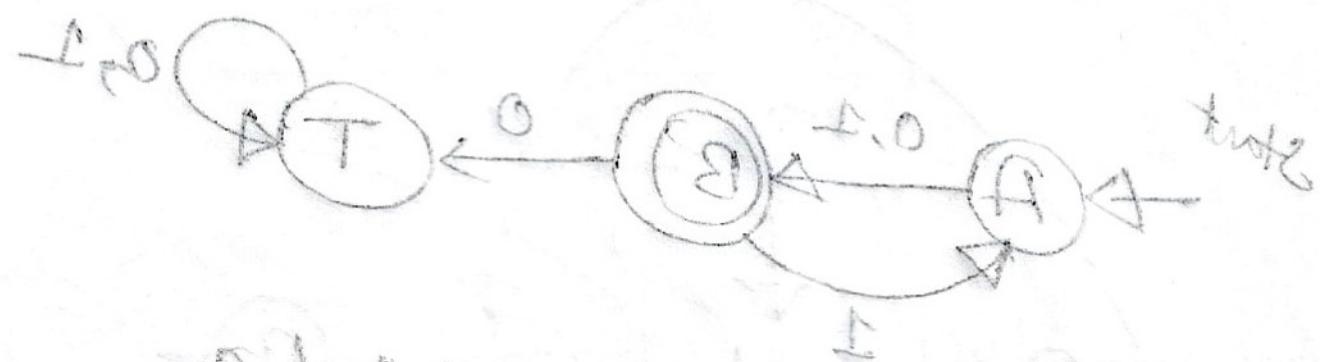


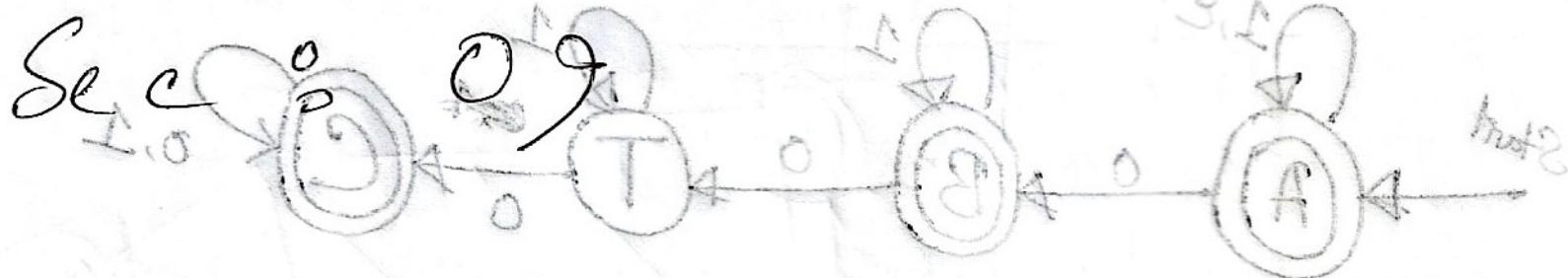
10  
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# ASSIGNMENT - 03

Name : SHADAB JOSBAI

ID : 19101072



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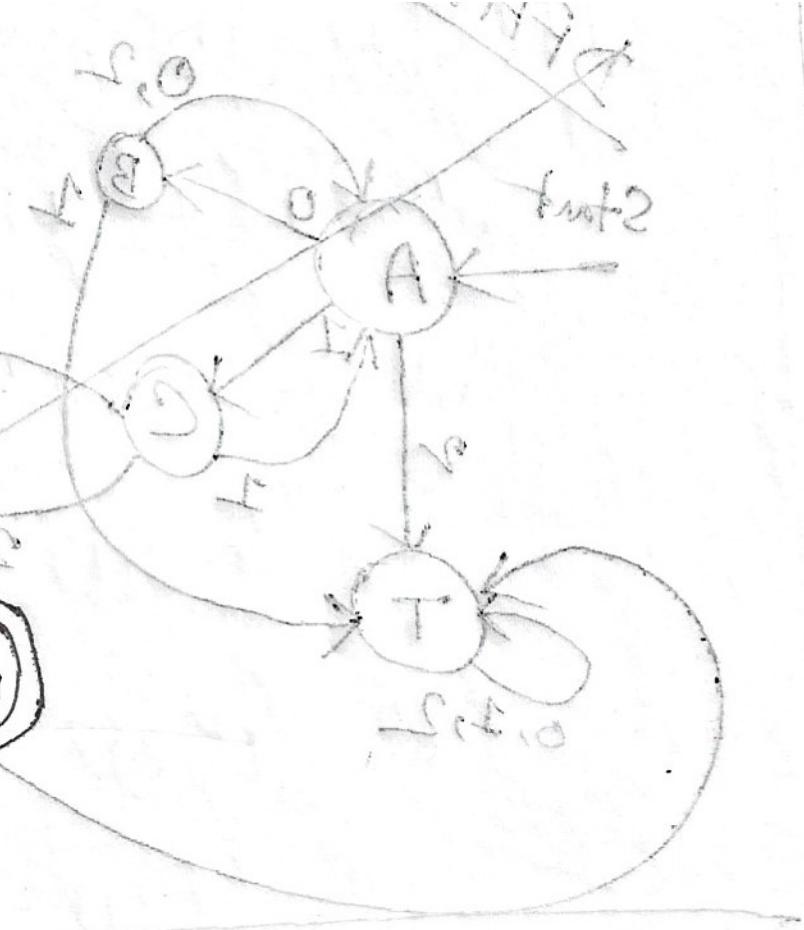
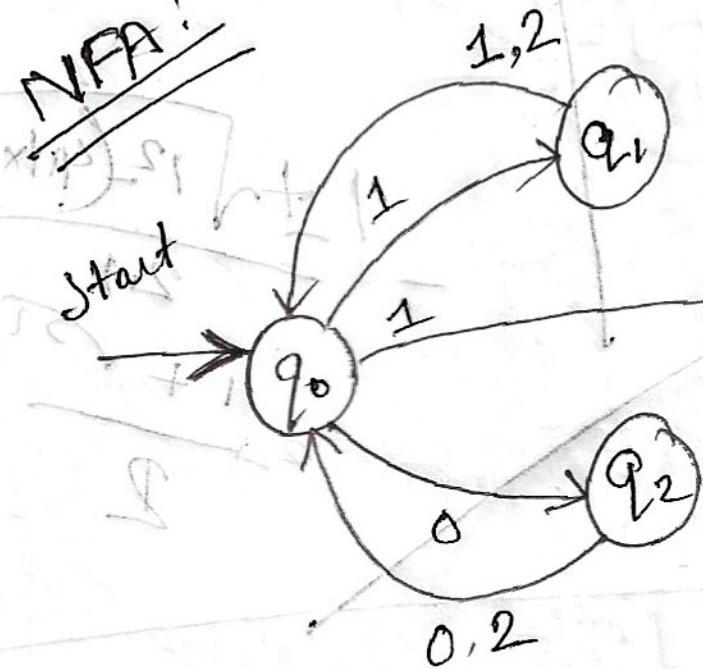
S.B.A ←

3	1	1.0	
A	A	B	A
B	A	T	B
C	D	C	C

~~A~~  $\leftarrow$  but 2 Ans. to Q.No - 1

~~NFA!~~

Start



Conversion:

Start state:  $\{q_0\} = A$

$\text{Move}_{\text{DFA}}(A, 0) = \{q_2\} = B$

$\text{MOVE}_{\text{DFA}}(A, 1) = \{q_1, q_3\} = C$

$\text{MOVE}_{\text{DFA}}(B, 0) = \{q_0\} = A$

$\text{MOVE}_{\text{DFA}}(B, 2) = \{q_0\} = A$

~~not present~~  $\text{MOVE}_{\text{DFA}}(C, 0) = \{q_4\} = D$

$\text{MOVE}_{\text{DFA}}(C, 1) = \{q_0\} = A$

$\text{MOVE}_{\text{DFA}}(C, 2) = \{q_0, q_4\} = E$

$\text{MOVE}_{\text{DFA}}(A, 2)$

$= \{\} = T$

$\text{MOVE}_{\text{DFA}}(B, 1)$

$= \{\} = T$

$\text{MOVE}_{\text{DFA}}(D, \{1, 2, 3\})$

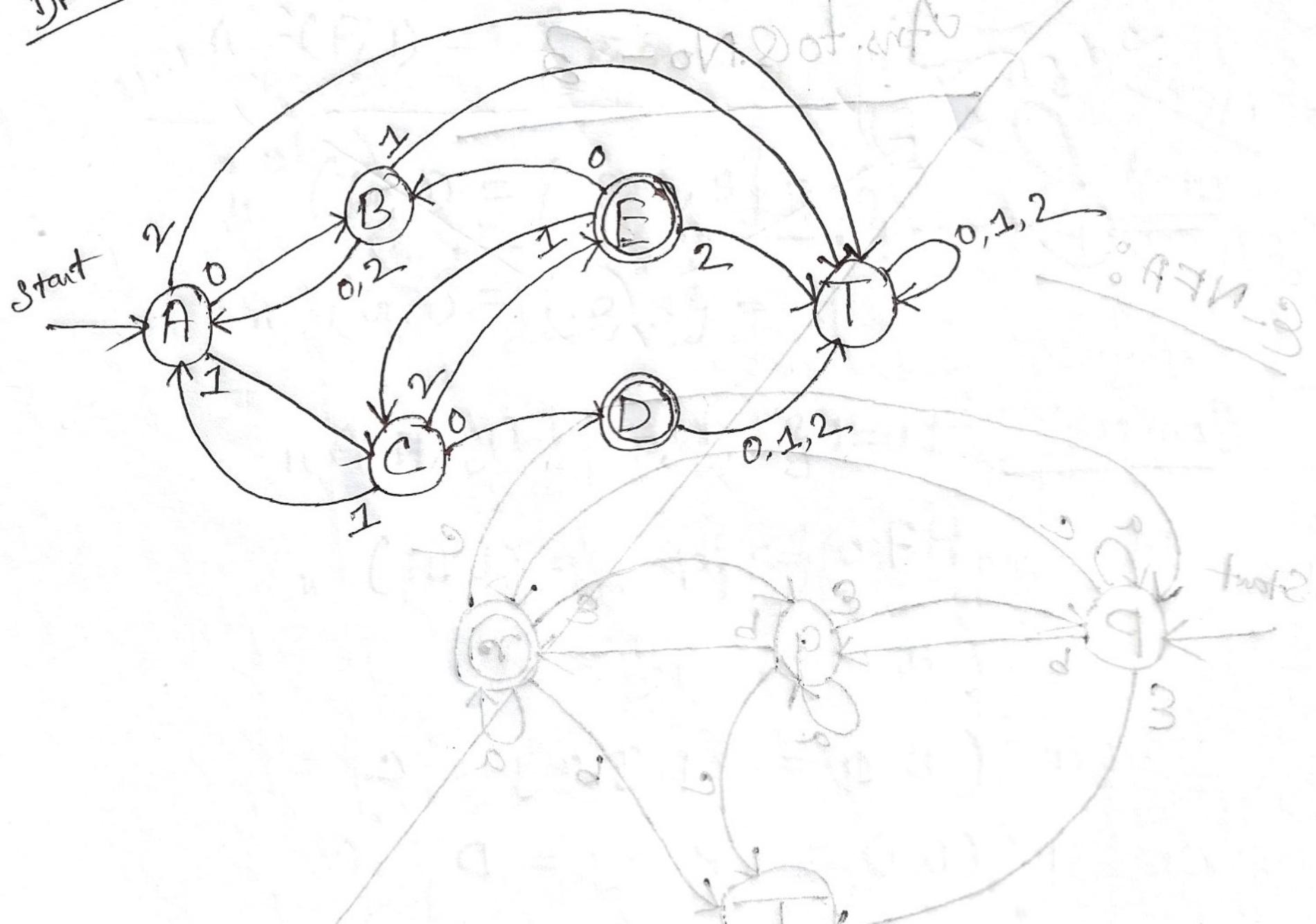
$= \{\} = T$

$$\text{MOVE}_{\text{DFA}}(E, 0) = \{q_2\} = B$$

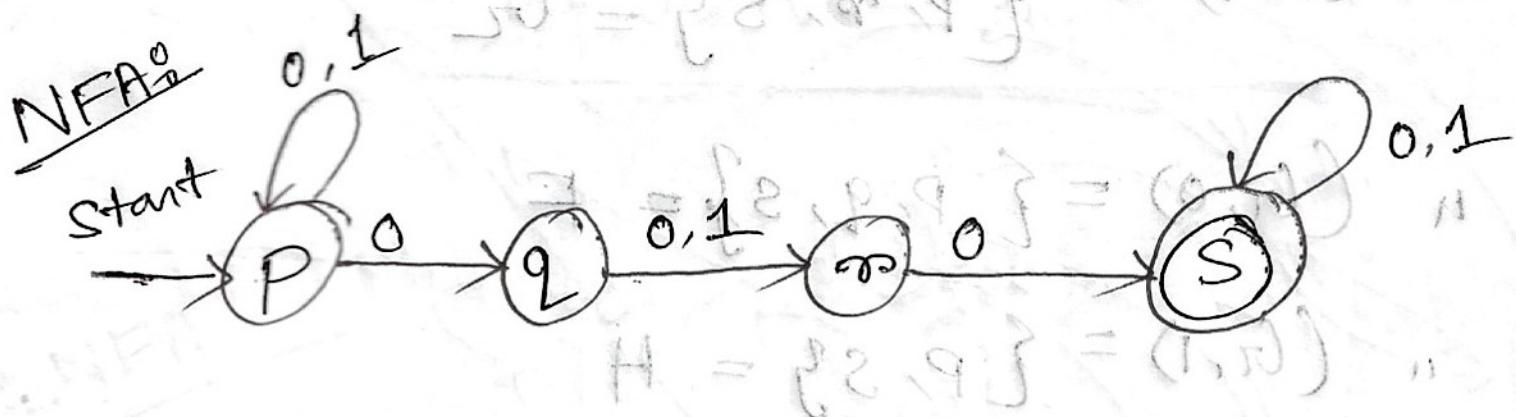
$$u \quad (E, 1) = \{q_1, q_3\} = C$$

$$u \quad (E, 2) = \{\} = T$$

DFA<sup>0</sup>



Ans to Q No-2



Conversion: Start State  $\{P\} = A$

$$MOVE_{DFA}(A, 0) = \{P, q\} = B$$

$$\text{II } (A, 1) = \{P\} = A$$

$$\text{II } (B, 0) = \{P, q, r\} = C$$

$$\text{II } (B, 1) = \{P, r\} = D$$

$$\text{II } (C, 0) = \{P, q, r, s\} = E$$

$$\text{II } (C, 1) = \{P, r\} = D$$

$$M_{\text{NFA}}(D, 0) = \{p, q, s\} \sqsupseteq F$$

$$\text{u } (D, 1) = \{p\} = A$$

$$\text{u } (E, 0) = \{p, q, r, s\} \sqsupseteq E$$

$$\text{u } (E, 1) = \{p, r, s\} = G$$

$$\text{u } (F, 0) = \{p, q, r, s\} = E$$

$$\text{u } (F, 1) = \{p, r, s\} = G$$

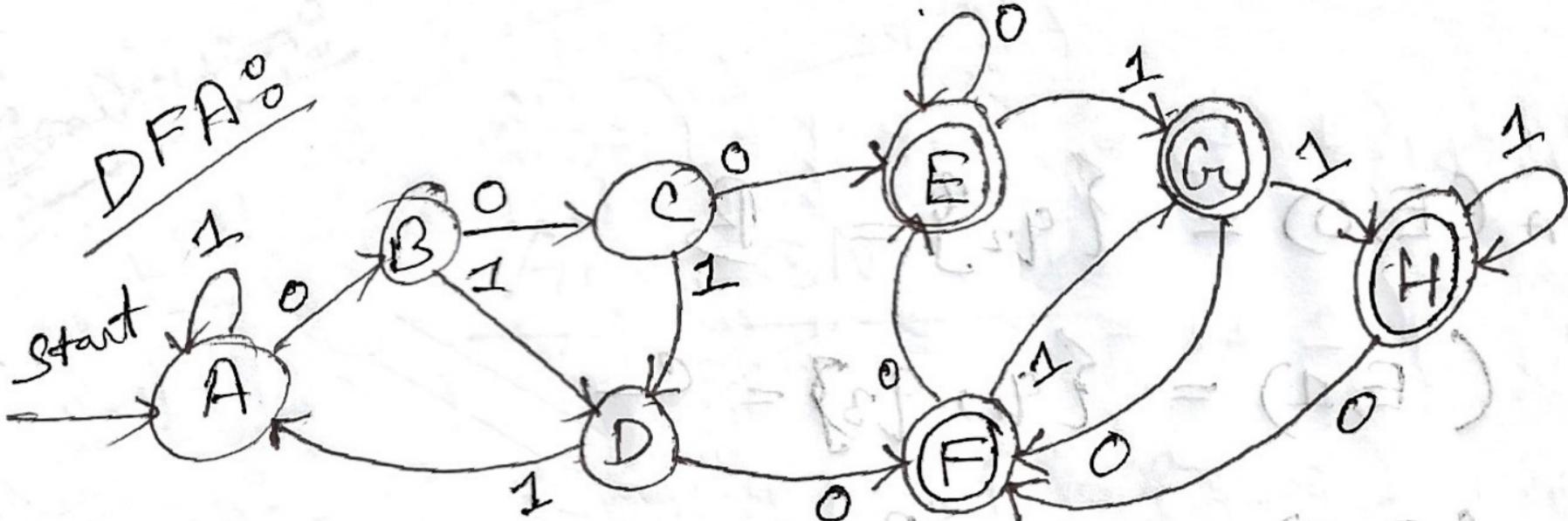
$$\text{u } (G, 0) = \{p, q, s\} = F$$

$$\text{u } (G, 1) = \{p, s\} = H$$

$$\text{u } F(H, 0) = \{p, q, s\} \sqsupseteq F \quad \underline{\text{minimal}}$$

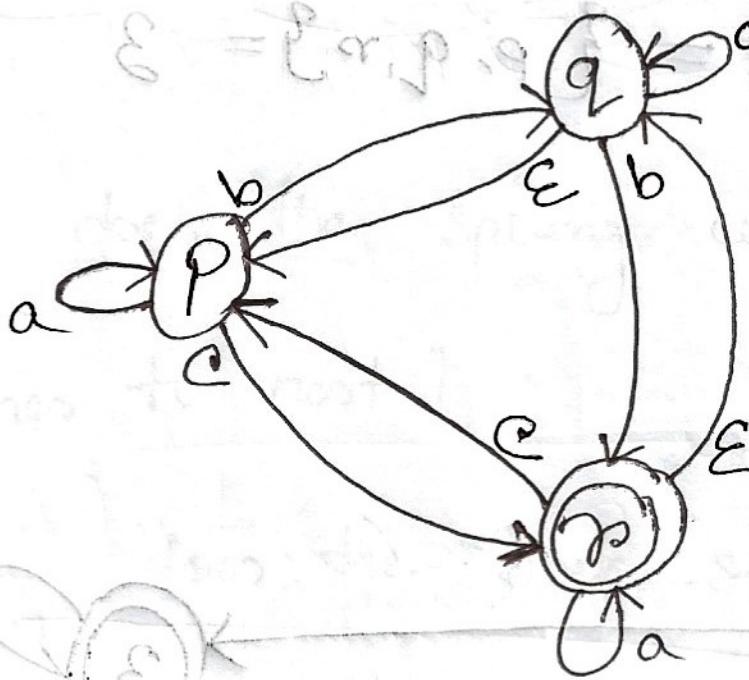
$$\text{u } (H, 1) = \{p, s\} \quad \text{from } F \rightarrow H$$

$$A = \{q\} = (\pm A)$$



Ans. to Q No - 3

ε-NFA<sup>o</sup>



Q How for

Block comes

Q Modes

Spring since

Conversion<sup>o</sup>

Start state =  $\{P\} = \underline{\text{1}}$

~~MOVE DFA (1, a)~~

MOVE DFA (1, a) =  $\{P\} = \underline{\text{1}}$

" (1, b) =  $\{P, Q\} = \underline{\text{2}}$

" (2, a) =  $\{P, Q\} = \underline{\text{2}}$

" (2, b) =  $\{P, Q, R\} = \underline{\text{3}}$

" (3, a) =  $\{P, Q, R\} = \underline{\text{3}}$

" (3, b) =  $\{P, Q, R\} = \underline{\text{3}}$

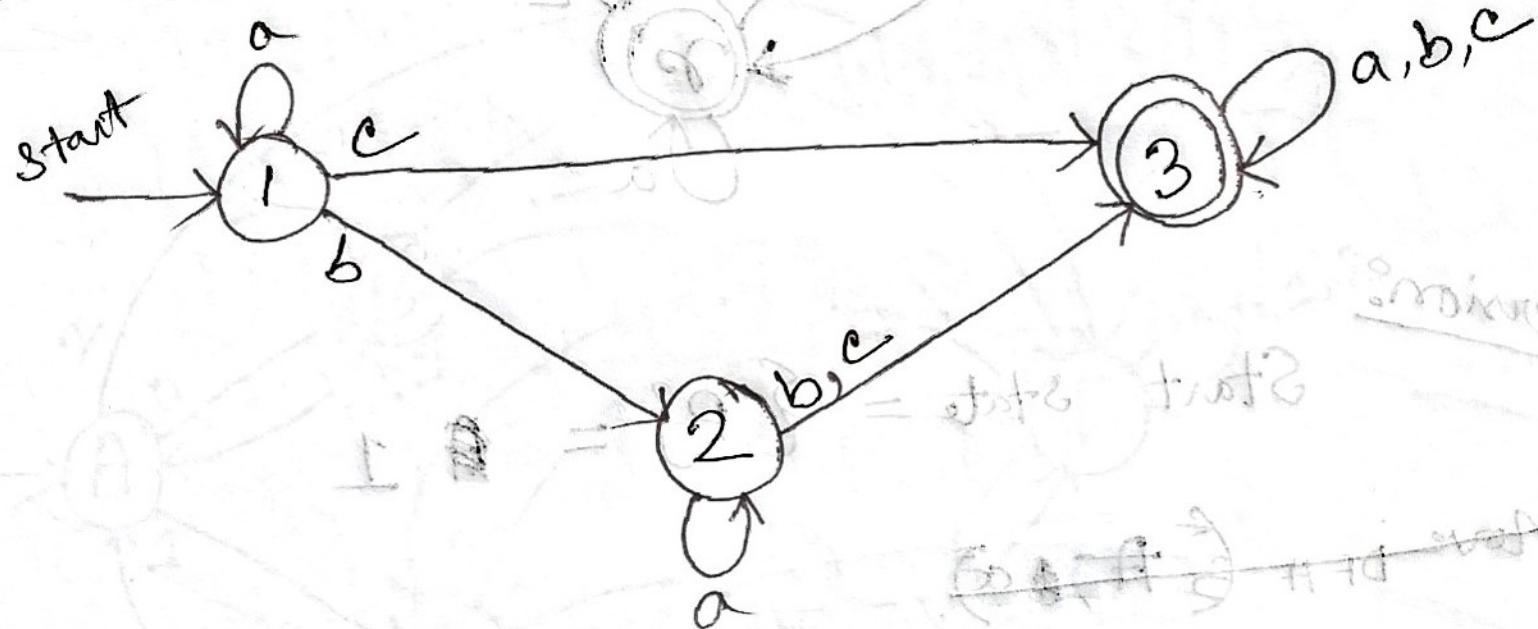
DFA<sup>o</sup>

$$\text{Move}_{DFA}(1, c) = \{p, q, r\} \approx 3$$

$$\text{Move}_{DFA}(2, c) = \{p, q, r\} \approx 3$$

$$\text{Move}_{DFA}(3, c) = \{p, q, r\} \approx 3$$

DFA<sup>0</sup>



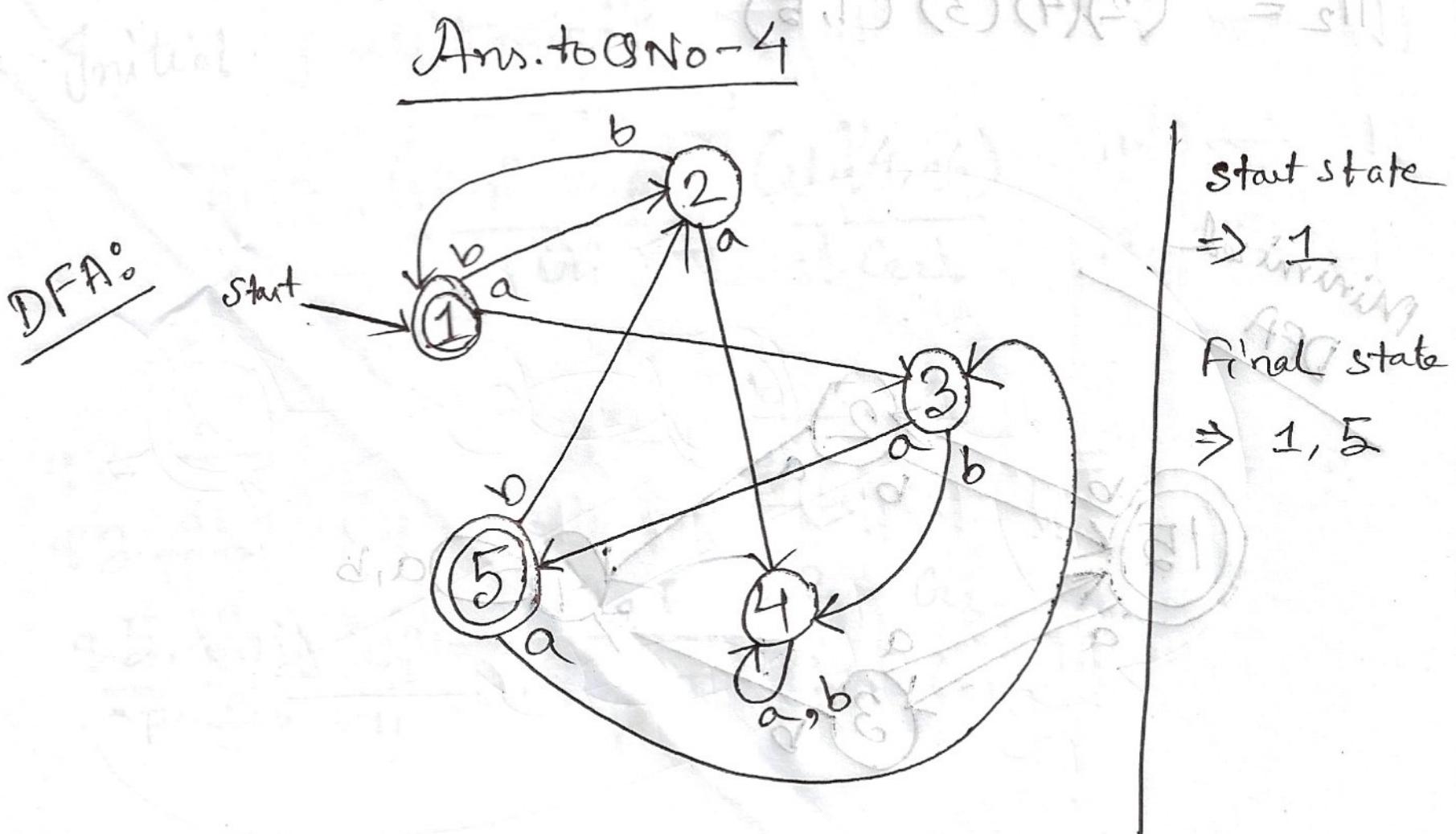
$$t = \{a\} = (0, t)$$

$$s + \{p, q\} = (d, t)$$

$$s = \{p, q\} = (0, s)$$

$$e = \{p, q, r\} = (d, s)$$

$$o = \{p, q, r\} = (s, o)$$



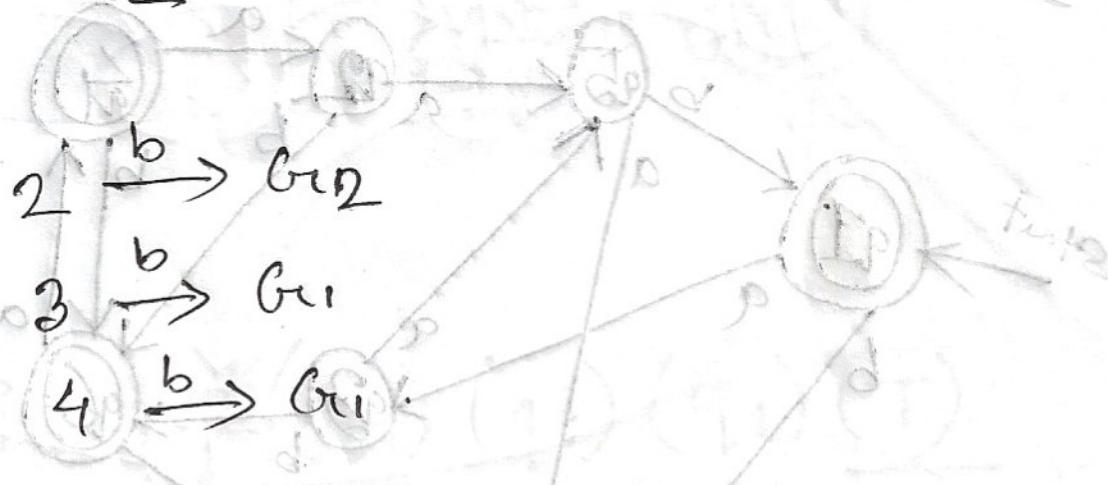
Initial partitioning:

$$\Pi_1 = \underbrace{(2, 3, 4)}_{C_{r1}} \quad \underbrace{(1, 5)}_{C_{r2}}$$

$$2 \xrightarrow{a} C_{r1}$$

$$3 \xrightarrow{a} C_{r2}$$

$$4 \xrightarrow{a} C_{r1}$$



$$\Pi_2 = \begin{array}{ll} 1 \xrightarrow{a} C_{r1} & 1 \xrightarrow{b} C_{r1} \\ 5 \xrightarrow{a} C_{r1} & 5 \xrightarrow{b} C_{r1} \end{array}$$

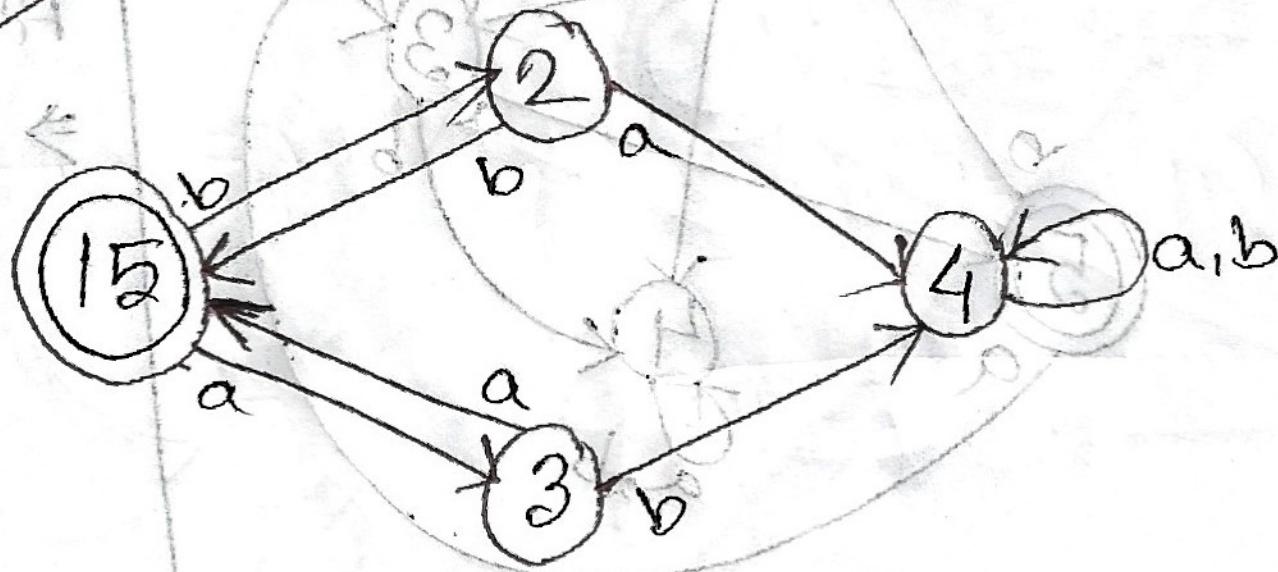
$$\Pi_2 = (2)(4)(3) (1, 5)$$

P-oddDot.wrl

start node

Minimized  
dot2 DFA

dot2



100

aggregation distinct

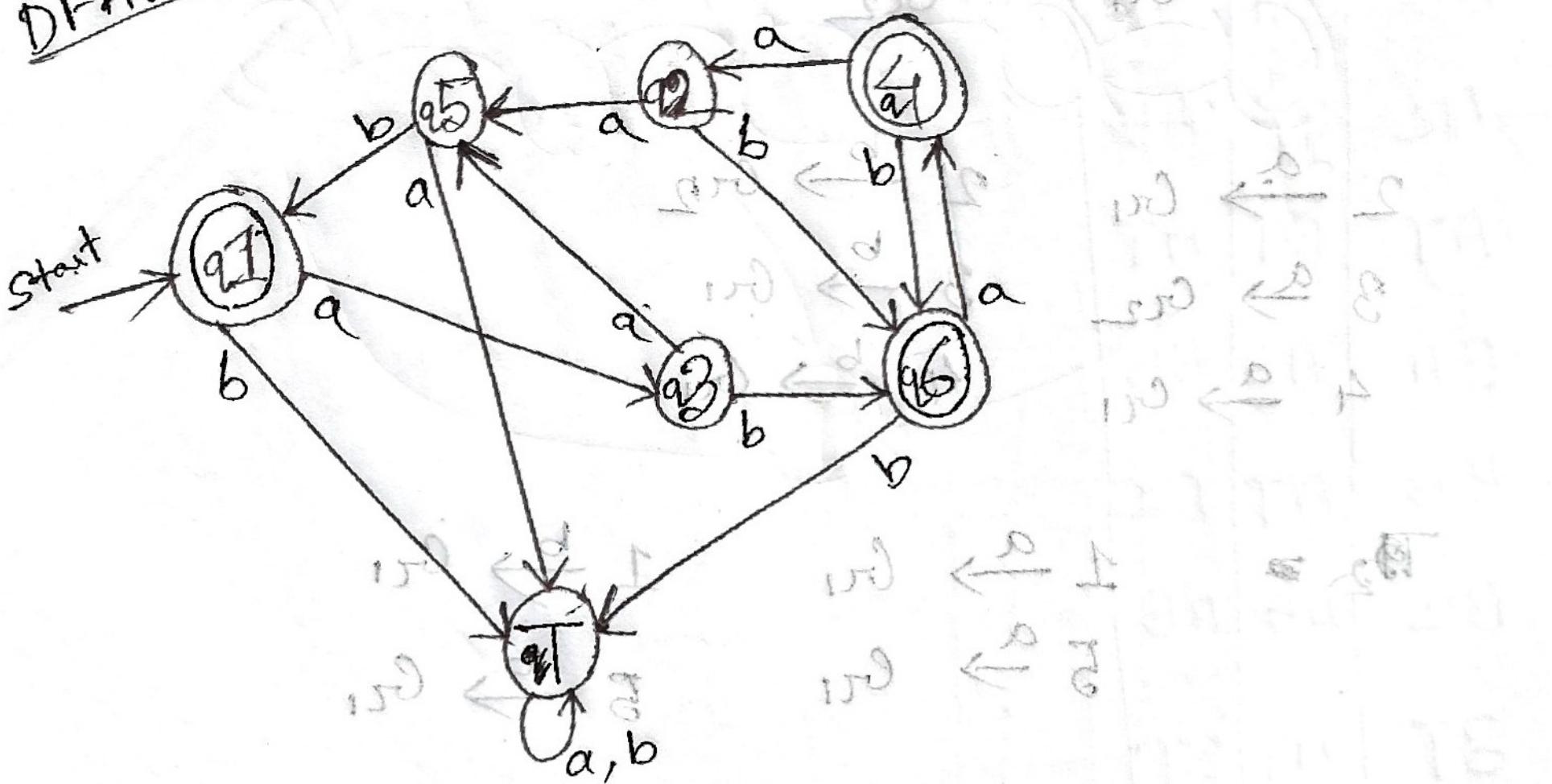
Ans.to Q No - 5

(E.1) (E.2)



=  $\Pi$

DFA<sup>o</sup>



Initial partitioning:

$$\Pi_1 = \frac{(q_2, q_3, q_5, q_7)}{G_{r_1}} \quad \frac{(q_1, q_4, q_6)}{G_{r_2}}$$

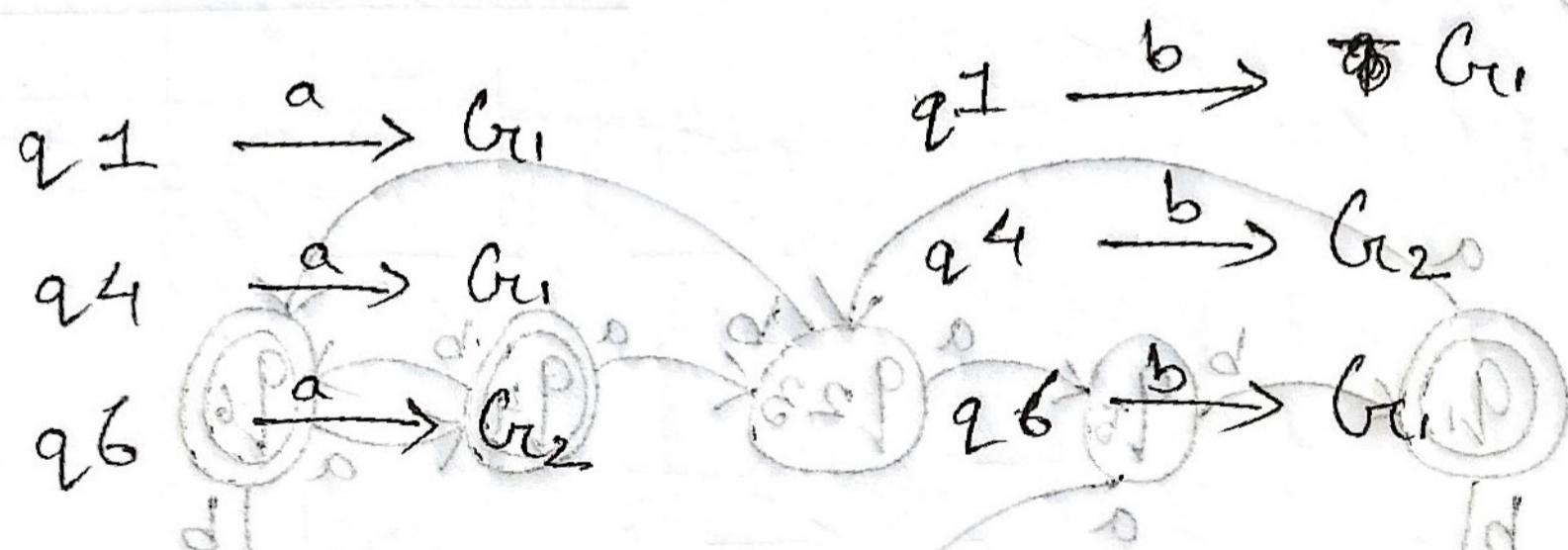
$$q_2 \xrightarrow{a} G_{r_1} \quad q_2 \xrightarrow{b} G_{r_2}$$

$$q_3 \xrightarrow{a} G_{r_1} \xrightarrow{T} G_{r_1}(sp) \quad q_3 \xrightarrow{b} G_{r_2} \xrightarrow{T} G_{r_2}(sp) = \Pi_1 \quad \therefore$$
 ~~$q_5 \xrightarrow{a} G_{r_1} \quad q_5 \xrightarrow{b} G_{r_2}$~~ 

$$T \xrightarrow{a} G_{r_1} \quad T \xrightarrow{b} G_{r_1}$$

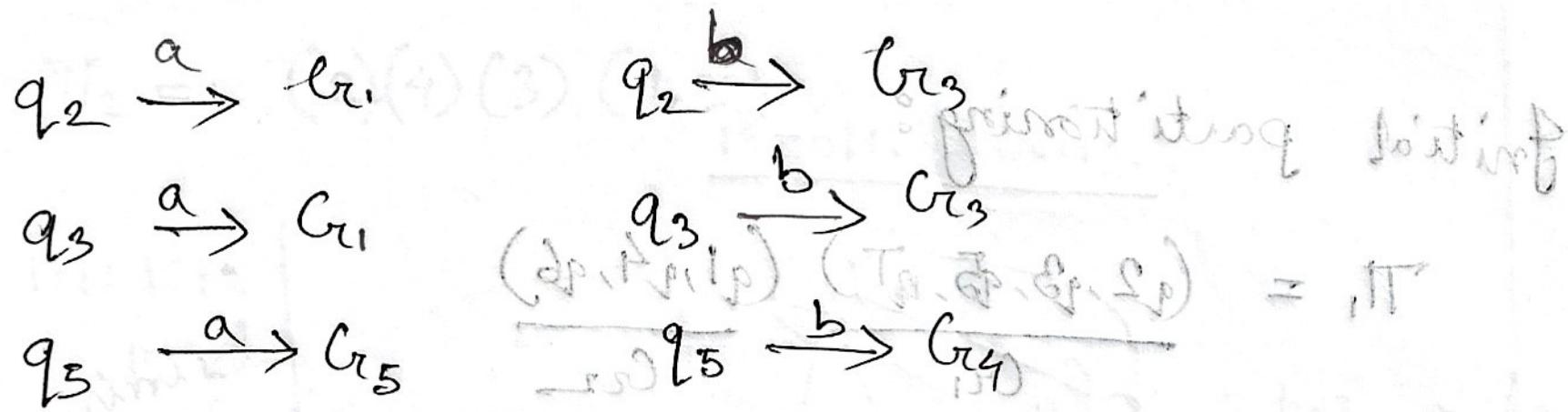
~~$\therefore \Pi_2 = (q_2, q_3, q_5)$~~

desiminating  
q<sub>2</sub>, q<sub>3</sub>, q<sub>5</sub>



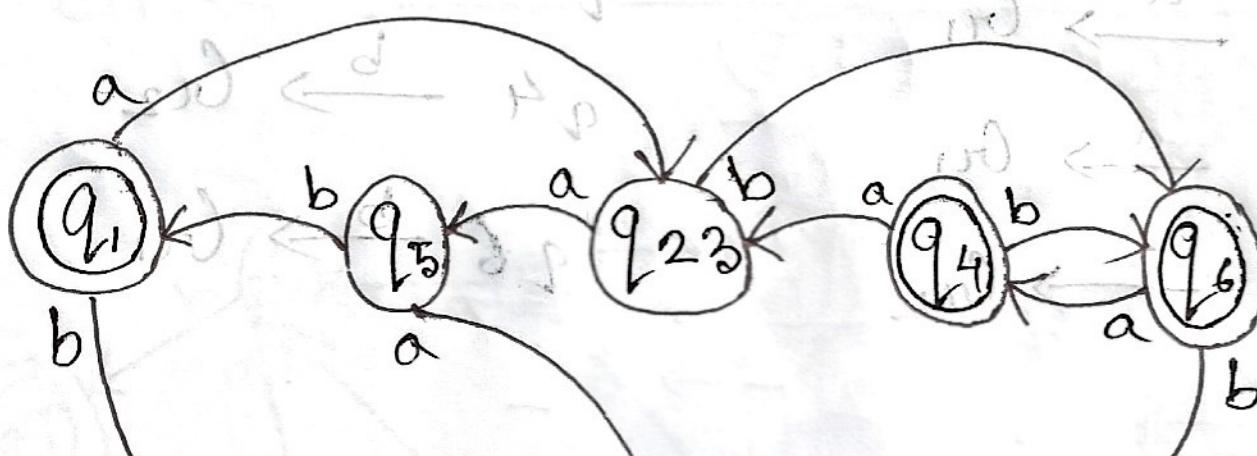
~~$\therefore \Pi_2 = (q_2, q_3, q_5) \quad (q_4) \quad (q_6) \quad (q_1) \quad (T)$~~ 

$$\Pi_2 = \frac{(q_2, q_3, q_5)}{G_{r_1}} \quad \frac{(q_4)}{G_{r_2}} \quad \frac{(q_6)}{G_{r_3}} \quad \frac{(q_1)}{G_{r_4}} \quad \frac{(T)}{G_{r_5}}$$



$\therefore \Pi_3 = (q_1) (q_2, q_3) (q_4) (q_5) (q_6) (T)$   
 = Final partitioning partitioning

\* Minimized DFA



$$\frac{(T) (q_1) (q_5) (q_{23}) (q_4) (q_6)}{=} = \Pi$$