

Registration No. :

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Total number of printed pages – 2

B. Tech  
PCCS 4305

**Sixth Semester (Special/Back) Examination – 2013**

**COMPILER DESIGN**

**BRANCH : CSE**

**QUESTION CODE : E 311**

**Full Marks – 70**

**Time : 3 Hours**

*Answer Question No. 1 which is compulsory and any **five** from the rest.  
The figures in the right-hand margin indicate marks.*

1. Answer the following questions : 2 × 10
- (a) Define the terms lexeme and pattern with an example ?
  - (b) What are the functions of analysis phase and synthesis phase of compiler ?
  - (c) Write any two error recovery actions in case of lexical errors ?
  - (d) Draw a NFA for  $a^*|b^*$ .
  - (e) What do you mean by handle pruning? Give an example ?
  - (f) Define an attribute ? Give the types of an attribute ?
  - (g) Name any two kinds of Intermediate code representation ?
  - (h) Name the data structures used for implementing symbol table ?
  - (i) What are the steps involved in partitioning a Sequence of three address statements into basic blocks ?
  - (j) Define dead code elimination with an example ?
2. (a) What are the various phases of a compiler ? Write down the output for the following expression after each phase  $a:=b*c-d$ . 5
- (b) Explain the functions of the Lexical Analyzer along with its implementation ? 5

**P.T.O.**

3. (a) Check whether the following grammar is a LL(1) grammar  
 $S \rightarrow iEtS \mid iEtSeS \mid a$   
 $E \rightarrow b$  5
- (b) What is a shift-reduce parser? Explain in detail the conflicts that may occur during shift-reduce parsing. 5
4. Construct Predictive Parsing table for the following grammar: 10  
 $S \rightarrow (L) \mid a$   
 $L \rightarrow L, S \mid S$
5. (a) How would you generate the intermediate code for the flow of control statements? Explain with examples. 5
- (b) Describe in detail the syntax-directed translation of assignment statements? 5
6. (a) What are the triples and quadruples implementation for the following three address code statements?  
 $x[i] := y$   
 $x := y[i]$  5
- (b) Construct the dag for the following basic block: 5  
 $d := b * c$   
 $e := a + b$   
 $b := b * c$   
 $a := e - d$
7. (a) What are the different storage allocation strategies? 5
- (b) Write detailed notes on Basic blocks and flow graphs. 5
8. Write short notes on any **two**: 5 × 2
- (a) Peephole Optimization
- (b) Stack Allocation
- (c) Type Checking
- (d) SLR vs CLR.