

BRAC UNIVERSITY
CSE331 : Automata and Computability
Summer 2025

Duration: 30 minutes

Quiz 2

Total: 20 marks

Name:

ID:

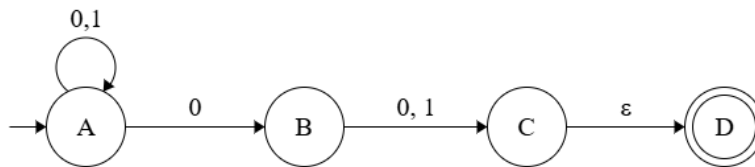
0.5 Points

Section:

0.5 Points

NFA→DFA

1. Consider the following NFA:



A. If you convert the given NFA into an equivalent DFA using the subset construction method, what is the maximum number of rejecting states the DFA can have? (1 Mark)

Answer: 8

B. Write the ϵ -closure of state C in the given NFA. (1 Mark)

Answer: {C, D}

C. What is $\delta(\{A, B\}, 1)$ in the given NFA? (1 Mark)

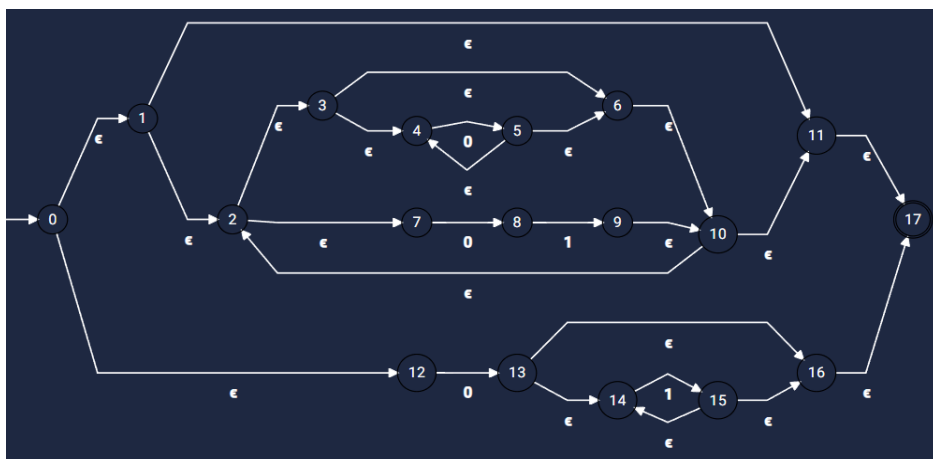
Answer: {A, C}

RE→NFA

2. Convert the following RE into an equivalent NFA using the Thompson's construction: (7 Marks)

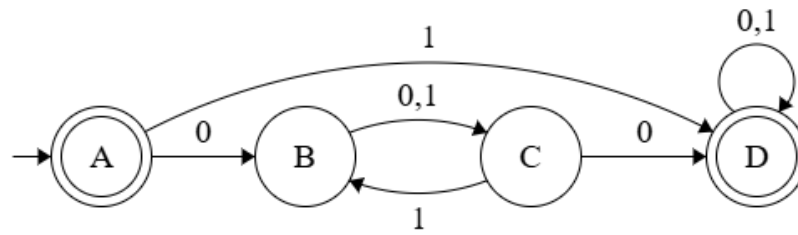
$(0^* \cup 01)^* \cup 01^*$

Solution:



FA→RE

3. Convert the following DFA into an equivalent RE using the state elimination method(Eliminate the states in the following order: D, C, B, A): (10 Marks)



Solution: $1\Sigma^* \mid 0(\Sigma 1)^*\Sigma 0\Sigma^* \mid \varepsilon$