8. Write short notes on the following :   **15**

   (a)   Peephole optimization

   (b)   Flow graphs

   (c)   Code generation

EE691

M.C.A. EXAMINATION, May 2019

(Vth Semester)

(B. Scheme) (Re-appear)

MCA667

COMPILER DESIGN

Time : 3 *Hours*]   [*Maximum Marks :* 75

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

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) What do you mean by cross compilation ? Explain the various compiler construction tools. **10**

   (b) Design a DFA over an alphabet $\Sigma = (a, b)$ that accepts all the strings ending with *ab*. **5**

2. Explain the various phases of compiler with diagram. **15**

Unit II

3. Find out whether the given grammar is LL(1) and LR(1) by constructing the respective items : **15**

$$S \rightarrow aSa/bS/C$$

4. (a) Consider the following grammar :

$$S \rightarrow AS/b$$

$$A \rightarrow SA/a$$

Construct the SLR parse table for the grammar. Show the actions of the parser for the input string 'abab'. **5**

(b) Show that the following grammar :

$$S \longrightarrow A\ a\ A\ b/B\ b\ B\ a$$

$$A \longrightarrow \varepsilon$$

$$B \longrightarrow \varepsilon$$

is LL(1) but not SLR(1). **10**

Unit III

5. State and explain the syntax directed translation scheme for the desk calculator and give the parse tree and translation for the string (6+4) * 249/3 + 20. **15**

6. (a) Describe the various contents and data structures for symbol table and its role in compilation process.

(b) Draw the DAG for the statement :

$$A = (a*b+c) - (a*b+c)$$

Unit IV

7. What are the various techniques for the code optimization ? Explain all in brief. What optimization can you propose for the following code ? **15**

a:=b*c;

x:b*c+5;