

Reg. No.

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B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019

Sixth Semester

IT16604 – AUTOMATA AND COMPILER DESIGN*(Information Technology)***(Regulation 2016)****Time: Three Hours****Maximum : 100 Marks**Answer **ALL** questions**PART A - (10 X 2 = 20 Marks)**

	CO	RBT
1. Define Finite State Systems.	1	R
2. Construct DFA for $(0+1)^* (0+1)^+ 0^*$	2	C
3. Eliminate the left factoring for the following Grammar : $S \rightarrow aSSbS / aSaSb / abb / b$	4	AP
4. Define Regular Expression.	2	R
5. What are the three kinds of Intermediate representation?	5	U
6. Write down SDD for a simple type declarations	3	R
7. How do we eliminate common sub expression. Give an example	5	AP
8. What is control flow analysis?	5	U
9. Write the characteristics of Peephole optimization?	3	U
10. What are the structure preserving transformations on basic blocks?	4	U

PART B - (5 X16 = 80 Marks)

11. (a) Construct a minimized DFA for the given regular expression using Thomson Method $(a)^*abb(b)^*(16)$ (16) 1 C

(OR)

- (b) Design a DFA to accept the following strings over the alphabet $\{0,1\}$ (16) 1 C
- The set of all strings beginning with 00
 - The set of all strings that begin with 1 and end with 0
 - Obtain the equivalent DFA using subset construction method for $011(0/1)^*$

12. (a) Construct a SLR parsing table for the following CFG (16) 2 C
 $E \rightarrow E+T \mid T$
 $T \rightarrow T * F \mid F$
 $F \rightarrow (E) \mid id$ and parse the input string $id+id*id$
(OR)
- (b) Explain the various phases of a compiler in detail. Also write down the output for the following expression after each phase $a := b * c - d$. (16) 2 C
13. (a) How would you generate the intermediate code for the flow of control statements? Explain with examples. (16) 5 E
(OR)
- (b) Translate the arithmetic expression into $a = b * c - b * c$ (16) 5 E
a) DAG b) Syntax Tree c) Quadruples d) Triples
14. (a) (i) Discuss about the run time storage management of a code generator. (8) 4 AN
(ii) Explain the DAG representation of the basic block with example. (8) 4 AN
(OR)
- (b) Explain the principal sources of optimization. (16) 4 AN
15. (a) (i) List down & explain the issues in the design of code generator. (8) 3 AN
(ii) Elaborate on how to compute program and instruction costs. (8) 3 AN
(OR)
- (b) (i) Brief about Machine Independent Optimization. (8) 3 AN
(ii) Elaborate on peephole optimization. (8) 3 AN