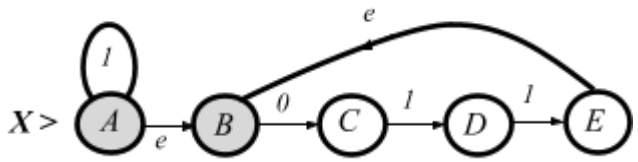
SABANCI UNIVERSITY, CS 302 Automata Theory, Spring 2023

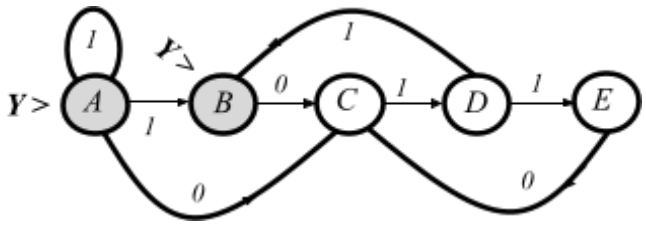
Midterm Examination Answers

ANSWER 1 *(50 pts)*

(a) *(15 pts)* ***E = 1*. (0.1.1)****

(b) *(35 pts)*





Q	***σ***	***Q'***
*> AB**	*0*	*C*
	1	*AB**
C	*0*	*Null*
	1	*D*
D	*0*	*Null*
	1	*BE**
*BE**	*0*	*C*
	1	*Null*

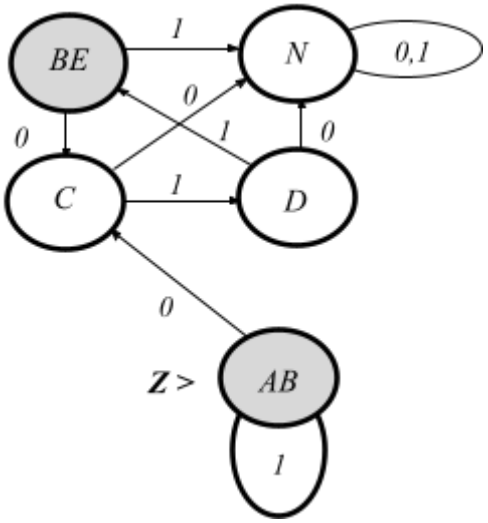


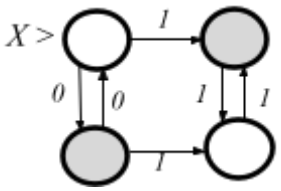
Table below shows that ***Z =W*** *= minimal state machine*

	C	***D***	***N***	***AB***	***BE***
C		*1*	*2*	*0*	*0*
D			*1*	*0*	*0*
N				*0*	*0*
AB					*1*
BE					

ANSWER 2*(50 pts)*

(a) & (b) *See the relevant slides*

(c) L_1 *is regular accepted by the NFA* ***X*** *below.*



L_2 *is* ***not*** *a regular language and is generated by the CFG* ***G=({S},{0,1},R,S)*** *where* ***R*** *is given by :*

S → 000S1 | 0S | 0