Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – SUMMER 2016

Subject Code:170701 Date:16/05/2016

Subject Name:Compiler Design

Time:02:30 PM to 05:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain different phases of compiler.	**07**
	(b)	What is regular expression, give all the algebraic properties of regular expression.	**07**
Q.2	**(a)**	Draw the DFA for the regular expression (a|b)*abb using set construction method only.	**07**
	(b)	Unsigned numbers are strings such as 5280, 39.37, 6.336E4 or 1.894E-4, give the regular definitions for the above mentioned strings.	**07**
		OR	
	(b)	Draw the state transition diagram for the unsigned numbers.	**07**
Q.3	**(a)**	Convert the (a|b|c)*d*(a*|b)ac^+# regular expression to DFA directly and draw its DFA.	**07**
	(b)	Write short note on context free grammar (CFG) explain it using suitable example.	**07**
		OR	
Q.3	**(a)**	Explain all error recovery strategies using suitable examples.	**07**
	(b)	Where do we use operator precedence parsing technique? Give the general precedence table for operating precedence parsing, considering all the generalized rules.	**07**
Q.4	**(a)**	What is left recursion? Eliminate the left recursion from the following grammar. E → E + T | T T → T * F | F F → (E) | id	**07**
	(b)	Translate the expression – (a*b)+(c*d)+(a*b*c) into 1. Quadruples 2. Triples 3. Indirect triples.	**07**
		OR	
Q.4	**(a)**	Explain SLR parser in detail with the help of a suitable example.	**07**
	(b)	Design the FIRST SET and FOLLOW SET for the following grammar. E → E + T | T T → T * F | F F → (E) | id	**07**
Q.5	**(a)**	Explain how type checking & error reporting is performed in compiler. Draw syntax tree and DAG for the statement a = (a * b + c) ^ (b + c) * b + c. Write three address codes from both.	**07**
	(b)	Explain peephole optimization.	**07**
		OR	

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" **07**

(b) What is an activation record? Explain how they are used to access local and global variables. **07**

****