Roll No. .....

67058

MCA 2nd Semester CBCS Scheme w.e.f.

2016-17

Examination – May, 2019

COMPILER DESIGN

Paper : 16MCA32C3

Time : Three Hours] *[Maximum Marks : 80*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

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

1. ***Compulsory questions :***

(a) How linking is defined for overlay structured program ?

(b) Differentiate between pure and impure interpreter.

(c) How the problem of left factoring and left recursion are removed ?

(d) Write the algorithm for FIRST and FOLLOW IN PARSER.

(e) Define ambiguous grammar.

(f) What is a symbol table ? Discuss various data structure used to implement it.

(g) What role does the target machine play on code generation of compiler ?

(h) What are the properties of optimizing compiler ?

UNIT – I

2. (a) How relocation is performed by linker ? Explain with example.

(b) What are different functions performed by loaders ? Differentiate absolute, reallocating and direct linkage loader.

3. (a) What are the basic functions of loaders ? Differentiate linking, relative and bootstrap loader.

(b) State the basic tasks a macro instruction processor performs. Explain how the nested macro calls are executed with example.

UNIT – II

4. (a) Discuss various phases of compiler and trace it with program segment (position:= initial + rate*60)

(b) Explain LL(I) grammar for the sentence S→iEts | iEtseS | a E→b.

5. (a) Consider the production :

S → aAb

A →cd/C

Show that recursive descent parsing fails for input string "acdb", also explain Recursive Descent Algorithm.

(b) What are the problems with top down parsing ? Write the algorithm to remove left recursion from a grammar with example.

UNIT – III

6. (a) What is an Activation record ? Explain how it is relevant to the intermediate code generation phase with respect to procedure declarations.

   (b) How declarations are done in a procedure using syntax directed translation ? Explain.

7. (a) Discuss important data structures which are used in implementing symbol table.

   (b) What is three address code ? Mention its different types. How address statements are implemented ? Give example.

UNIT – IV

8. Define a Directed Acyclic Graph. Construct a DAG and write the sequence of instruction for the expression : a+a*(b–c)+(b–c)*d.

9. (a) Discuss the principal source of optimization.

   (b) How structure preserving transformation is different from algebraic transformation ? Explain with example.