(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1450 Roll No. | | | | | | | | | | |

M.C.A.

(SEM. IV) THEORY EXAMINATION 2010-11

COMPILER DESIGN

Time : 3 Hours *Total Marks : 100*

Note :— Attempt **ALL** questions.

1. Attempt any **four** of the following : **(5×4=20)**
   (a) Discuss the merit and demerit of single pass and multi pass compiler.
   (b) Describe the functionality of each phase of compiler with appropriate diagram.
   (c) Differentiate between the following :
      (1) Compiler and Interpreter
      (2) Preprocessor and Micro.
   (d) What is Bootstrapping ? Explain with appropriate example.
   (e) What is Translator ? Classified the translator.

2. Attempt any **four** of the following : **(5×4=20)**
   (a) What is Parsing ? Explain its types.
   (b) Consider the following grammar :

$$S \rightarrow S = R$$
$$S \rightarrow R$$
$$L \rightarrow * R$$
$$L \rightarrow id$$
$$R \rightarrow L$$

   Write the algorithm for FOLLOW. And find the FIRST and FOLLOW for the given grammar.

(c) Explain the following in brief :

(1) YACC

(2) Parse Tree.

(d) Consider the following grammar :

$E \rightarrow E + E$

$E \rightarrow E * E$

$E \rightarrow (E)$

$E \rightarrow id$

Using the above grammar for input string id1 + id2 * id3 show the stack implementation for Shift Reduce Parsing.

(e) What is Operator Precedence Parsing ?

$E \rightarrow EAE/(E)/-E/id$

$A \rightarrow + | - | * | / | \uparrow$

Is the above grammar is Operator Precedence Grammar ? If yes then why if not convert into the Operator Precedence Grammar ?

3. Attempt any **four** of the following : **(5×4=20)**

(a) Give the Quadruple representation for the given statements :

(1) $A := -B*(C + D)$

(2) $-(a + b) * (c + d) - (a + b + c)$

(b) Explain the following in brief :

(1) Control Flow

(2) Procedure Calls

(c) What is Syntax Directed Translation Scheme ? Explain in brief.

(d) What is Three address code ? Explain in brief.

(e) For the following statements :

(1) A[I] : B

(2) A : B[I]

Give the triple representation.

4. Attempt any **two** of the following : **(10×2=20)**

(a) Explain any **two** of the following in detail :

(1) Lexical phase errors

(2) Syntactic phase errors

(3) Semantic phase errors.

(b) What is Symbol Table ? Explain in detail. Explain the use of symbol table.

(c) What is the use of Run time storage administrator ? What is the difference between static and dynamic allocation ?

5. Attempt any **two** of the following : **(10×2=20)**

(a) What is the difference between static and dynamic memory allocation ? How static scope rules are defined using stack ?

(b) Describe the various code optimization techniques in detail.

(c) What do you mean by DAG ? Explain the algorithm for constructing a DAG with the help of example.