2012

Time: 3 hours

Full Marks: 80

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer from both the Groups as directed.

Group – A

(Objective Type Questions)

1. Choose the correct answer of the following:

   \[2 \times 10 = 20\]

(a) Compiler is divided into mainly two parts:

(i) Semantic analyzer and Syntax analyzer

(ii) Symbol table and Lexical analyzer

(iii) Analysis analyzer and Semantic analyzer

(iv) None of the above

CX – 18/4  

(Turn over)
(b) The regular _______ expression is used in syntax analysis.
   (i) Pattern
   (ii) Expression
   (iii) Value
   (iv) Function

(c) _______ is a data structure which is used by compiler to keep track of scope and binding information about names.
   (i) Source program
   (ii) Symbol structure
   (iii) Symbol table
   (iv) None of the above

(d) LEX and YACC is a tool used for automatically generating _______.
    (i) Lexical analyzer
    (ii) Semantic analyzer
    (iii) Syntactic analyzer
    (iv) Symbol table

(e) Syntax analyzer uses _______ tree to check the expression.
    (i) Context
(ii) Parser
(iii) Stack
(iv) Parse

(f) Code generation and code ______ is the last phase of Compiler Design.
(i) Analysis
(ii) Optimization
(iii) Implementation
(iv) None of the above

(g) Parsing techniques are top down and ______.
   (i) Bottom down
   (ii) Bottom up
   (iii) Top bottom
   (iv) None of the above

(h) The portion of one or more phases are combined into a module is known as ______.
   (i) Pass
   (ii) Semantic

CX - 18/4     (3)     (Turn over)
(iii) Phase
(iv) None of the above

(i) Regular expression are closed under

(i) Union
(ii) Concatenation
(iii) Kleene star
(iv) All of the above

(j) Finite automata has following attributes:
   (i) Non empty set of state
   (ii) Initial state
   (iii) Both (i) and (ii)
   (iv) Only (i)

Group – B
(Long-answer Type Questions)

Answer any four questions: \[15 \times 4 = 60\]

2. Explain the different phases of Compiler with example.

3. What is the role of symbol table in compiler

\[CX = 18/4 \quad (4) \quad \text{Contd.}\]
design? Design a simple structure of symbol table.

4. Construct context free grammar for:
   (a) If then and if then else statement
   (b) For language that accept palindrome words over alphabet (a & b)

5. Generate a parse tree for expression a + b*c based on grammar for arithmetic expression.

6. Discuss the relevance of regular expression into Lexical analyzer.

7. Construct regular expression for an unsigned number defined in C language.

8. Construct an automaton system (DFA) for the following regular expression:

   \[(a + b)^* (ab + ba)\]

9. Explain top down and bottom up parsing technique with example.

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CX - 18/4 (400) (5) BCA(III) / 22A / 12