

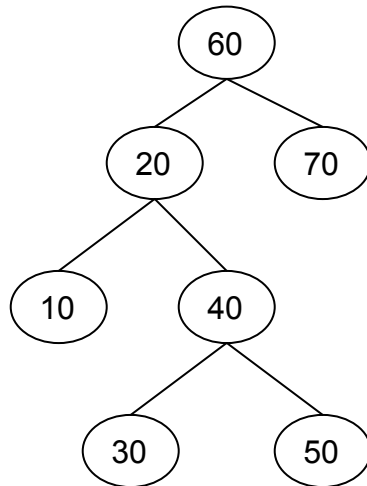
Multiple choice

For each question make sure that you select the **best** answer to that question.

- 1) Which of the following rankings orders the algorithms from fastest to slowest?
- $O(N)$, $O(\log_2 N)$, $O(N^M)$, $O(2^N)$, $O(N!)$
 - $O(\log_2 N)$, $O(N)$, $O(N^M)$, $O(2^N)$, $O(N!)$
 - $O(\log_2 N)$, $O(N)$, $O(2^N)$, $O(N^M)$, $O(N!)$
 - $O(\log_2 N)$, $O(N)$, $O(N!)$, $O(N^M)$, $O(2^N)$
 - $O(\log_2 N)$, $O(N)$, $O(N^M)$, $O(N!)$, $O(2^N)$

B

For questions 2 –4 please refer to the following tree:



- 2) What would the result of a pre-order traversal of the above tree?
- 60 20 10 40 30 50 70
 - 10 20 30 40 50 60 70
 - 10 30 50 40 20 70 60
 - 70 60 50 40 30 20 10
 - None of the above

A

- 3) What would the result of an in-order traversal of the above tree?
- 60 20 10 40 30 50 70
 - 10 20 30 40 50 60 70
 - 10 30 50 40 20 70 60
 - 70 60 50 40 30 20 10
 - None of the above

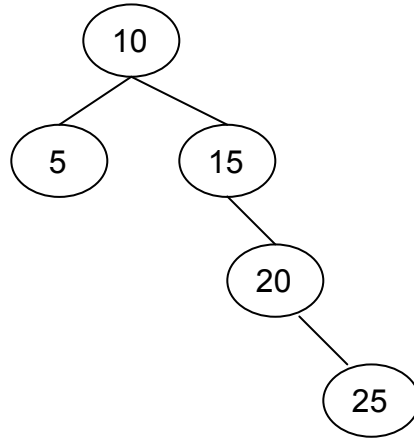
B

- 4) What would the result of a post-order traversal of the above tree?
- 60 20 10 40 30 50 70
 - 10 20 30 40 50 60 70
 - 10 30 50 40 20 70 60

- d. 70 60 50 40 30 20 10
- e. None of the above

C

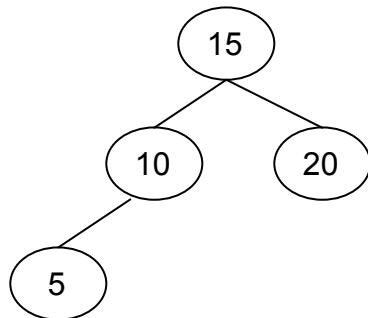
5) Which of the following statements are true of the tree shown below?



- a. It is a binary search tree.
- b. It is a complete tree.
- c. It is a full tree.
- d. It is a max heap.
- e. More than one of the above statements is true.

A

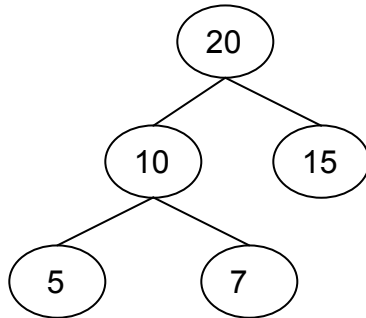
6) Which of the following statements are true of the tree shown below?



- a. It is a binary search tree.
- b. It is a complete tree.
- c. It is a full tree.
- d. It is a max heap.
- e. (a) & (b)

E

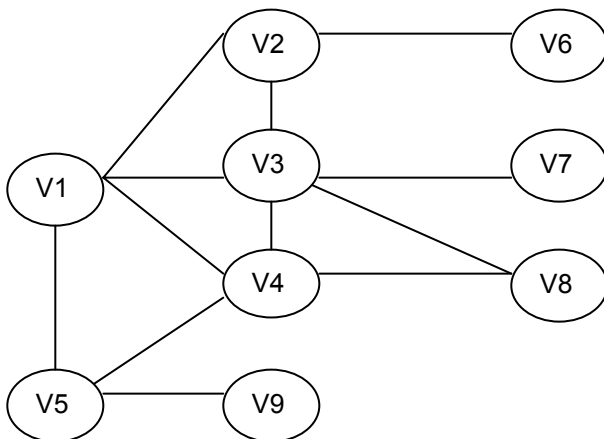
7) Which of the following statements are true of the tree shown below?



- a. It is a binary search tree.
- b. It is a complete tree.
- c. It is a full tree.
- d. It is a max heap.
- e. (b) & (d)

E

For Questions (8) & (9) please refer to the graph shown below.



8) What would be the result of a breadth first traversal starting with node V1?
Whenever there is a choice of path traversals, the node with the lowest number will be traversed first.

- a. V1 V2 V3 V4 V5 V6 V7 V8 V9
- b. V1 V2 V3 V4 V5 V9 V8 V7 V6
- c. V1 V2 V6 V3 V7 V4 V8 V5 V9
- d. V1 V5 V2 V3 V4 V9 V6 V7 V8
- e. V1 V2 V3 V1 V2 V3...

A

9) What would be the result of a depth first traversal (ignoring backtracking) starting with node V1? Whenever there is a choice of path traversals, the node with the lowest number will be traversed first.

- a. V1 V2 V3 V4 V5 V6 V7 V8 V9

- b. V1 V2 V3 V4 V5 V9 V8 V7 V6
- c. V1 V2 V6 V3 V7 V4 V8 V5 V9
- d. V1 V5 V2 V3 V4 V9 V6 V7 V8
- e. V1 V2 V3 V1 V2 V3...

B**Short Answer**

1. Suppose you want to hash the following keys: 89, 18, 49, 58 and 69. The hash function uses the last digit of the key as the index of the insertion point into the hash table. Collisions are resolved through quadratic probing. Fill in the table below to show the insertion of the above keys

	Empty	After 89	After 18	After 49	After 58	After 69
[0]						
[1]					58	58
[2]						69
[3]						
[4]						
[5]						
[6]						
[7]						
[8]			18	18	18	18
[9]		89	89	89	89	89
[10]				49	49	49



JT: Good luck with the real thing!