

Expression Evaluation using StackAssignment -#3

Q1. Which of the following infix expressions is obtained on converting the postfix expression $A\ B\ -\ C\ +\ D\ E\ F\ -\ +\ ^\wedge$?

- A) $A - B + C + D ^\wedge E - F$
- B) $A - B + C ^\wedge D + E - F$
- C) $A - B ^\wedge C + D + E - F$
- D) More than one of the above
- E) None of the above

Q2. What is the postfix representation of the following infix expression?

$$(A + B) * C - D * E / F$$

- A) $A\ B\ +\ C\ * \ D\ E\ * \ F\ /\ -$
- B) $A\ B\ * \ C\ +\ D\ E\ * \ F\ /\ -$
- C) $A\ B\ +\ C\ -\ D\ E\ * \ F\ /\ *$
- D) More than one of the above
- E) None of the above

Q3. What is the outcome of the prefix expression $+\ ,\ -, \ *, \ 3,\ 2,\ /\ ,\ 8,\ 4,\ 1\ ?$

- A) 12
- B) 5
- C) 11
- D) More than one of the above
- E) None of the above

Q4. The result of evaluating the postfix expression $10\ 5\ +\ 60\ 6\ /\ * \ 8\ -$ is:

- A) 284
- B) 213
- C) 142
- D) More than one of the above
- E) None of the above

Q5. Consider the following postfix expression with single-digit operands: $6\ 2\ 3\ *\ /\ 4\ 2\ *\ +\ 6\ 8\ *\ -$. The top two elements of the stack after the second $*$ is evaluated, are:

- A) 6, 3
- B) 8, 1
- C) 8, 2
- D) More than one of the above
- E) None of the above

Q6. What would be the prefix notation for the given equation? $(a+(b/c)*(d^e)-f)$

- A) $-+fa*/bc^ade$
- B) $-+a*b/c^def$
- C) $+a*/^bcdef$
- D) More than one of the above
- E) None of the above

Q7. Convert the following infix expression into its equivalent postfix expression $(A + B ^\wedge D) / (E - F) + G$

- A) $ABD ^\wedge + EF - /\ G +$
- B) $ABD + ^\wedge EF - /\ G +$
- C) $ABD ^\wedge + EF /\ - G +$
- D) More than one of the above
- E) None of the above

Q8. The following postfix expression with single-digit operands is evaluated using a stack:

$$8\ 2\ 3\ ^\wedge /\ 2\ 3\ *\ +\ 5\ 1\ *\ -$$

(Note that $^\wedge$ is the exponentiation operator). The top two elements of the stack after the first $*$ is evaluated are:

- A) 6, 1
- B) 5, 7
- C) 3, 2
- D) More than one of the above
- E) None of the above

Q9. Assume that the operators $+$, $-$, \times are left associative and $^\wedge$ is right associative. The order of precedence (from highest to lowest) is $^\wedge$, \times , $+$, $-$.

The postfix expression corresponding to the infix expression $a + b \times c - d ^\wedge e ^\wedge f$ is:

- A) $abc \times + def ^\wedge ^\wedge -$
- B) $abc \times + de ^\wedge f ^\wedge -$
- C) $ab + c \times d - e ^\wedge f ^\wedge$
- D) More than one of the above
- E) None of the above

Q10. The result of evaluating the postfix expression $5,\ 4,\ 6,\ +,\ *,\ 4,\ 9,\ 3,\ /\ ,\ +,\ *$ is:

- A) 600
- B) 350
- C) 650
- D) More than one of the above
- E) None of the above

Q11. The postfix form of the expression $(A + B) * (C * D - E) * F / G$ is?

- A) $AB + CD * E - FG /\ **$
- B) $AB + CD * E - F ** G /\$
- C) $AB + CD * E - * F * G /\$
- D) More than one of the above
- E) None of the above

Q12. The prefix form of $A-B / (C * D \wedge E)$ is?

- A) $-/*\wedge ACBDE$
- B) $-ABCD*\wedge DE$
- C) $-A/B*C\wedge DE$
- D) More than one of the above
- E) None of the above

Q13. The prefix form of an infix expression $p + q - r * t$ is?

- A) $+pq - *rt$
- B) $-+pqr * t$
- C) $-+pq * rt$
- D) More than one of the above
- E) None of the above

Q14. Convert the following infix expressions into its equivalent postfix expressions

$(A + B \wedge D) / (E - F) + G$

- A) $(A B D \wedge + E F - / G +)$
- B) $(A B D + \wedge E F - / G +)$
- C) $(A B D \wedge + E F - / G +)$
- D) More than one of the above
- E) None of the above

Q15. Convert the pre-fix expression to in-fix

$--*+ABC*DE+FG$

- A) $(A - B)*C+(D*E)-(F+G)$
- B) $(A+B)*C-(D-E)*(F-G)$
- C) $(A+B-C)*(D-E)*(F+G)$
- D) More than one of the above
- E) None of the above

Q16. Choose the equivalent prefix form of the following expression $(a + (b - c)) * ((d - e) / (f + g - h))$

- A) $*+a - bc / - de - + fgh$
- B) $*+a - bc - / de - + fgh$
- C) $*+a - bc / - ed + - fgh$
- D) More than one of the above
- E) None of the above

Solution with Explanation

Answer1: b) $A-B+C \wedge D+E-F$

Answer2: a) $AB+C*DE*F/-$

Answer3: b) 5

Answer4: c) 142

Answer5: b) 8,1

Answer6: e) $-+a */bc^{\wedge}def$

Answer7: a) $ABD^{\wedge}+EF-/G+$

Answer8: a) 6, 1

Answer9: a) $abc \times + def^{\wedge} \wedge -$

Answer10: b) 350

Answer11: c) $AB+ CD*E-*F*G/$

Answer12: c) $-A/B*C^{\wedge}DE$

Answer13: c) $-+pq * rt$

Answer14: a) $ABD^{\wedge}+EF-/G+$

Answer15: $--*+ABC*DE+FG$

Explanation:

$--*+ABC*DE(F+G)$

$--*+ABC(D*E)(F+G)$

$--*(A+B)C(D*E)(F+G)$

$--((A+B)*C)(D*E)(F+G)$

$-(((A+B)*C)-(D*E))(F+G)$

$((A+B)*C)-(D*E)-(F+G)$

Answer16: a) $*+a-bc / -de --fgh$

Explanation:

$(a + (b - c)) * ((d - e) / (f + g - h))$

$(a + -bc) * ((d - e) / (f + g - h))$

$+a-bc * ((d - e) / (f + g - h))$

$+a-bc * (-de / (f + g - h))$

$+a-bc * (-de / (+fg - h))$

$+a-bc * (-de / --fgh)$

$+a-bc * /-de --fgh$

$*+a-bc /-de --fgh$