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MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL

A Constituent Institution of Manipal University

VI SEMESTER B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

MAKE UP EXAMINATIONS, JUNE 2017

SUBJECT: COMPILER DESIGN [CSE 3201]

**REVISED CREDIT SYSTEM
(13/06/2017)**

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ALL** questions.
- ❖ Missing data may be suitably assumed.

- 1A.** Explain different phases of compiler with an example. **3M**
- 1B.** Draw format of activation record and explain any two fields. **4M**
- 1C.** Write a LEX program to count number of words and lines. **3M**
- 2A.** Write Three Address Code for the following statement. **4M**
- ```
if (a < b + c)
 a = a - c;
c = b * c;
```
- 2B.** How does Directed Acyclic Graph improve the efficiency? Justify your answer with an example. **4M**
- 2C.** Define Syntax Directed Definition (SDD). **2M**
- 3A.** Generate the assembly level code for following instructions: **2M**
- $a = *p$
  - $*p = a$
- 3B.** Construct LR(1) DFA and CLR(1) parse table for the grammar **5M**
- $A \rightarrow (A) \mid a$
- 3C.** Show parsing steps for input string "(a)" for the Grammar given in Q3B. **3M**

- 4A.** Construct predictive parser for the following grammar.  
 $E \rightarrow TA$   
 $A \rightarrow +TA \mid -TA \mid \varepsilon$   
 $T \rightarrow FB$   
 $B \rightarrow *FB \mid /FB \mid \varepsilon$   
 $F \rightarrow -S \mid S$   
 $S \rightarrow v \mid ( E )$   
Write first and follow set and construct predictive parsing table. **4M**
- 4B.** For the grammar Q4A, Show parsing action for  $(v+v)$ . **2M**
- 4C.** Explain the issues in the design of code generator. **4M**
- 5A.** Explain input buffering scheme with an example. **4M**
- 5B.** Draw transition diagram to identify relational operators in 'C' **3M**
- 5C.** Explain Annotated parse tree with an example. **3M**