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MCA

(SEM IV) THEORY EXAMINATION 2017-18

COMPILER DESIGN

Time: 3 Hours ***Total Marks: 70***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a. What are the two parts of a compilation? Explain briefly.

b. Define symbol table.

c. List the phases that constitute the front end of a compiler.

d. Differentiate tokens, patterns, lexeme.

e. List the various error recovery strategies for a lexical analysis.

f. Briefly explain the concept of derivation.

g. Mention the types of LR parser.

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a. What is translator? Differentiate between compilation and interpretation.

b. Define DFA. Write an algorithm to convert NFA to DFA.

c. Check whether the following grammar is LL(1) grammar or not
S-> iEtSS' / a
S-> eS / ε
E-> b

d. Make left and right derivation using top down parsing to drive a statement :
W= id + (id) + id * id using following grammar :
E-> E + E
E-> E*E
E-> (E)
E-> id
Check whether the grammar is ambiguous for above statement.

e. Explain the working and algorithm of LR parsers.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a) What is syntax directed translation schemes? Explain how they are used to make syntax trees.

(b) Create 3 address code for the following expression
a + a* (b – c) * d

4. Attempt any *one* part of the following: 7 x 1 = 7

(a) Define boot-strapping with the help of an example.

(b) What do you mean by operator precedence grammar? Compute the operator

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precedence table for the given grammar.
E-> E+T / T
T-> T * F / F
F-> (E) / id

5. Attempt any *one* part of the following: 7 x 1 = 7

(a) Describe syntax directed translation. Write the syntax directed translation for simple desk calculator and give annotated parse tree for the expression (7-2)*(8-1)

(b) Explain any two syntax-directed translation schemes.

6. Attempt any *one* part of the following: 7 x 1 = 7

(a) What are different issues in code optimization? Explain it with proper example.

(b) With the help of diagram explain the various phases of compiler and explain its functioning.

7. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain the problems associated with top down parsing.

(b) Write short notes on :
(i) Panic modes
(ii) Peep hole optimization

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