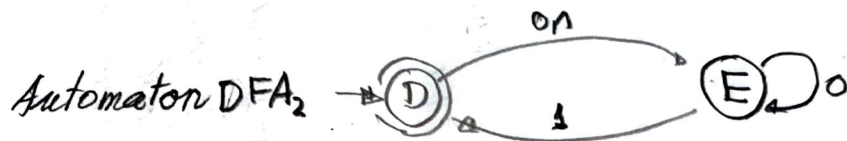


14

(I)



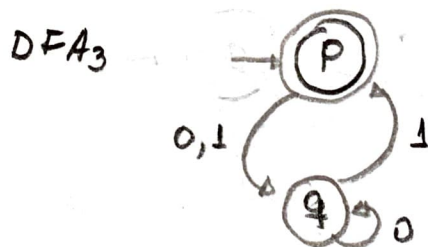
Direct sum $\Sigma = \{0,1\}$ $Q = \{A, B, C, D, E\}$ $q_0 = A$
 $F = \{A, C, D\}$

I leave it for you
to prove

$\rightarrow AED \Rightarrow$ DFA₁ E DFA₂

A and D are in the same class in
Q/E of DFA₁ + DFA₂

(II)



DFA₂ and DFA₃
 are isomorphic
 $L(DFA_2) = L(DFA_3)$

15

$$Q/E = \left\{ \underbrace{\{p, q\}}_{C_1} \underbrace{\{r, s\}}_{C_2} \right\}$$

\downarrow initial
 C_1 C_2

$$\Sigma = \{0, 1\} \quad F = \{p, r\}$$

$$f(p, 0) = q$$

$$f(p, 1) = r$$

$$f(r, 0) = r$$

$$f(r, 1) = p$$

$$\vdots$$

$$f'(C_1, 0) = f(p, 0) = q \in C_1$$

$$f'(C_1, 0) = C_1$$

$$f'(C_1, 1) = f(p, 1) = r \in C_2$$

$$f'(C_1, 1) = C_2$$

