Sheet 1

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first

Q.1 The set A = { x, x ∈ N, and $x^2 - 3x + 2 = 0$ } is
Finite set

Q2 The set A = { x, x ∈ R, and $x^2 = 9$, 2x = 4 } is
Empty set

3- Let A = { x : x is a letter in the word follow }, B = { y : y is a letter in the word wolf } A = B

4- if $A \cap B^c = \emptyset$ A is proper subset of B

5- $A^c - B^c$ is equal to A - B

6- if $A = \emptyset$ then total number of element in P(A) are one

7- let A be a finite set of size n, the number of elements in the power set of AXA is ~~2^{2n}~~ 2^{n^2}

8- If A = {x, y}, the power set of A is None of these

9- If A & B are sets and $A \cap B = A \cup B$, then A = B

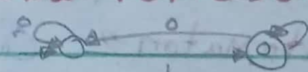
10- for a set A, the power set of A is denoted by 2^A, If A = {5, {6}, {7}} which of the following option are true {5, {6}} ∈ $2^{A \times A}$ or P(A)

Sheet2 & sheet3 choose مفيش

first

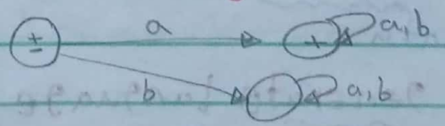
Sheet 4 اللي مش محلول

1- Which of the regular expressions given below represent the following DFA? $(0+1)^* 1$



2- If E = {aa, bb}, then E^* will not contain aaabbb

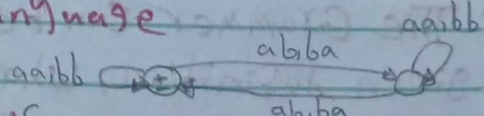
3- If Σ = {a, b}, then the following DFA can be represented by which RE



$a(a+b)^*$

4- one language can have ---- TG's More than one

5- the following TG represent, which language
EVEN-EVEN



6- If L is a regular language then, L^c is also a language
Regular

7- Which of the following pairs of regular expressions are equivalent? ~~نوعا ما~~ not مش نفس
$x(xx)^*$ and $(x)^* x$ ~~$(ab)^*$ and $a^* b^*$~~

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8- ______ is always Deterministic finite Automation

9- look السؤال in sheet ______ (a) is FA , (b) is NFA

first ملاحظ اللي Sheet 4

1- Which of the following x is accepted by given DFA (x is a binary string $\Sigma = \{0,1\}$)? divisible by 3 and 2 or by 6

2- Given: $L_1 = \{x \in \Sigma^* \mid x$ contains even no's of 0's$\}$

$L_2 = \{x \in \Sigma^* \mid x$ contains odd no's of 1's$\}$

No of final states in language $L1 \cup L2$? (c) 3 لو n 1 هتبقى

3- The maximum number of transition which can be performed over a state in a DFA? $\Sigma = \{a,b,c\}$ (c) 3

4- The maximum sum of in degree and out degree over a state in a DFA can be determined as: $\Sigma = \{a,b,c,d\}$

depends on the language

5- The sum of minimum and maximum number of final states for a DFA n states is equal to: $n+1$

6- under which of the following operation, NFA is not closed?

None of the mentioned union - Intersection - Concatenation

Kleene - Negation

7- Which of the following is an application of finite Automaton? Compiler Design - Grammar Parsers - Text Search

first Sheet 5

1- The entity which accepts Language is termed as:

Automata

2- The entity which generate language is termed as:

Grammar

3- The Grammer can be defined as: $G = (V, \Sigma, P, S)$ in the given definition, what does S represents? Starting Variable

4- There exists no finite automaton to accept the language? L is a set of $a^n b^n$

5- It could be proved by the pumping lemma that the language is not regular? L is a set of $0^n 1^n$

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6- Which among the following can't be accepted by a regular grammar? L is a set of 0^n1^n

7- Which of the expression is appropriate? for production P: a -> b where a ∈ V and b ∈ .... $(V+\Sigma)^*$

8- for S -> 0S1 | e for $\Sigma = \{0,1\}^*$, which of the following is wrong for the language produced None of the mentioned

9- The minimum number of productions required to produce a language consisting of palindrome string over $\Sigma = \{a,b\}$ is (5)

10- Which of the following statement is correct? All Regular grammar are context free but not vice versa.

11- Are ambiguous grammar context free? True

12- Every grammar in Chomsky Normal form is: context free

13- Which of the production rule can be accepted by Chomsky grammar? A->BC, A->a, S->e All of the mentioned

14- Given grammar G: (1) S->AS (2) S->AAS (3) A->SA (4) A->aa Which of the following productions denies the format of chomsky normal form? 2,4

15- Which of the following grammars are in chomsky normal form: S->AB|BC|CD, A->0, B->1, C->2, D->3

16- With reference to the process of conversion of a context free grammer to CNF, the number of variables to be introduced for the terminals are: S->ABa A->aab B->AC (3)

17- In which of the following does the CNF Conversion find its use? CYK Algorithm - Bottom up parsing Preprocessing step in some algorithms - All of the mentioned

18- let G be a grammar: S->AB|e, A->a, B->b is the given grammar in CNF? True

19- let G be a grammar: S->AB|SA|e, A->a, B->b is the given grammar in CNF? false

in Exams

1- Which of the following fields is in the scope of the theory of Computation?
Computational complexity - Automata - formal language

2- The set of states Q at the DFA machine is Finite set

3- Which of the following developments is irrelevant to advance of the theory of Computation? ~~Grammar~~ Robot

4- Usually, the set of final states F at the NFA is
Empty set - Singleton set - Infinite set - None of these

5- A CFG is ambiguous if there is a string with at least two left most derivations or derivation حسب الاختيارات

6- Among the reasons to Apply CNF is ... algorithm efficient or proof

7- one of the computer Courses that are close to the theory of Computation is Natural language Processing - switching circuit theory
~~Neural Networks~~ - Artificial intelligence - Programming language
syntactic pattern recognition - Algorithm analysis - Compiling theory

8- under which of the following operation, DFA is not closed?
Difference - Power set نفس رقم ٦ و ٤ في sheet DFA - NFA نفس الاختيارات

9- Is DFA simulate NDFA? True

10- which behavior of a NFA can be stimulated by DFA?
Always

11- A regular language over an alphabet a is one that can be obtained from All of the mentioned
union - Concatenation - Kleene

12- Regular expression ϕ^* is equivalent to
ϵ

13- What is the relation between NFA - accepted language and DFA accepted language? (=)

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14- Regular expression {0,1} is equivalent to All of the mentioned
o U 1 - o/1 - o+1

15- The Concatenation ∈L is equivalent to
L∈

16- Consider following regular expression
i) (a/b)* ii) (a*/b*)* iii) ((∈/a)b*)*

17- RE is used to ... the language
Generate

18- find the wrong statement
DFA → RE - RE → DFA - there is no NDFA → RE - Non of them

19- a? is equivalent to a+∈

20- (a+b)* is equivalent to (a*b*)*

21- Precedence of regular expression in decreasing order
is *, ., +

22- ∅L is equivalent to L∅∅

Mostafa Abdelnaser