



1. a) $S \rightarrow SS \mid aSb \mid bSa \mid ab \mid ba \mid b$ (5P)
- b) $S \rightarrow SS \mid AR_1 \mid BR_2 \mid AB \mid BA \mid b$ (5P)
 $R_1 \rightarrow SB$
 $R_2 \rightarrow SA$
 $A \rightarrow a$
 $B \rightarrow b$
- c) **baababa** kelimesini kabul edip etmediğini **CYK** algoritması ile test ediniz. (20P)

b	S,B	S, R ₂	R ₂	S	R ₂	S	R ₂
a	A	-	-	-	-	-	
a	A	S	R ₂	S	R ₂		
b	S,B	S, R ₂	S, R ₁	S, R ₂			
a	A	S	R ₂				
b	S,B	S, R ₂					
a	A						

KABUL ETMEZ

2. (20P)
- | | | | | | | | | |
|---|---|---|---|--|--|---|---|---|
| | S | | | | | S | | |
| S | | S | | | | S | | S |
| b | A | | B | | | B | A | b |
| a | | | b | | | b | | a |

3. (25P)
- | | a | b |
|----------|---------|-------|
| {0} | {0} | {0} |
| -+{1} | {3} | {2} |
| {2} | {2,3} | {1} |
| {3} | {1,3} | {0} |
| +{1,2} | {2,3} | {1,2} |
| +{1,3} | {1,3} | {2} |
| {2,3} | {1,2,3} | {1} |
| +{1,2,3} | {1,2,3} | {1,2} |

4. $L = \{ a^{2n}b^{n+1} \mid n=0,1,2,\dots \}$ (25P)