

Registration No. :

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Total number of printed pages – 2

B. Tech
PCCS 4305

Sixth Semester Back Examination – 2015

COMPILER DESIGN

BRANCH : CSE

QUESTION CODE : M 236

Full Marks – 70

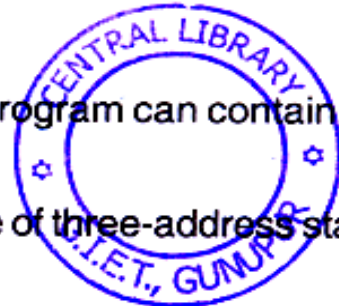
Time : 3 Hours

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) What is a compiler ?
 - (b) What is a symbol table ?
 - (c) Mention the back-end phases of a compiler.
 - (d) Differentiate tokens, patterns, lexeme.
 - (e) Write a regular expression for an identifier.
 - (f) List the various error recovery strategies for a lexical analysis.
 - (g) List the properties of LR parser.
 - (h) What is meant by handle pruning ?
 - (i) What are the various methods of implementing three address statements ?
 - (j) List the different storage allocation strategies.
2. (a) Explain in detail the process of compilation. Illustrate the output of each phase of compilation for the input "a = (b + c) * (b + c) * 2" 5
- (b) Obtain the minimized state DFA for the regular expression (a/b)*a using subset construction method. 5

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3. (a) What are the advantages of LALR parsing over SLR and CLR methods? 5
(b) Describe the syntax directed translation procedure for assignment statements with integers and mixed types and explain. 5
4. Construct the predictive parser for the following grammar : 10
 $E \rightarrow TE'$
 $E' \rightarrow +TE' \mid \square$
 $T \rightarrow FT'$
 $T' \rightarrow *FT' \mid \square$
 $F \rightarrow (E) \mid id$
5. (a) What are the different types of errors a program can contain? List out the error handling strategies. 5
(b) Write an algorithm to partition a sequence of three-address statements into basic blocks. 5
6. (a) Consider the following grammar
 $S \rightarrow AS \mid b$
 $A \rightarrow SA \mid a$
Construct the SLR parse table for the grammar. Show the actions of the parser for the input string "abab". 5
(b) Elaborate on the peephole optimization. 5
7. (a) Explain about the various storage allocation strategies. 5
(b) Draw the DAG for the expression $a := b * -c + b * -c$. 5
8. Write short notes on any **two** : 5×2
(a) Compiler vs Interpreter
(b) LEX
(c) YACC
(d) Flow Analysis.