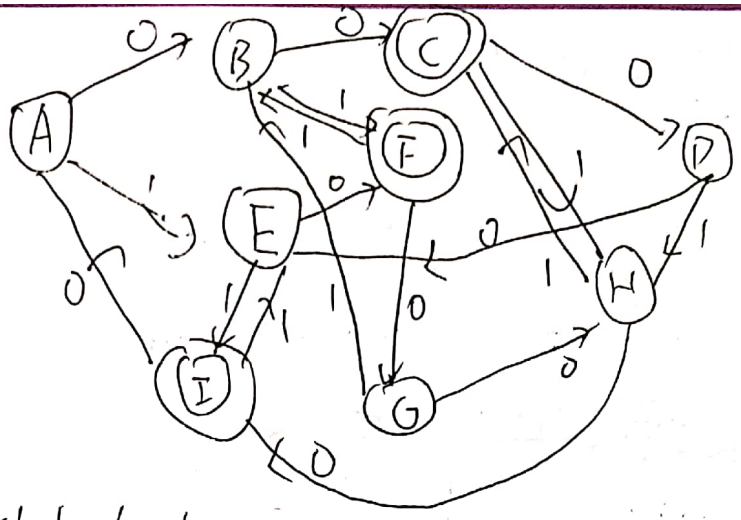
1.

DFA: →



	A	B	C	D	E	F	G	H	I
A	✓	X	X		X	X		X	X
B	X	✓	X	X		X	X		X
C	X	X	✓	X	X		X	X	
D		X	X	✓	X	X		X	X
E	X		X	X	✓	X	X		X
F	X	X		X	X	✓	X	X	
G		X	X		X	X	✓	X	X
H	X		X	X		X	X	✓	X
I	X	X		X	X		X	X	✓

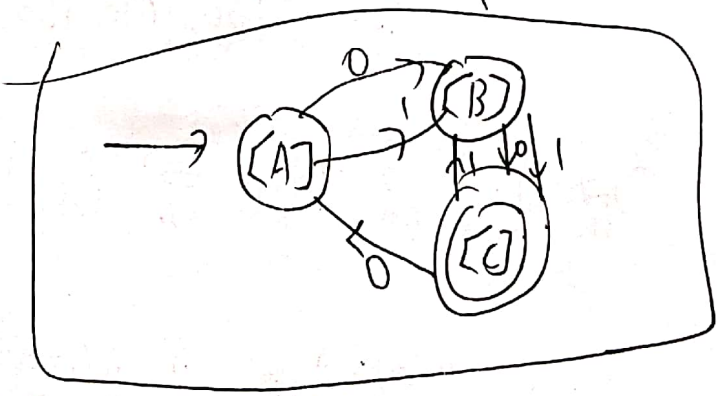
~~(A)~~ $\delta(A,1)$; $\delta(D,1)$, $\delta(G,1) \notin F$

$\delta(B,1)$ $\delta(E,1)$, $\delta(H,1) \in E$

$[A] = \{A, D, G\}$

$[B] = \{B, E, H\}$

$[C] = \{C, F, I\}$



5.1.1(c)

不同　　　　相同

$E \to 1A1 \mid 0A0 \mid 1B0 \mid 0B1$

$A \to 1B0 \mid 0B1$

$B \to 11 \mid 00 \mid 1B1 \mid 0B0 \mid \varepsilon$ => 前后相同

~~$B \to 1 \dots \mid \varepsilon \mid 0B0B \mid 1B1B \mid B0B0 \mid B'$~~

$E \to A \mid EaEa \mid EaEb \mid EbEa \mid EbEb$ // 前后至少一个不同

$A \to BaBb \mid BbBa$ // 前后有个不同

$B \to \varepsilon \mid BaBa \mid BbBb$ // 前后相同

5.1.1(d)

$E \to B \mid EBE$

$B \to \varepsilon \mid 001 \mid 010 \mid 100$

5.1.2 (c)

$S \underset{lm}{\Rightarrow} A1B \underset{lm}{\Rightarrow} 0A1B \underset{lm}{\Rightarrow} 00A1B \underset{lm}{\Rightarrow} 000A1B \underset{lm}{\Rightarrow} 0001B \underset{lm}{\Rightarrow} 00011B \underset{lm}{\Rightarrow} 00011$

$S \underset{rm}{\Rightarrow} A1B \underset{rm}{\Rightarrow} A10B \underset{rm}{\Rightarrow} A11 \underset{rm}{\Rightarrow} 0A11 \underset{rm}{\Rightarrow} 00A11 \underset{rm}{\Rightarrow} 000A11 \underset{rm}{\Rightarrow} 00011$

5.1.5

~~B → 0 | 1 | e | B* | (B)~~

~~S → 0 | 1 | SS | S* | (S) | S+e | e+S | A~~

A → φ　　S → A | B | C

A → 0 | 1 | ~~AA | A* | (A)~~

B → φ

C →

$$S \to A \mid A+A \mid AA \mid A^* \mid (A)$$

$$A \to 0 \mid 1 \mid \phi \mid \varepsilon$$

5.1.6 (b) 证明：若推导 B ⇒ r 为一步，即 B ⇒ r，

则 α ⇒ r 成立（⇒的定义）

~~若为~~ 若已知 α ⇒ B′，B′ ⇒ r，B ⇒ r 为n步，则 α ⇒ r 成立

设 B ⇒ r 第一步为 B ⇒ X，

则：A ⇒ B，B ⇒ X，A ⇒ X

且有 X ⇒ r（n步）

则有 A ⇒ r，得证

则：对于n+1步：

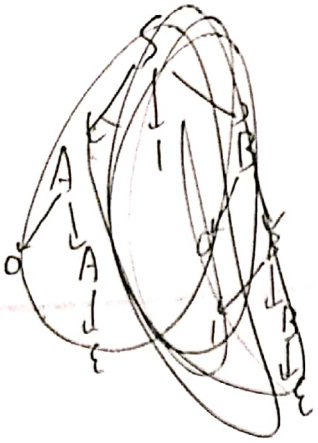
设 B ⇒ r 第一步为 B ⇒ $X_1X_2 \cdots X_n$

则有 α ⇒ $X_1X_2 \cdots X_m$

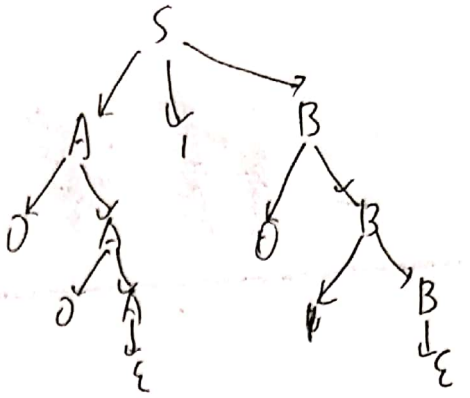
$X_1 \Rightarrow r_1$，$X_2 \Rightarrow r_2 \cdots X_m \Rightarrow r_m$，其中 $r = r_1r_2 \cdots r_m$

则有 α ⇒ $X_1X_2 \cdots X_m$

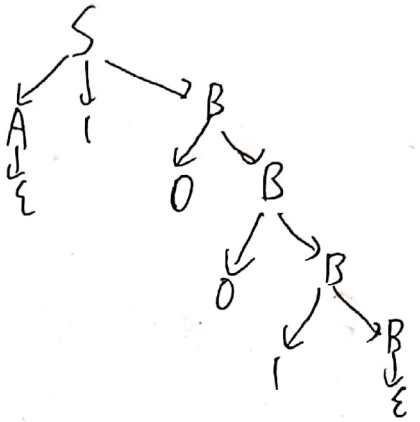
5.2.1



(a)



(b)



(c)