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10CS63

Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018

**Compiler Design**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.**

**PART – A**

- 1 a. With a neat diagram, explain various phases of compiler. (10 Marks)
- b. Write the look ahead code with sentinels for input buffering strategy used in lexical analysis phase. (05 Marks)
- c. Construct a transition diagram for recognizing unsigned numbers. (05 Marks)
- 2 a. Explain panic mode and phrase – level error recovery strategies. (08 Marks)
- b. Write an algorithm to left factor a grammar. Give the left factored grammar for the following :  
 $S \rightarrow iEtS/iRtSeS/a$   
 $E \rightarrow b$  (06 Marks)
- c. Give the rules for constructing FIRST and FOLLOW sets. (06 Marks)
- 3 a. Write an algorithm to construct a predictive parsing table. Construct the predictive parsing table, considering the grammar :  
 $E \rightarrow E + T/T$   
 $T \rightarrow T * F/F$   
 $F \rightarrow (E) /id$  (08 Marks)
- b. Explain the working of a shift reduce parser. (04 Marks)
- c. Explain the conflicts of shift reduce parsing with suitable examples. (08 Marks)
- 4 a. Write an algorithm for constructing SLR parsing table. (06 Marks)
- b. Construct LALR parsing table, considering the following augmented grammar :  
 $S' \rightarrow S$   
 $S \rightarrow CC$   
 $C \rightarrow cC/d$  (10 Marks)
- c. Write a note on the use of ambiguous grammars. (04 Marks)

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**PART – B**

- 5 a. Explain the concept of syntax-directed definition. (06 Marks)
- b. Construct a dependency graph for the declaration float id1, id2, id3. (06 Marks)
- c. Explain the parser stack implementation of postfix SDT with an example. (08 Marks)
- 6 a. Obtain the directed acyclic graph for the expression :  
 $a + a * (b - c) + (b - c) * d.$  (06 Marks)
- b. List any four common three address instruction forms. (04 Marks)
- c. Write syntax directed definition for flow of control statements. (10 Marks)
- 7 a. With a neat diagram, explain the typical subdivision of runtime memory. (08 Marks)
- b. Explain the desirable properties of memory manager. (06 Marks)
- c. Explain the design goals for garbage collector. (06 Marks)
- 8 a. Write an algorithm to partition three-address instructions into basic blocks. (06 Marks)
- b. Define flow graph. How it is constructed? (04 Marks)
- c. With an example, explain common sub-expression and dead code elimination methods. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
 2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8 = 50, will be treated as malpractice.