Avinashilingam Institute for Home Science and Higher Education for Women
Comibatore-641 043
Master's Degree Examination –November 2017
I Semester

Class: I PG **Max. Marks: 60**
Major: Computer Science **Time: 3 Hours**

17MCSC02 Principles of Compiler Design

PART – A **(10 * 0.5 = 5 marks)**

Choose the correct answer:

1) The term _____ denotes any finite set of symbols.
A) strings B) languages C) alphabet D) digits

2) A _____also called a rewriting rule of the grammar.
A) production B) reduction C) noun D) phrase

3) _____ is the process of determining whether a string of tokens can be generated by a grammar.
A) Parsing B) Compiling C) Analyzing D) Translating

4) _____ parsing attempts to construct a parse tree for an input string from the leaves to the root.
A) Top down B) Target program C) Bottom up D) Source program

5) An efficient non-backtracking form of top-down parser is called _____ .
A) unpredective parser B) predictive parser C) ambiguous parser D) sematic parser

6) A grammar for which we can construct a parsing table in which every entry is uniquely defined is said to be an _____ grammar.
A) Ambiguous B) LR C) Context-free D) Regular

7) Misspelling an identifier is an example for _____ error.
A) lexical B) syntactic C) semantic D) logical

8) Memory allocation is dealt with_____.
A) pointer B) code generation C) back end D) symbol table

9) The important step in local optimization is transforming basic block to_____ .
A) leader B) flow graph C) DAG D) IR

10) The input of the code generator is _____ .
A) parse tree B) intermediate code C) flow graph D) algorithm

PART – B (5 *4 =20)

Answer All Questions

Each answer should not exceed 200 words or one page

11) a) Describe the lexical and syntactic structure of a language.

(Or)

b) What is a regular expression? State the rules, which define regular expression?

12) a) Write down the functions of lexical analyzer.

(Or)

b) Consider the following grammar for list structures:

S→a | ^| (T)

T→ T,S | S

In the above grammar, find leftmost and rightmost derivation for

i) (a, (a,a)) ii) (((a,a), ^, (a)),a)

13) a) Explain about the recursive descent parser.

(Or)

b) Why SLR and LALR are more economical to construct than canonical LR?

14) a) Define: Symbol table. What are the capabilities of a symbol table?

(Or)

b) What are the Error-recovery actions in a lexical analyzer?

15) a) What are the problems in code generation? Explain.

(Or)

b) Define: DAG. Give an example.

PART – C (5 *7 =35)

Answer all the Questions

Each answer should not exceed 600 words or three pages

16) a) State various phases of a compiler and explain them in detail.

(Or)

b) What is a Context-free Grammar? Explain the construction of grammars with an example.

17) a) Write an algorithm to constructing a NFA from a regular expression and give an example.

(Or)

b) What is a shift-reduce parser? Explain in detail the conflicts that may occur during shift-reduce parsing.

18) a) Construct the predictive parser for the following grammar:

S → a | ↑| (T)

T → T, S | S

Write down the necessary algorithms and define FIRST and FOLLOW.

Show the behavior of the parser in the sentence: (a, (a, a))

(Or)

b) Write an algorithm for construction of an SLR parsing table with examples.

19) a) Explain about the plan of an error detection/corrector.

(Or)

b) Explain the data structure used for implementing Symbol Table.

20) a) Write an algorithm for code generation and explain it.

(Or)

b) What are the advantages and disadvantages of register allocation and assignments? Explain.

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