

NAME: .....

## MAT 518 , ASSIGNMENT-4

1. Construct a phrase-structure grammar to generate the set  $\{0^n 1^{2m} : n, m \geq 0 \text{ integers}\}$

2. Find the language  $L(G)$  generated by the grammar  $G = (V, T, S, P)$  where  
 $V = \{a, b, c, A, B, C, S\}$   $T = \{a, b, c\}$  and  
 $P = \{S \rightarrow ABC, A \rightarrow a|b, B \rightarrow b, C \rightarrow c|cc|\lambda\}$

3. Sketch the finite state automaton  $M = (S, I, f, s_0, F)$  with  $F = \{s_3\}$ , state table of which is given by :

$f$	input	
	a	b
$s_0$	$s_1$	$s_2$
$s_1$	$s_2$	$s_3$
$s_2$	$s_3$	
$s_3$		

4. Determine the language recognized by the machine  $M$  in the previous problem.

5. Construct a finite state automaton recognizing the set  $\{01^n0 : n \geq 0 \text{ integer}\}$