

Q) Draw the following DFA using  
table filling algorithm where A  
is the start state. The states  
C, F and I are the final states.

S	O	I						
A	B	E						
B	C	F						
*C	D	H						
D	E	H						
E	F	I						
*F	G	B						
G	H	B						
*H	I	C						
*I	A	E						

B	X							
*C	X	X						
D		X	X					
E	X			X	X			
*F	X	X			X	X		
G		X	X	-	X	X		
*H	X		X	X		X	X	
*J	X	X		X	X		X	X
A	B	C	D	E	F	G	H	

Dept - Group combination of fire  
and non final states

Subgraphs

O I  
A B E (NF, NF)  
B C F (F, F)

A & D O I  
A B E (NF, NF)  
D E H (NF, NF)

A & E

O I  
A B E NF NF  
E F I G F F

A & G

O I  
A R f NF NF  
G H B F F

A & H

O I  
A R E NF NF  
H I C F F

	O	I	
B	C	F	F
D	E	H	NF NF

	O	I	
B	C	F	
E			

	O	I	
B			
G			

	O	I	
A	B	E	NF NF
D	E	H	NF NF

	O	I	
A	B	E	NF NF
G	H	B	NF NF

(A)	O	I	X	
A	B	E		
H	I	C		

<del>B</del>	C	F	F	F
D	E	H	NF	NF

<del>B</del>	C	F	F	F
E	F	I	F	F

<del>B</del>	B	E	NF	NF
G	H	B	NF	NF

<del>B</del>	B	E	NF	NF
H	S	C	F	F

<del>C</del>	D	H	NF	NF
F	G	B	NF	NF

<del>C</del>	D	H	NF	NF
I	A	E	NF	NF

③

	0	1
D	E	H
E	F	T

NR NR

F F

	0	1
D	E	H
G	H	B

NF NF  
NF NF

④

	0	1
D	E	H
H	I	C

NF NF  
F F

⑤

	0	1
E	F	I
G	H	B

F F  
NF NF

	0	1
E	F	I
H	I	C

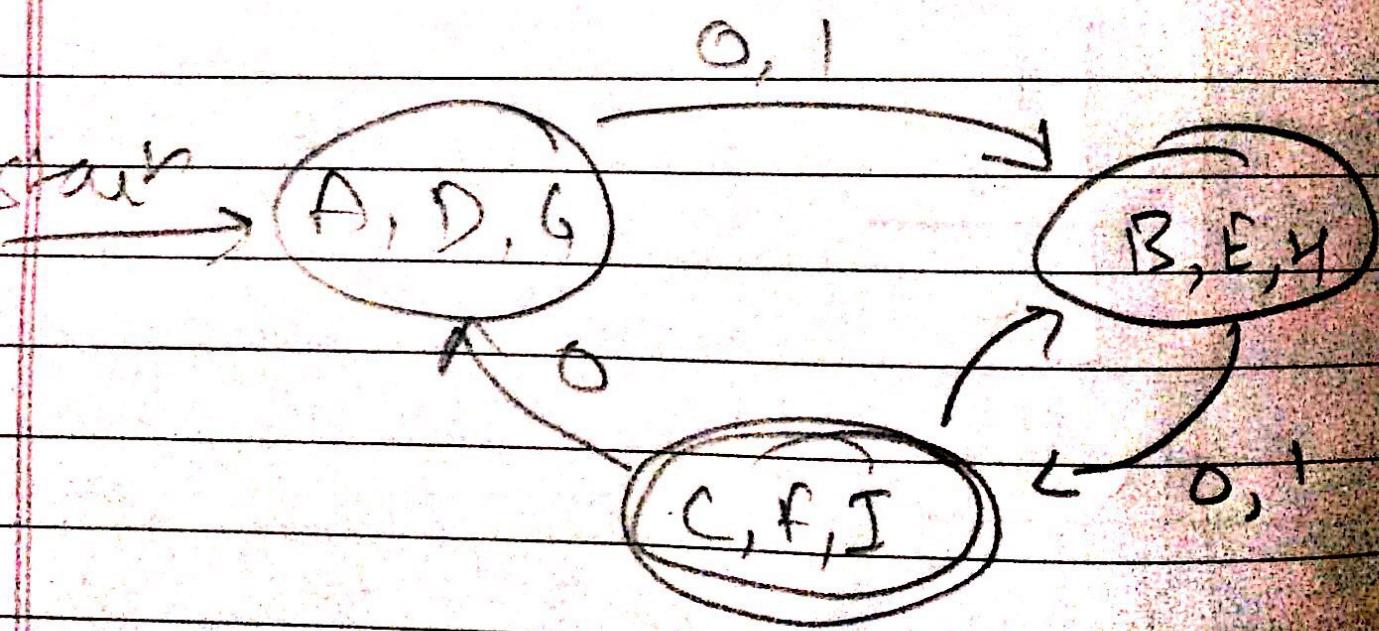
F F  
F F

⑥

	0	1
G	H	B
H	I	C

NF NF  
F F

~~(A, D)~~      ~~(A, G)~~      ~~(D, G)~~ → ~~(G, H)~~  
~~(B, H)~~      ~~(B, E)~~      ~~(E, H)~~ → ~~(B, H)~~  
~~(C, F)~~      ~~(C, F)~~      ~~(F, I)~~ → ~~(C, F)~~  
~~(D, H)~~      → ~~(D, H)~~



Consider the DFA given by the transition table.

$\delta$	0	1
$\rightarrow q_1$	$q_2$	$q_3$
$q_2$	$q_3$	$q_5$
$*q_3$	$q_4$	$q_3$
$q_4$	$q_3$	$q_5$
$*q_5$	$q_2$	$q_5$

$q_2$	x			
$*q_3$	x	x		
$q_4$	x		x	
$*q_5$	x	x	x	

$(q_1, q_4)$

$(q_5, q_5)$

$q_1, q_2, q_3, q_4$

	0	1		
$\checkmark q_2$	$q_5$	$q_5$	F	F
$q_4$	$q_3$	$q_5$	F	F

9 <sub>1</sub>	9 <sub>2</sub>	9 <sub>3</sub>	9 <sub>4</sub>	9 <sub>5</sub>	9 <sub>6</sub>	9 <sub>7</sub>	9 <sub>8</sub>	9 <sub>9</sub>
9 <sub>1</sub>	9 <sub>2</sub>	9 <sub>3</sub>	9 <sub>4</sub>	9 <sub>5</sub>	9 <sub>6</sub>	9 <sub>7</sub>	9 <sub>8</sub>	9 <sub>9</sub>

9 <sub>1</sub>	9 <sub>2</sub>	9 <sub>3</sub>	9 <sub>4</sub>	9 <sub>5</sub>	9 <sub>6</sub>	9 <sub>7</sub>	9 <sub>8</sub>	9 <sub>9</sub>
9 <sub>1</sub>	9 <sub>2</sub>	9 <sub>3</sub>	9 <sub>4</sub>	9 <sub>5</sub>	9 <sub>6</sub>	9 <sub>7</sub>	9 <sub>8</sub>	9 <sub>9</sub>

9 <sub>2</sub>	9 <sub>3</sub>	9 <sub>4</sub>	9 <sub>5</sub>	9 <sub>6</sub>	9 <sub>7</sub>	9 <sub>8</sub>	9 <sub>9</sub>
9 <sub>3</sub>	9 <sub>4</sub>	9 <sub>5</sub>	9 <sub>6</sub>	9 <sub>7</sub>	9 <sub>8</sub>	9 <sub>9</sub>	9 <sub>1</sub>

$(9_3, 9_4)$  is equivalent because they reach same destination