answer: D**

Explanation:

Depth first search (DFS) algorithm is used for traversing a graph (and sometimes trees). It requires visiting one unvisited adjacent node and traversing down one path as deep as possible before backtracking to the last visited node and repeating the process until all nodes have been visited.



**Question: 8**

Software with a tendency to break due to changes in unrelated segments is called\_\_\_\_\_

- A. Rigid
- B. Fragile
- C. Portable
- D. Immobile

**Answer: B**

Explanation:

Rigid — A software design that is difficult to change.

Fragile — A software design that is prone to breaking in multiple places whenever a change is made.

Portable — A software design that can be used in different environments.

Immobile— A software design that is difficult to reuse for different projects

**Question: 9**

Static software testing involves verification through\_\_\_\_\_.

- A. program code review

- B. software maintenance
- C. program code execution
- D. Options A, B and C are all correct

**Answer: A**

Explanation:

Static software testing involves verification using program code reviews, walk-throughs and inspections.

### Question: 10

Glass box testing of a software is also known as \_\_\_\_\_ testing.

- A. White Box
- B. Blue Box
- C. Black Box
- D. Pink Box

**Answer: A**

Explanation:

Glass box/White box testing involves detailed investigation of code's internal logic and structure. Internal details of the code are made available to the tester so that tester can investigate if any section of the code is non-compliant with performance requirements. White-box testing is in-depth detailed. But it can be time consuming and costly.

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