10550

MCA/D-15

SYSTEM PROGRAMMING AND COMPILER CONSTRUCTIONS

PAPER-MCA-504

Time Allowed: 3 Hours Maximum Marks: 80

Note: Attempt Five questions in all, selecting at least one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) What do you mean by Parsing?
   (b) What is Program relocation?
   (c) Differentiate Assembler and Compiler?
   (d) What is Ambiguity in parsing?
   (e) What are the properties of Context free Grammar?
   (f) What is Code optimization?
   (g) Differentiate DFA and NFA.
   (h) Differentiate left and right Derivations tree.

UNIT=I

2. Describe the following :

   (a) Macroprocessing within Language translators.
   (b) General purpose macroprocessor.
3. What are Assemblers? How assembler works? Describe one pass and multi-pass assembler.

UNIT-II

4. What is Compiler? Describe phases of compiler.
5. Construct the minimum state DFA's for the following regular expressions : (a | b) * a (a | b).

UNIT-III

6. (a) Construct recursive-descent parsers, starting with the following grammars :
   (i) S - > + SS | - SS | a
   (ii) S - > S (S) S | ∑
   (iii) S - > 0SI | 01.

(b) Explain Operator precedence passing in brief.

7. (a) Construct the

(i) Canonical LR and

(ii) LALR

Sets of items for the grammar

S- SS + | | SS* | a

(b) Show that the following grammar :

S- Aa | bAc | dc | bda

A -> d

is LALR (1) but not SLR (1).

UNIT-IV

8. (a) A complete flow graph on n nodes has arcs i---+j between any two nodes i and j (in both directions). For what values of n is this graph reducible?

(b) Discuss the issues in designing a Code generator.

9. How to generate Intermediate code for declarative statement and assignment statement?