

# ① Infix to Postfix:-

Infix Expression:  $A * (B * C + D * E) + F$ :

S.No	Current Token	Operator Stack	Postfix String
1.	A		
2.	*	*	A
3.	(	*(	A
4.	B	*(	A
5.	*	*(	AB
6.	C	*(	AB
7.	+	*(+	ABc
8.	D	*(+	ABc*
9.	*	*(+*	ABc*D
10.	E	*(+*	ABc*DE
11.	)	*	ABc*DE*+
12.	+	+	ABc*DE*+*
13.	F	+	ABc*DE*+*F
14.			ABc*DE*+*F+

Postfix Expression is :  $ABc * DE * + * F +$

⑤ Balanced Symbols:

$((a+b)*(c-d))$

S.No	Symbol	Stack	Action taken	Expression so far
1.	(	(	Push '('	(
2.	(	((	Push '('	((
3.	a	((	Append 'a'	((a
4.	+	((	Append '+'	((a+
5.	b	((	Append 'b'	((a+b
6.	)	(	Pop '('	((a+b
7.	*	(*	Push '*'	((a+b)*
8.	(	(* (	Push '('	((a+b)* (
9.	c	(* (	Append 'c'	((a+b)* (c
10.	-	(* (	Append '-'	((a+b)* (c-
11.	d	(* (	Append 'd'	((a+b)* (c-d)
12.	)	(*	Pop '('	((a+b)* (c-d)
13.	)		Pop '*'	((a+b)* (c-d))

It is valid for "Balanced Symbol."



6.  $\{ (a+b)*c \} - d$

S.No	Symbol	Stack	Action Taken	Expression so far
1.	(	[(	Push '('	(
2.	a	[(	Append 'a'	(a
3.	+	[(, +]	Push '+'	(a+
4.	b	[(, +]	Append 'b'	(a+b
5.	)	[(, +]	Pop '('	(a+b)
6.	*	[(, +, *]	Push '*'	(a+b)*
7.	c	[(, *]	Append 'c'	(a+b)*c
8.	)	[(	Pop '('	(a+b)*c
9.	-	[(, -]	Push '-'	(a+b)*c -
10.	d	[(, -]	Append 'd'	(a+b)*c - d
11.	End	$\emptyset$	Pop remaining operators	$(a+b)*c - d$

It is valid for "Balanced Symbol"

⑧ Infix Expression:  $A * B^c + D$

S.No	Current Token	Operator Stack	Postfix string
1.	A		A
2.	*	*	A
3.	B	*	AB
4.	^	* ^	AB
5.	C	* ^	ABC
6.	+	+ * ^	$ABC^{\wedge *}$
7.	D	+ * ^	$ABC^{\wedge *} D$
8.		+ * ^	$ABC^{\wedge *} D +$

Postfix Expression:  $ABC^{\wedge *} D +$



### ③ Postfix to infix:

Postfix Expression:  $AB-DE+F*/$

S.No	Reading of Postfix	Stack top	Expression
1.	A	A	<div style="border: 1px solid black; padding: 2px; display: inline-block;">A</div>
2.	B	B	<div style="border: 1px solid black; padding: 2px; display: inline-block;">B A</div>
3.	-	A - B	<div style="border: 1px solid black; padding: 2px; display: inline-block;">A - B</div>
4.	D	D	<div style="border: 1px solid black; padding: 2px; display: inline-block;">D A - B</div>
5.	E	E	<div style="border: 1px solid black; padding: 2px; display: inline-block;">E D A - B</div>
6.	+	D + E	<div style="border: 1px solid black; padding: 2px; display: inline-block;">D + E A - B</div>
7.	F	F	<div style="border: 1px solid black; padding: 2px; display: inline-block;">F D + E A - B</div>
8.	*	$(D + E) * F$	<div style="border: 1px solid black; padding: 2px; display: inline-block;">(D + E) * F A - B</div>
9.	/	$(A - B) / ((D + E) * F)$	

Infix Expression:  $(A - B) / ((D + E) * F)$

Postfix conversion:  $abc^*de-/+$

S.No	Symbol	Stack
1.	a	a
2.	b	ab
3.	c	abc
4.	*	$a(b*c)$
5.	d	$a(b*c)d$
6.	e	$a(b*c)de$
7.	-	$a(b*c)(d-e)$
8.	/	$a((b*c)/(d-e))$
9.	+	$(a+((b*c)/(d-e)))$

Infix Conversion :  $(a+((b*c)/(d-e)))$