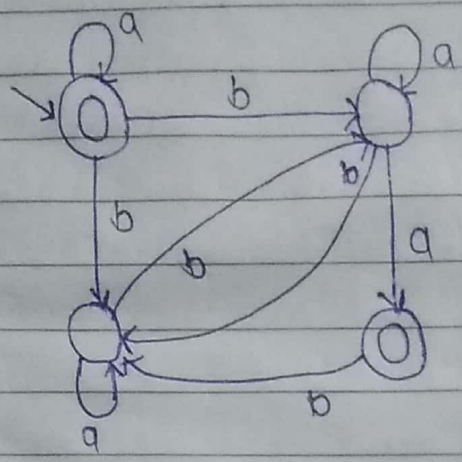
TOC

Homework

(1) consider the following NFA M.



for each of the following string ω, determine whether $\omega \in L(M)$.

a) aabbba

→ yes

b) babb

NO

c) baba

yes

(2) consider the following ϵ-NFA

Solve for A & B

(A)

		ϵ	a	b	c
→	p	ϕ	{p}	{q}	{r}
	q	{p}	{q}	{r}	ϕ
	r	{q}	{r}	ϕ	{p}

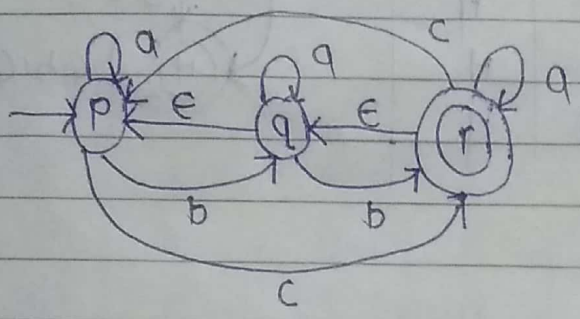
(B)

	ϵ	a	b	c
→p	{q,r}	ϕ	{q}	{r}
q	ϕ	{p}	{r}	{p,q}
*r	ϕ	ϕ	ϕ	ϕ

(a) compute the ϵ-closure of each state
(b) Give all the string of length three or less accepted by the automation
(c) convert the automation to a DFA

(A) →

The ϵ-NFA looks



a) ϵ-close(p) = {p} Eclose{q} = {p,q} Eclose(r) = {p,q,r}

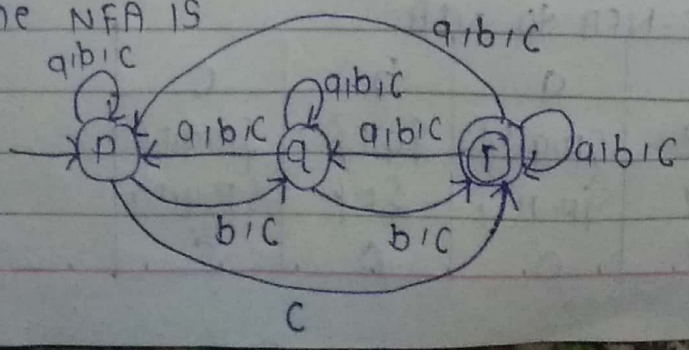
q ϵ Eclose(q); if p ϵ Eclose(q) & (p) —ϵ→ (r) then r ϵ Eclose(q)

b) String : ϵ, a, b, aa, ab, ba, aaa, aab, abq, baq

c)

	a	b	c
p	{p}	{p,q}	{p,q,r}
q	{p,q}	{p,q,r}	{p,q,r}
r	{p,q,r}	{p,q,r}	{p,q,r}

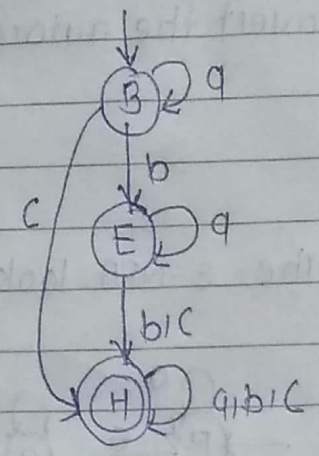
The NFA is



from NFA TO DFA

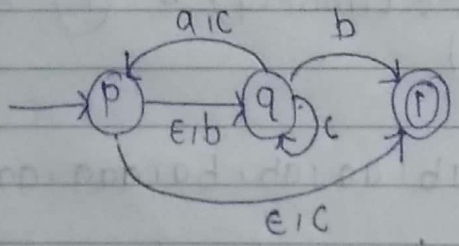
	a	b	c
A = ∅	A	A	A
→ B = {p}	B	E	H
C = {q}	E	H	H
D = {r}	H	H	H
E = {p,q}	E	H	H
F = {p,r}	H	H	H
G = {q,r}	H	H	H
H = {p,q,r}	H	H	H

DFA IS



(B)

The ∈-NFA looks as



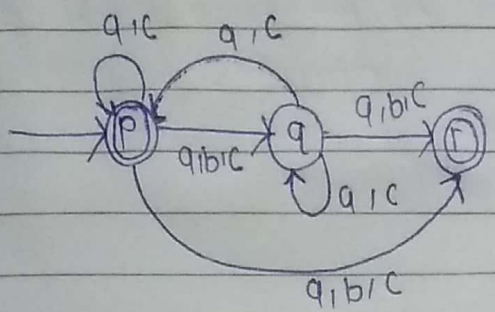
a) EClose(p) = {p,q,r} EClose(q) = {q} EClose(r) = {r}

b) All string : bba, bbb, bbc

c) from ∈-NFA to NFA

	a	b	c
p	{p,q,r}	{q,r}	{p,q,r}
q	{p,q,r}	{r}	{p,q,r}
r	∅	∅	∅

The NFA is



from NFA TO DFA

	a	b	c
A = ∅	A	A	A
→ B = {p}	H	G	H
C = {q}	H	D	H
D = {r}	A	A	A
E = {p,q}	H	G	H
F = {p,r}	H	G	H
G = {q,r}	H	D	H
H = {p,q,r}	H	G	H

DFA is