Student ID :
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Automata Teory Course Quiz-2 (2016-2017Fall)

(Please use free space for draft and fit your answer to boxes.)

1. (50*P*) Find whether given grammar can produce "bbbaaababa" or not.
(S→bS|A , A→aA|aAa|B , B→bBb|A)

The first, enumerate the rules:
1) S→bS 2) S→A 3)A→aA 4)A→aAa 5) A→B 6)B→bBb 7)B→A

The second, start with initial variable S

1 1 1 2 3 3 4 5
S→bS→bbS→bbbS→bbbA→bbbaA→bbbaaA→bbbaaaAa→bbbaaaBa

6 7 3
→bbbaaabBba→bbbaaabAba→bbbaaabaAba

We could produce it, but since there is not a stop rule, we cannot stop the system. So it is not an absolute solution.

2. (50*P*) According to grammar below, write PDA functions down.
(S→AB|ε , A→a|AB|AA , B→b|BA)

The first, enumerate the rules:
R1) S→AB R2) S→ε R3) A→a R4) A→AB R5) A→AA R6) B→b R7) B→BA

According to the first type of rules (X→XY)

qa$→qNBA	for R1
qb$→qNBA	for R1
qaA→qNBA	for R4
qbA→qNBA	for R4
qaA→qNAA	for R5
qbA→qNAA	for R5
qaB→qNAB	for R7
qbB→qNAB	for R7

According to the second type of rules (X→x)

qaA→qRε	for R3
qbB→qRε	for R6

According to the third type of rules (S→ε)

q#$→qNε	for R2