



**CRAWFORD UNIVERSITY, FAITH CITY, IGBESA**

**COLLEGE OF NATURAL AND APPLIED SCIENCES**

**DEPARTMENT OF COMPUTER AND MATHEMATICAL SCIENCES  
HARMATTAN SEMESTER**

**SESSION: 2023/2024**

**COURSE CODE: CSC 305**

**COURSE TITLE: DATA STRUCTURE AND ALGORITHM**

**UNITS: 3**

**Matric N0:.....**

**ANSWER ALL (60MINS)**

1. What is the value of the postfix expression  $6\ 3\ 3\ 4\ +\ -\ *?$   
a) 74 b) -18 c) 22 d) -24
2. What data structure would you mostly likely see in non- recursive implementation of a recursive algorithm?  
a) FIFO b) Linked List c) Tree d) LIFO
3. The prefix form of  $A-B/(C * D ^ E)$  is?  
a)  $-A/B*C^DE$  b)  $-A/BC*^DE$  c)  $-ABCD*^DE$  d)  $-/*^ACBDE$
4. The optimal data structure used to solve Tower of Hanoi is \_\_\_\_\_  
a) Tree b) Heap c) FIFO d) LIFO
5. Which is the most appropriate data structure for reversing a word?  
a) stack b) queue c) graph d) tree
6. The time complexity of converting a prefix notation to infix notation is \_\_\_\_\_  
a)  $O(n)$  where  $n$  is the length of the equation  
b)  $O(n)$  where  $n$  is number of operands  
c)  $O(1)$   
d)  $O(\log n)$  where  $n$  is length of the equation

7. What would be the solution to the given prefix notation?  $- * 1\ 5 / * / 6\ 3\ 6\ 2$

- a) 1 b) 0 c) -1 d) -2

8. What would be the solution to the given prefix notation?  $+ 9 * 3 / 8\ 4$

- a) 14 b) 15 c) 18 d) 12

9. What would be the solution to the given prefix notation?  $- + 5 / 10\ 5\ 5$

- a) 2 b) 5 c) 10 d) 7

10. Evaluation of expression  $a/b+c*d-e$  in postfix notation. a)  $ab+cd/*-e$  b)  $ab/cd*+e-$  c)  $abc/+d*-e$  d)  $abcd/+*-e$

11. What is the other name for a postfix expression?

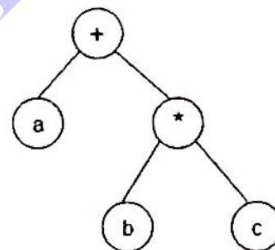
- a) Normal polish Notation b) Reverse polish Notation c) Warsaw notation d) Infix notation

12. In Postfix expressions, the operators come after the operands. a) True b) False

13. What is the result of the given postfix expression?  $abc*+$  where  $a=1, b=2, c=3$ .

- a) 4 b) 5 c) 6 d) 7

14. For the given expression tree, write the correct postfix expression.



- a)  $abc*+$  b)  $abc+*$  c)  $ab+c*$  d)  $a+bc*$

15. What is the other name for a postfix expression?

- a) Normal polish Notation b) Reverse polish Notation c) Warsaw notation d) Infix notation

**Answer**

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**Theory (Answer all questions here)**

1. Write out all the master theorem conditions

2. Using Substitution method, find the  $T(n)$  of the expression below

$$T(n) = 2T(n-1) + 1$$

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