



Mansoura University
Faculty of Engineering
Electronics and Communications Dept.

First Term
Date: 15-January- 2014
Time: 2 Hours
Full mark: (70)

Exam. Of (Humanity 3)
For 3rd year Grade Electronics and Communications Dept. Students

Answer ALL the following Questions:

1. a. Compare between compiler and interpreter.
1. b. DFA may take more memory space than NFA. Explain
2. a. Write regular expressions for the following:
 - (1) Keywords
 - (2) Variable names.
 - (3) Float numbers
- 2 .b. Extend the description of real numbers to include numbers in scientific notation:

-2.3E+17

3. a. Draw the NFA diagram for the following regular expressions:
 - (1) $(a/b)^*abb$
 - (2) $aa^*/bb?$
 - (3) $(a^+/c^+)b^+$
3. b Given the regular expression $a^*(a/b)aa$,Construct the equivalent NFA then convert it to DFA.
- 4.a. Minimize the DFA derived in 3.b.

b. Consider the following grammar:

$S \rightarrow (A)$ $A \rightarrow CB$

$B \rightarrow a/$ $C \rightarrow a/S$

Give the left most derivation for the sentence (a;a)

5.a Remove the left recursion from the following grammar G:

$S \rightarrow Sa/Bl$

$L \rightarrow ScL/Sd/a$

5.b. Using: $S \rightarrow E+S/E$, $E \rightarrow \text{number}/(S)/-S$

Do the right most derivation of: $1+ (2+ -(3+4)) + 5$

Good Luck
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