Q5. Attempt any ***two*** questions from the following : 10x2=20

(a) Explain the following in the organization of code optimizer :

(i) Control - flow analysis (ii) Data - flow analysis

(iii) Transformations

(b) What is activation record? Explain its organization. Also discuss various storage allocation strategies.

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

(i) Lexical phase errors (ii) Syntactic phase errors

(iii) Semantic phase errors.

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NMCA011/MCAE-11

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

PAPER ID : 214429

Roll No.

MCA
(SEM. IV) THEORY EXAM. 2014-15
COMPILER DESIGN

Time : 3 Hours] [Total Marks : 100

Note : Attempt the questions as indicated.

Q1. Attempt any ***four*** questions from the following : 5x4=20

(a) Discuss the role of compiler-writing tools. Describe various compiler writing tools.

(b) Describe the technique used for reducing number of passes.

(c) Discuss the role of Macros in programming language.

(d) Describe the basic structure of compiler.

(e) Define and differentiate between DFA and NFA with an example.

(f) What is DAG? Discuss it.

Q2. Attempt any ***two*** questions from the following : 10x2=20

(a) How lexical analyzer removes white spaces from source file? Explain the buffer input scheme for scanning the source program.

(b) Explain about basic parsing techniques. What is top - down parsing? Explain in detail.

(c) How is finite automata useful for lexical analysis? Show that the following regular expressions are same by constructing optimized DFA

(i) $(a / b)^*$

(ii) $(a^* / b)^*$

(iii) $(a / b^*)^*$

Q3. Attempt any ***two*** questions from the following : 10x2=20

(a) What do you understand by left factoring and how it is eliminated?

(b) Consider the following

$E \rightarrow T + E / T$

Write down the procedures for the non - terminals of the grammar to make a recursive descent parser.

(c) Discuss the role of data - flow analysis in detail.

Q4. Attempt any ***two*** questions from the following : 10x2=20

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

$V \rightarrow Vd^* T / V$

(b) Explain the implementation of simple stack allocation scheme while on run-time administration.

(c) Write short notes on the following : (Any ***two***)

(i) Principle sources of optimization

(ii) Problems in code generation

(iii) Error recovery schemes