Roll No.…… **10413**

MCA / D-13

SYSTEM PROGRAMMING AND COMPILER CONSTRUCTION

Paper.-MCA-504

Time allowed: 3 hours] [Maximum marks: 80

Note: Attempt five questions in all. Question number 1 is compulsory. Attempt four more questions selecting one question from each unit.

1. (i) What is handle? Explain with the help of example. 3
   (ii) What is a regular expression? 3
   (iii) What is the use of intermediate code in two-pass assembler? 3
   (iv) What is symbol table? 3
   (v) What is bootstrap compiler? 3
   (vi) What is inherent ambiguity? 3
   (vii) What is context free grammar? 3
   (viii)What do you understand by formal language and formal grammar? 3

Unit—I

2. (a) What is. the difference between absolute loader and compile and go loader ? Explain 7

   (b) What is an overlay structure? What is its use? Discuss. 7

3. (a) What do you understand by one-pass assembler and two-pass assembler ? Discuss their merits and demerits. 7

   (b) In what features of macro there is the need of stack and recursion? Discuss. 7

Unit—II

4. (a) Design grammars for the language that contain the set of all strings of Os and is with an equal number of 0s and is. 7

   (b) Compute FIRST and FOLLOW for the following grammar:
   E > E+t I T,T > T*F I F,F > (E) I id 7
5. (a) What are attribute grammars ? Explain Inherited and Synthesized Attributes with example. 7
   (b) What are the different phases in compilation? Discuss in brief. 7

Unit—III

Consider the given grammar :

A—> Ba, B—>dab | Cb,C—>cB | Ac.

Does this grammar satisfy the LL (1) condition If not change the grammar to make it LL (1) without changing the language. 14

7. What is LALR parser? Construct the LALR parser for the following grammar:

E—>E+E,E—)E*E,E——>(E),E—)id 14

Unit—IV

8. Differentiate between local and global code optimization. Also explain the following code optimizing transformations using suitable examples :

(a) Strength reduction,

(b) Frequency reduction,

(c) Dead code elimination. 14

9. Translate the following assignment statement into:

(a) Syntax Tree

(b) Quadruples

(c) Triples

(cl) Indirect Triples

a=b[i] +c[j],a [i]=b*c-b*d, X=*p+&y, X=f(y+1)+2 14