1. Briefly describe the definition of structural pattern recognition.

2. **[Optional]** Suppose there is a non-deterministic finite automaton $A=(Q,\sum_I,\delta,q_0,F)$,

where Q = $\{q_0, q_1, q_2\}$, Σ_I = $\{0, 1\}$, F=$\{q_2\}$, and δ:

（1）$\delta(q_0,0)=\{q_0,q_1\}$ （2）$\delta(q_0,1)=\{q_1,q_2\}$

（3）$\delta(q_1,0)=\{q_1\}$ （4）$\delta(q_1,1)=\{q_2\}$

（5）$\delta(q_2,0)=\{q_2\}$ （6）$\delta(q_2,1)=\{q_2\}$

(1) Please give the state transition table and state transition diagram.

(2) Design the corresponding deterministic finite automaton and give its state transition diagram.

3. Summarize the procedures of CYK algorithm briefly.