

**Computer Science 323**  
**Assignment No.1**

Names.....row#.....

1. True or false? Circle your answers

i. $L=a^*ba^*$	ab is a member of L ba is a member of L $\lambda$ is a member of L	True/false True/false True/false
ii. $L=a^*b^*$	$a^3b^2$ is a member of L $b^4$ is a member of L	True/false True/false
iii. $L=a^* + b^*$	$a^4b$ is a member of L $b^5$ is a member of L	True/false true/false
iv. $L=(a^* + b)^*$	a is a member of L bab is a member of L	True/false True/false
v. $L=(ab)^*a$	$a(ba)^3$ is a member of L abab is a member of L	True/false True/false
vi. $L=a(aa)^*(\lambda+a)b$	$a^*b$ is a member of L aab is a member of L	True/false True/false
vii. $L=(a+b)^*(aa+bb)$	aaa is a member of L aabb is a member of L	True/false True/false
viii. $L=(aa)^*(\lambda+a)$	$a^4$ is a member of L $a^7$ is a member of L $L=a^*$	True/false True/false True/false

2. Complete the following table. Write your answer in each box

Language	FA	CFG
$L = a^*(a+b)b^*$		$x \rightarrow aA$ $A \rightarrow aA \mid bB \mid \lambda$ $B \rightarrow bB \mid \lambda$
$ab^*a+b$		$x \rightarrow aA \mid bB$ $A \rightarrow aB \mid bA \mid \lambda$ $B \rightarrow \lambda$
$a^*bb^*a(a+b)^*$		$S \rightarrow aA \mid bB$ $A \rightarrow aA \mid bB \mid \lambda$ $B \rightarrow bB \mid aA \mid \lambda$ $X \rightarrow aX \mid bX \mid \lambda$

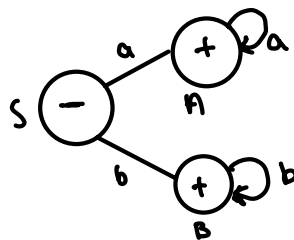
3. Find the language of each CFG. Write your answers in the space provided

i.  $S \rightarrow aA \mid bB$

$A \rightarrow aA \mid \lambda$

$B \rightarrow bB \mid \lambda$

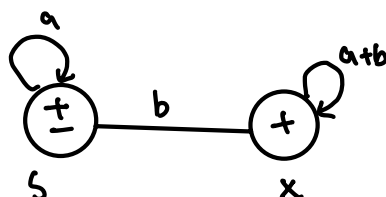
Answer  $a^*a^* + b^*b^*$



ii.  $S \rightarrow aS \mid bX \mid \lambda$

$X \rightarrow aX \mid bX \mid \lambda$

Answer  $a^* + b(a+b)^*$



#### 4. Programming assignment

Write a program to read a postfix expression and display its numeric value. Suppose a=5,b=7,c=2,d=4

##### **Sample Input/Output**

Enter a postfix expression with \$ at the end: ab+cd\*+\$

Value = 20

CONTINUE(y/n)? y

Enter a postfix expression with \$ at the end:abcd+++ \$

Value = 18

CONTINUE(y/n)? y

Enter a postfix expression with \$ at the end:abcd\*-\*\$

Value = -5

CONTINUE(y/n)? n

Directions. Include the following information at the beginning of your program

```
//-----  
//      Group names: Smith, John and Brown, Anna  
//      Assignment   : No.1  
//      Due date     : .....  
// Purpose: this program reads an expression in postfix form, evaluates the expression  
// and displays its value  
//-----  
Comment all functions and class members.
```