GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-VII EXAMINATION – SUMMER 2016

Subject Code:170701

Date:16/05/2016

Total Marks: 70

S	u	bj	ect	N	ame:Compiler	Design
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Time:02:30 PM to 05:00 PM

Instructions:

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- (a) Explain different phases of compiler. 07 0.1 (b) What is regular expression, give all the algebraic properties of regular 07 expression. (a) Draw the DFA for the regular expression (a|b)*abb using set construction Q.2 07 method only. (b) Unsigned numbers are strings such as 5280, 39.37, 6.336E4 or 1.894E-4, give 07 the regular definitions for the above mentioned strings. OR (b) Draw the state transition diagram for the unsigned numbers. 07 07 Q.3 **(a)** Convert the $(a|b|c)*d*(a*|b)ac^+\#$ regular expression to DFA directly and draw its DFA. (b) Write short note on context free grammar (CFG) explain it using suitable 07 example. OR Explain all error recovery strategies using suitable examples. **Q.3** 07 **(a)** Where do we use operator precedence parsing technique? Give the general 07 **(b)** precedence table for operating precedence parsing, considering all the generalized rules. What is left recursion? Eliminate the left recursion from the following grammar. 07 **O.4 (a)** $E \rightarrow E + T | T$ $T \rightarrow T * F | F$ $F \rightarrow (E) | id$ (b) Translate the expression -(a*b)+(c*d)+(a*b*c) into 07 1. Quadruples 2. Triples 3. Indirect triples. OR (a) Explain SLR parser in detail with the help of a suitable example. 07 **Q.4** Design the FIRST SET and FOLLOW SET for the following grammar. 07 **(b)** $E \rightarrow E + T | T$ $T \rightarrow T * F | F$ $F \rightarrow (E) | id$ Explain how type checking & error reporting is performed in compiler. 07

Q.5 (a) Explain how type checking & error reporting is performed in compiler. 0 Draw syntax tree and DAG for the statement $a = (a * b + c) ^ (b + c) * b + c$. Write three address codes from both.

- (b) Explain peephole optimization.
- OR

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- Q.5 (a) Differentiate SLR, Canonical LR and LALR. Also justify the statement "A class of grammar that can be parsed using LR methods is a proper subset of the class of grammars that can be parsed with predictive parser"
 - (b) What is an activation record? Explain how they are used to access local and 07 global variables.
