Subject - Compiler Design

Paper – CCMCA303

Group- A

1. A bottom-up parser generates

(A) Left-most derivation in reverse

(B) Left-most derivation

(C) Right-most derivation in reverse

(D) Right –most derivation

2. Which of the following parsers is the most powerful?

(A) SLR

(B) LALR

(C) Canonical LR

(D) Operator-precedence

3. Which of the following is used for grouping of characters into tokens?

(A) Scanner

(B) Code generator

(C) Code optimizer

(D) Parser

4. Type checking is normally done during

(A) Code optimization

(B) Syntax directed translation

(C) Lexical analysis

(D) Syntax analysis

5. _____ is considered as a sequence of characters in a token.

(A) Pattern

(B) Texeme

(C) Lexeme

(D) Mexeme

6. LR stands for

(A) Left to right

(B) Left to right reduction

(C) Right to left

(D) Left to right and right most derivation in reverse.

7. Compiler should report the presence of _____ in the source program, in translation process.

(A) Text

(B) Errors

(C) Classes

(D) Objects

8. Does the compiler program translate the whole source code in one step?

(A)   No

(B)   Depends on the Compiler

(C)   Yes

(D)   Don't Know

9. Finite automata requires minimum _____ number of stacks.

(A) 1

(B) 0

(C) 2

(D) None of the mentioned

10. Regular expression for all strings starts with ab and ends with bba is.

(A) aba*b*bba

(B) ab(ab)*bba

(C)ab(a+b)*bba

(D) All of the mentioned

11. What is the relation between DFA and NFA on the basis of computational power?

(A) DFA > NFA

(B) NFA > DFA

(C) Equal

(D) Can't be said

12. A grammar with more than one derivation tree is called:

(A) Unambiguous

(B) Ambiguous

(C) Regular

(D) None of the mentioned

13. Which among the following is not a part of the Context free grammar tuple?

(A) End symbol

(B) Start symbol

(C) Variable

(D) Production

14. S -> (S)| a
Let the number of states in SLR(1), LR(1) and LALR(1) parsers for the grammar n1 n2 and n3 respectively.

(A) n1 < n2 < n3

(B) n1 = n3 < n2

(C) n1 = n2 = n3

(D) n1 > n3 > n2

15. The grammar A ->AA |(A)| ε is not suitable for predictive-parsing because the grammar is _____
(A) Ambiguous
(B) Left-recursive
(C) Right-recursive
(D) An operator-grammar

Group-B

Direction: Answer any Four   **4*5=20**

1.   What is a Compiler? Explain different phases of a compilation process.
2.   Differentiate between compiler and interpreter.
3.   Write algorithm for FIRST and FOLLOW. Explain with the help of an example.
4.   What is a DFA? Construct a DFA over Σ = {a , b} which accepts
        a) All strings having even number of a's and even number of b's.
        b) All strings ending with abb.
5.   What is Regular Expression? Write regular expression for identifier and also draw its transition diagram.
6.   What is Symbol table? Explain different data structures used for implementing Symbol table. .
7.   Explain attribute and attribute grammar.
8.   Explain general LR parsing algorithm with the help of suitable example
9.   What do you mean by scope and lifetime of variables?
10.   Write short notes on (Any two)
        a) Error recovery
        b) Type checking
        c) Ambiguity

Group- C

1. What is parameter passing? Explain different mechanism of parameter passing.

2. Check whether the following Grammar is LL(1) or not by constructing predictive parsing   table :

    E --> TE'

    E' --> +TE' | ε

    T --> FT'

    T' --> *FT' | ε

    F --> id | (E)

3. What do you understand by run-time environment? Explain different storage allocation techniques.

4. What do you mean by intermediate code representation? Explain different ways to represent intermediate code.

5. Given the Grammar :

    exp → exp addop term | term
    addop → + | -
    term → term mulop factor |factor
    mulop → *
    factor → (exp) |number
    number → 1|2|3|4|5|6|7|8|9

    Write down the rightmost derivations, parse tree and abstract syntax tree for the following expressions:
    a) 3 + 4 * 5 - 6

    b) 3* (4 – 5 + 6)