Branch : CSE/IT Batch : Hinglish

Data Structure
Tree

DPP-02

[MCQ]

1. Consider the following nested representation of binary trees: (X Y Z) indicates Y and Z are the left and right sub stress, respectively, of node X. Note that Y and Z may be NULL, or further nested. Which of the following represents a valid binary tree?

(a) (1 2 (4 5 6 7))
(b) (1 (2 3 4) 5 6) 7)
(c) (1 (2 3 4) (5 6 7))
(d) (1 (2 3 NULL) (4 5))

[MCQ]

2. Consider the following two statements:

S1: It is possible to construct a binary tree uniquely whose post-order and pre-order traversals are given.

S2: It is possible to construct a binary tree uniquely whose in-order and pre-order traversals are given.

S3: It is possible to construct a binary tree uniquely whose post-order and level-order traversals are given.

Which of the following statement(s) IS/ARE INCORRECT?

(a) S1 only
(b) S2 only
(c) S1 and S3
(d) S3 only

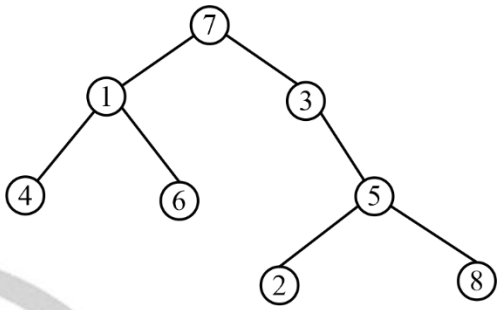
[MCQ]

3. Let LASTPOST, LASTIN and LASTPRE denote the last vertex visited in a postorder, inorder and preorder traversal respectively, of a complete binary tree. Which of the following is always true?

(a) LASTIN = LASTPOST
(b) LASTIN = LASTPRE
(c) LASTPRE = LASTPOST
(d) None of the above

[MCQ]

4. Consider the following binary tree T-

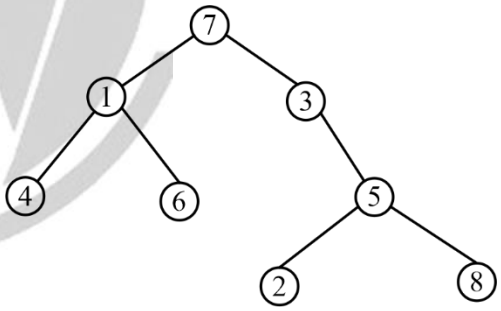


The in-order traversal of T is-

(a) 7 1 3 4 6 5 2 8
(b) 4 1 6 7 3 2 5 8
(c) 4 6 1 2 8 5 3 7
(d) 7 1 4 6 3 5 2 8

[MCQ]

5. Consider the following binary tree T-

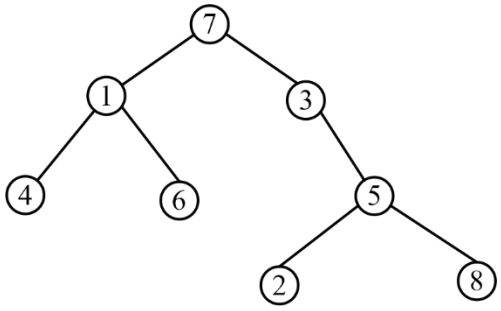


The pre-order traversal of T is-

(a) 7 1 3 4 6 5 2 8
(b) 4 1 6 7 3 2 5 8
(c) 4 6 1 2 8 5 3 7
(d) 7 1 4 6 3 5 2 8

[MCQ]

6. Consider the following binary tree T-



The post-order traversal of T is-

(a) 7 1 3 4 6 5 2 8
(b) 4 1 6 7 3 2 5 8
(c) 4 6 1 2 8 5 3 7
(d) 7 1 4 6 3 5 2 8

[NAT]

7. The pre-order traversal of a binary tree is 1, 2, 4, 7, 8, 3, 5, 6, 9. The in-order traversal of the same tree is 7 4 8 2 1 5 3 6 9. The height of a tree is the length of the longest path from the root to any leaf. The height of the binary tree above is _____.

[MCQ]

8. The post-order traversal of a binary tree is 9, 7, 4, 8, 2, 5, 1, 3, 6. The in-order traversal of the same tree is 9, 7, 8, 4, 5, 2, 6, 3, 1. The pre-order traversal of the above binary tree is-

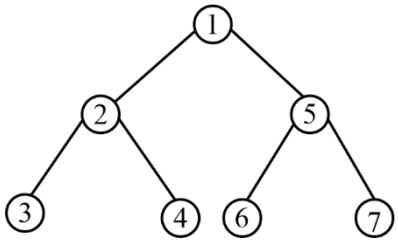
(a) 1, 2, 4, 7, 9, 8, 5, 3, 6
(b) 1, 2, 4, 7, 8, 9, 5, 3, 6
(c) 1, 2, 3, 4, 5, 6, 7, 8, 9
(d) None of the above.

Answer Key

1. **(c)**
2. **(c)**
3. **(d)**
4. **(b)**
5. **(d)**
6. **(c)**
7. **(3)**
8. **(a)**

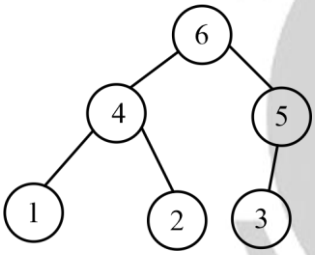
Hints and Solutions

1. (c)
Correct



2. (c)
It is possible to construct a binary tree uniquely whose in-order and pre-order/post-order traversals are given.

3. (d)



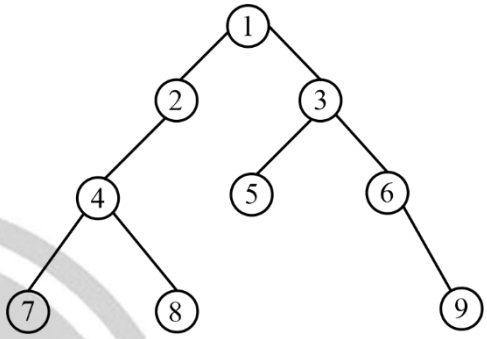
In order: 1 4 2 6 3 5
Pre-order: 6 4 1 2 5 3
Post-order: 1 2 4 3 5 6
Clearly, LASTIN ≠ LASTPRE ≠ LASTPOST

4. (b)
The in-order traversal of T is- 4 1 6 7 3 2 5 8

5. (d)
The pre-order traversal of T is- 7 1 4 6 3 5 2 8

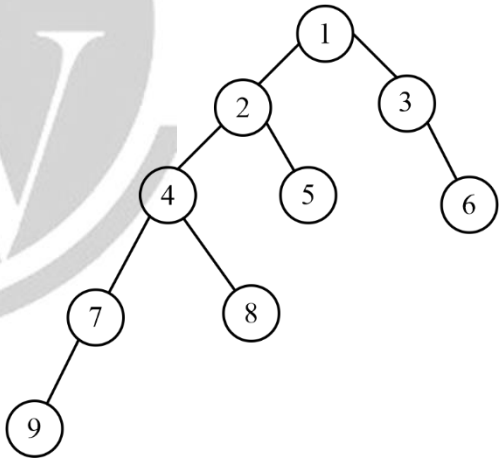
6. (c)
The post-order traversal of T is - 4 6 1 2 8 5 3 7

7. (3)



Height of the above binary tree = 3

8. (a)



The pre-order traversal of the above binary tree is- 1, 2, 4, 7, 9, 8, 5, 3, 6