Roll No. .....

67058

MCA 2nd Semester CBCS Scheme w.e.f. 2016-17 Examination – May, 2018

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 : Question No. 1 is ***compulsory***. Apart from it, attempt ***four*** questions by selecting ***one*** question from each Unit. All questions carry equal marks.

1. *Compulsory Question :*

   (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) Show schematic form of LR parser with its parsing table.

(e) Define various types of syntax directed translation.

(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) Discuss various targets for code optimization.

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) Explain use and fields of following tables of macro :

KPDTAB, MDT, EVTAB, SSTAB.

(b) What are various loading schemes ? Explain bootstrap loader with its merits and demerits.

UNIT – II

4. (a) What is the difference between:

(i) Passes and phases of compiler

(ii) Syntax analysis and semantic analysis.

(b) Construct the canonical LR(l) item sets for the following grammar :

$S \rightarrow AA$

$A \rightarrow aA/b$

5. (a) Consider the production :

$S \rightarrow aAb$

$A \rightarrow cd/C$

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) How assignment statement and case statements can be converted into intermediate code ? Illustrate with example.

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