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Q2. Evaluate the following Post-fix Expressions.

a. 2,3,4,*,+

Solution:

Step1: Push 2 into stack.

2			

Step2: Push 3 into stack.

2	3		

Step3: Push 4 into stack

2	3	4	

Step4: Pop 4 & 3 from the stack and use the operator * as 3*4 =12. Push 12 into it.

2	12		

Step5: As one more operator comes again in the series. We will pop the elements 2 & 12 and will use the operator "+" as 2+12 =14. Push 14 into it.

14			

b. 5, 1, 2 + 4 × + 3 –

Solution:

Step1: Push 5 into stack.

5			

Step2: Push 1 into stack.

5	1		

Step3: Push 2 into stack

5	1	2	

Step4: Pop 1 & 2 from the stack and use the operator "+" as 1+2 =3. Push 3 into it.

5	3		

Step5: Push 4 into stack.

5	3	4	

Step6: As one more operator comes again in the series. We will pop the elements 3 & 4 and will use the operator "*" as 3*4 =12. Push 12 into it.

5	12		

Step7: As one more operator comes again in the series. We will pop the elements 5 & 12 and will use the operator "+" as 5+12 =17. Push 17 into it.

17			

Step8: Push 3 into stack.

17	3		

Step9: As "-" operator comes in the series. We will pop the elements 17 & 3 and will use the operator "-" as 17-3 =14. Push 14 into it.

14			

c. 3, 4, 2 + *
Solution:

Step1: Push 3 into stack.

3			

Step2: Push 4 into stack.

3	4		

Step3: Push 2 into stack

3	4	2	

Step4: Pop 4 & 2 from the stack and use the operator + as 4+2 =6. Push 6 into it.

3	6		

Step5: As "*" operator comes again in the series. We will pop the elements 3 & 6 and will use the operator "*" as 3*6 =18. Push 18 into it.

18			

d. 3, 4, *, 2, 5, *, +, *

Solution:

Step1: Push 3 into stack.

3			

Step2: Push 4 into stack.

3	4		

Step3: Pop 3 & 4 from the stack and use the operator "*" as 3*4 =12. Push 12 into it.

12			

Step4: Push 2 into Stack.

12	2		

Step5: Push 5 into Stack.

12	2	5	

Step6: As "*" operator comes in the series. We will pop the elements 2 & 5 and will use the operator "*" as 2*5 =10. Push 10 into it.

12	10		

Step7: As "+" operator comes in the series. We will pop the elements 12 & 10 and will use the operator "+" as 12+10 =22. Push 22 into it.

22			

e. 7, 8 ,+, 3, 2, +, /

Solution:
Step1: Push 7 into stack.

7			

Step2: Push 8 into stack.

7	8		

Step3: Pop 7 & 8 from the stack and use the operator + as 7+8 =15. Push 15 into it.

15			

Step4: Push 3 into stack.

15	3		

Step5: Push 2 into stack.

15	3	2	

Step6: Pop 3 & 2 from the stack and use the operator "+" as 3+2 =5. Push 5 into it.

15	5		

Step7: Pop 15 & 5 from the stack and use the operator "/" as 15/5 =3. Push 3 into it.

3			