Midterm 1 Results for Nicholas Khang Tran

⚠ Correct answers are hidden.

Score for this attempt: **40** out of 40
Submitted Oct 1 at 6:23pm
This attempt took 9 minutes.

Question 1	1 / 1 pts

An intermediate result that we show to prove a larger result is known as:

○ Proof

○ Theorem

○ corollary

◉ lemma

Question 2	1 / 1 pts

When a language is NOT regular?

○ All languages are regular

○ if we are able to construct a DFA or NFA or epsilon-NFA or regular expression

◉ If we can show that no FA can be built for a language

○ If it is accepted by TM

Question 3	1 / 1 pts

The machine that can exist in multiple state at any given time is known as:

○ Turing Machine

○ Chomsky hierarchy

○ DFA

◉ NFA

Question 4	1 / 1 pts

Regular Languages are NOT closed under union operation.

○ True

⦿ False

Question 5   1 / 1 pts

L = { w | w is a binary string which does not contain two consecutive 0s or two consecutive 1s anywhere}. What is the regular expression for this language?

⦿ (01)* + (10)* + 0(10)* + 1(01)*

○ (01)* + (10)* + 0(10)*

○ (10)* + 0(10)* + 1(01)*

○ (01)* + 10(10)* + 1(01)*

Question 6   1 / 1 pts

A language L= Ø if and only if the reachability test fails.

⦿ True

○ False

Question 7   1 / 1 pts

If $y \geq 4, then\ 2^y \geq y^2$ is an example of what type of proof:

⦿ deductive

○ Definitive

○ Decisive

○ Dumb

Question 8   1 / 1 pts

String 00110100 will be accepted by a DFA that accepts?

○ 1100 as substring

⦿ 1010 as substring

○ Only 1s

○ Only 0s

Question 9   1 / 1 pts

How to minimize a DFA?

○ Identify reachable states.

○ Identify empty states

○ Not possible

● Remove unreachable states and Identify & condense equivalent states into one

Question 10   1 / 1 pts

If we are able to construct one of the following: DFA or NFA or ε-NFA or regular expression then the language is called:

○ Not regular

● regular

○ complex

○ simple

Question 11   1 / 1 pts

An NFA is defined by 5-tuple:

● true

○ false

Question 12   1 / 1 pts

True or False: (RS + R)* RS = (RR*S)*

○ True

● False

Question 13   1 / 1 pts

Probabilistic models could be viewed as extensions of which state machines?

○ DFA

○ PDA

○ TM

◉ NFA

Question 14   1 / 1 pts

Transitions into a dead state are implicit for a NFA.

◉ true

○ false

Question 15   1 / 1 pts

An NFA accepts w if there exists at least one path from the start state to an accepting (or final) state that is labeled by w:

◉ true

○ false

Question 16   1 / 1 pts

A DFA that accepts any string that ends with 10 will accept which of these strings?

○ 11000011

○ 1010101

○ 11111000

◉ 00000010

Question 17   1 / 1 pts

A transition from one state to another state without consuming any additional input symbol is known as:

○ $-transitions

○ alpha-transitions

○ delta-transitions

◉ epsilon-transitions

Question 18   1 / 1 pts

A technique that is used to show a given language is not regular is known as.

○ Dilemma

○ DFA

◉ Pumping Lemma

○ Regular expression

Question 19   1 / 1 pts

Unix environments heavily use regular expressions.

◉ True

○ False

Question 20   1 / 1 pts

How to decide if a string w in language L is accepted by a DFA?

○ If the DFA hangs tight

◉ If the DFA ends in an accepting state

○ If the DFA ends in a start state

○ If the DFA goes to sleep

Question 21   1 / 1 pts

A property that confirms If a set of regular languages are combined using an operator, then the resulting language is also regular is called:

○ Open property

◉ Closure property

○ Clean property

○ Clear property

Question 22   1 / 1 pts

A language is a collection of sentences of finite length all constructed from a finite alphabet of symbols:

◉ True

○ False

Question 23   1 / 1 pts

A DFA is defined by 3-tuple:

○ True

◉ false

Question 24   1 / 1 pts

What is the regular expression for a DFA that accepts 01 as a substring?

◉ 1*00*1(0+1)*

○ 1*(10)*0*

○ 1*10*

○ 1*100*(0)*

Question 25   1 / 1 pts

The machine that can exist in only one state at any given time is known as:

○ Turing Machine

○ Chomsky hierarchy

◉ DFA

○ NFA

Question 26   1 / 1 pts

Empty string is represented by:

○ Σ (sigma)

○ δ(delta)

◉ ε (epsilon)

○ α (alpha)

Question 27   1 / 1 pts

A transition from one state to another state without consuming any additional input symbol is known as:

○ Null transition

◉ Epsilon transition

○ New transition

○ Last resort

Question 28   1 / 1 pts

When a language is regular?

○ All languages are regular

◉ if we are able to construct a DFA or NFA or epsilon-NFA or regular expression

○ If it is accepted by the program

○ If it is accepted by TM

Question 29   1 / 1 pts

For every DFA A there exists a regular expression R such that L(R)=L(A).

○ ● True

○ False

Question 30   1 / 1 pts

Study of abstract computing devices or machines is known as:

○ Computing

○ Formal theory

● Automata theory

○ Machine learning

Question 31   1 / 1 pts

Explicit epsilon-transitions between different states introduce non-determinism:

● true

○ False

Question 32   1 / 1 pts

An alphabet is not a finite set of symbols:

○ True

● False

Question 33   1 / 1 pts

A containment hierarchy of classes of formal languages is known as:

○ Turing Machine

● Chomsky hierarchy

○ DFA

○ NFA

Question 34   **1 / 1 pts**

If we introduce ε then the regular expression (01)* + (10)* + 0(10)* + 1(01)* can be simplified to (ε +1)(01)*(ε + 0).

◉ true

○ false

Question 35   **1 / 1 pts**

Regular languages are regular under reunion.

○ True

◉ False

Question 36   **1 / 1 pts**

A DFA that accepts only even number of 1s and 0s will accept which of these strings?

◉ 11000011

○ 1010101

○ 11111000

○ 00000100

Question 37   **1 / 1 pts**

We use the symbol Σ(sigma) to denote an alphabet:

◉ True

○ False

Question 38   **1 / 1 pts**

ε-closure of a state q, ECLOSE(q), is the set of all states (including itself) that can be reached from q by repeatedly making an arbitrary number of ε-transitions.

○ true

○ false

Question 39   1 / 1 pts

A language L is accepted by some e-NFA if and only if L is accepted by some DFA.

○ true

○ false

Question 40   1 / 1 pts

What is Pigeon Hole Principle?

○ at least one hole must contain more than one pigeon

○ Pigeons don't live in holes

○ Each hole has exactly one pigeon

○ Pigeons love holes

Quiz Score: **40** out of 40