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Code No: 136AQ

R16

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, November/December - 2020

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COMPILER DESIGN
(Common to CSE, IT)

Time: 2 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

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- 1.a) What are functions of lexical analyzer?
b) Construct DFA for the regular expression $(a+b)^*aa+aba^*$. [7+8]

- 2.a) Explain the concept of input buffering.
b) Construct a finite automata for $(00)^*(11)^*$. [7+8]

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3. Construct LL(1) parsing table for the following grammar
 $S \rightarrow CC$
 $C \rightarrow cC \mid d$, where S is start variable, $V = \{S, C\}$, $T = \{c, d\}$.
Write and apply LL(1) parsing algorithm to parse the string $cdcd$. [15]

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4. What is shift - reduce conflict? Identify different conflicts in the SLR parsing table of the grammar after constructing parsing table, where S is start variable, $V = \{S, A, B\}$, $T = \{a, b, c, d\}$. [15]
 $S \rightarrow Aa \mid bAc \mid Bc \mid bBa$
 $A \rightarrow d$
 $B \rightarrow d$

- 5.a) Briefly write about abstract syntax tree.
b) Perform Quadruple, tripple, Indirect triple implementation for the infix expression $(c+d) * (c+-d) + (c+d)$. [7+8]

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- 6.a) Convert the following arithmetic expression into syntax tree and three address code $(a+b)*3*(a+b)$
b) Explain about Inherited attributes and synthesized attributes. [8+7]

- 7.a) Explain the stack allocation strategy with example.
b) Briefly explain different techniques for optimization of basic blocks. [7+8]

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8. Explain different principal sources of code optimization. [15]

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