1) The postfix expression: 3 4 5 * + evaluates to

3+(4*5) = 23

2) The postfix expression: 5 2 * 6 3 * + evaluates to:

(5*2) + (6*3) = 28

3)

a) **1 2 3 + * 3 2 1 - + ***

Step	Input Symbol	Operation	Stack	Calculation	
1	1	Push	1		
2	2	Push	1 , 2		
3	3	Push	1, 2 ,3		
4	+	Pop	1	2+3 = 5	
5		Push Result (5)	1, 5		
6	*	Pop		1 * 5 = 5	
7		Push	5		
8	3	Push	5, 3		
9	2	“ ”	3,3,2		
10	1	“ ”	5,3,2,1		
11	-	Pop & Evaluate	5,3	2 -1 = 1	
12		Push Result	3,3,1		
13	+	Pop	5	3 + 1 = 4	
14			5,4		
15	●	Pop & Evaluate		5 * 4 = 20	

b) 8 5 2 + - 3 8 1 + + * 2 + 2 +

Step	Input Symbol	Operation	Stack	Calculation
1	8	Push	8	
2	5	Push	8,5	
3	2	Push	8,5,2	
4	+	Pop	8	5 + 2 = 7
5		Push Result	8, 7	8-7 =1
6	-	Pop		
7		Push Result	1	
8	3	Push	1,3	
9	2	Push	1, 3, 8	
10	1	Push	1, 3, 8, 1	
11	+	Pop	1, 3	8 + 1 = 9
12		Push Result	1, 3, 9	
13	+	Pop	1	9 + 3 = 12
14		Push Result	1, 12	
15	*	Pop		1 * 12 = 12
16		Push Result	12	
17	2	Push	12, 2	
18	+	Pop		12 + 2 = 14
19	2	Push	11, 12	
20	+	Pop		16

4) Transform the infix expression to postfix form. Do NOT use the infix to postfix conversion algorithm. (Manual).

a) (A + B) * (C – D) + E* F

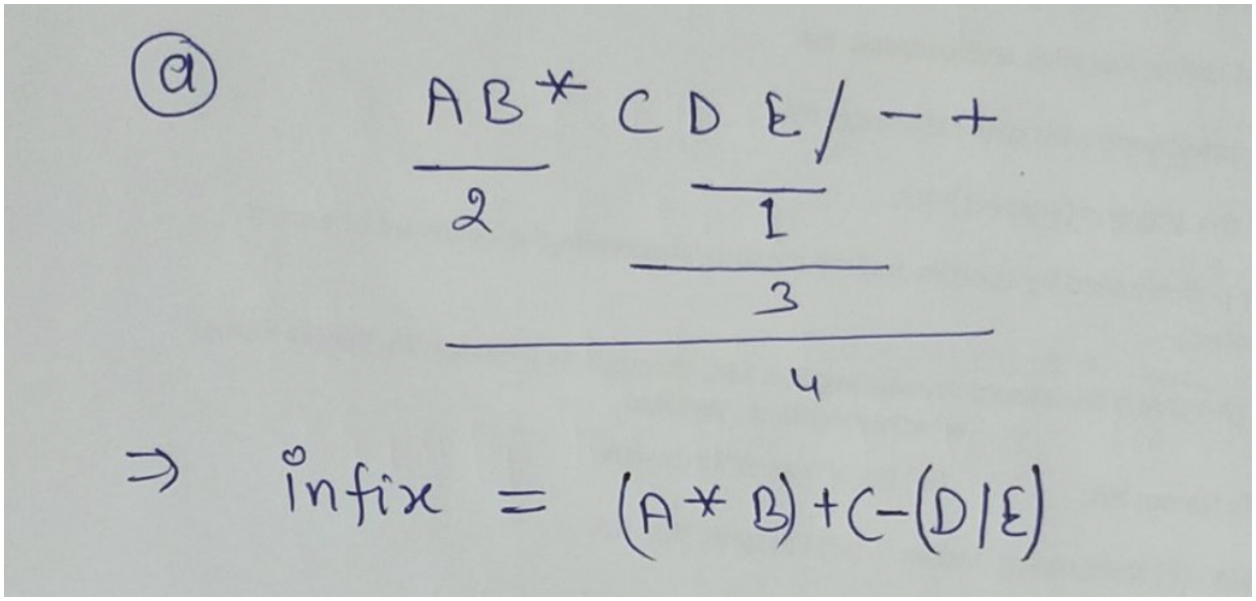
AB + CD - * EF * +

5) Use the infix to postfix conversion algorithm to transform the infix expression to postfix form (use stacks):

a) A B C * D E * + -
b) A B C * + D E * -

6. Transform the postfix expression to infix form. Show ALL the steps.

a) A B * C D E / - +



b) A B - C + D E F - + *