[Total No. of Questions - 9] [Total No. of Pri d Pages - 2]
(2126)

16562(D) - DUEC 2016

MCA 5th Semester Examination

Compiler Design (NS)

MCA-504

Time : 3 Hours **Max. Marks : 60**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all. Attempt one question from each section A, B, C & D. Question no. 9 in section E is compulsory and candidate is required to answer all the parts.

SECTION - A

1. A cross compiler is one that runs on a machine to generate target code for another machine. Identify a few cases where such a cross compiler will be useful. (12)

2. Discuss the action taken by every phase of the compiler on the following strings:
   A=B*C + D/E. Discuss the distinctness of the retargeting and rehosting. (12)

SECTION - B

3. Construct the operator precedence parser of the following grammer.
   S→(L)|a
   L→L,S|S
   Show the parsing of the string "(a, ((a,a),(a,a)))" using the parser constructed. (12)

4. Construct a Finite Automata for the regular expression r = (a+b)*abb. What is the use of deterministic finite automata in lexical analysis? Explain with suitable example. (12)

SECTION - C

5. What is the role of intermediate code generation in overall compiler design? Show the annotated parse tree and code generation process for the following arithmetic expression: a+(b–c)*d (12)

6. Write the semantic actions to generate three-address code for case statement of any language you are familiar with. (12)

SECTION - D

7. Explain the need of code optimization. Illustrate loop optimization with example. (12)

8. Explain the necessary and sufficient conditions for the constant propagation, dead code elimination and loop optimization. (12)

SECTION - E

9. Write short note on the following.
   (a) Define Compiler.
   (b) Define interpreter.
   (c) Differentiate sentence and sentential form.
   (d) How semantic rules are defined?
   (e) What are the benefits of machine independent code?
   (f) Give application of DAG.
   (g) What do you mean by back patching?
   (h) Give characteristics of peephole optimization.
   (i) Give block diagram of organization of code optimizer.
   (j) What is the importance of look ahead operator in lexical analysis phase?
   (k) Describe the steps involved in booting.
   (l) Draw the parse tree for an arithmetic expression a*–(b+c). (1×12=12)