

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 $S \rightarrow iEts \mid iEtsS \mid a E \rightarrow b$.
5. (a) Consider the production :

$$S \rightarrow aAb$$

$$A \rightarrow cd/C$$

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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.

*queddy
triple
indirect*

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.

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