Q.5

Seat No.: **Enrolment No.** GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-VII (OLD) - EXAMINATION - SUMMER 2018 **Subject Code:170701** Date: 08/05/2018 **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) Define following terms: 07 Compiler i. Interpreter ii. Assembler iii. **Regular Expression** iv. Token v. Lexeme vi. Pattern vii. (b) How do the parser and scanner communicate? Explain with the block diagram **07** communication between them. Also explain: What is input buffering? (a) Construct DFA for following regular expression without constructing NFA and **Q.2** 07 optimize the same. $(a | \epsilon)^* a b (a | b)^* #$ (b) Discuss various Storage allocation strategies in detail. 07 **(b)** Explain various data structures used in symbol table management. **07** (a) Construct a SLR parsing table for following grammar. **07** 0.3 $S \rightarrow aAb \mid bB$ $A \rightarrow Aa \mid \epsilon$ $B \rightarrow Bb \mid \epsilon$ **(b)** Check whether the given grammar is LL (1) or not? **07** $S \rightarrow aAC \mid bB$ A -> Abc | Abd | e $B \rightarrow f \mid g$ $C \rightarrow h \mid i$ OR Construct the LALR parsing table for the following grammar. **Q.3** 07 $S \rightarrow CC$ $C \rightarrow aC$ $C \rightarrow d$ (b) Write a syntax directed definition for desk calculator. Justify whether this is an **07** S-attributed definition or L-attributed definition. Using this definition draw annotated parse tree for 3*5+4n. What is intermediate code? Explain different types of intermediate code 07 **Q.4** representations. Also discuss importance of intermediate code. (b) Explain activation tree, control stack, the Scope of Declaration and Bindings of 07 Names. OR (a) Explain Operator precedence Parsing technique in detail. 07 **Q.4**

(b) Write down short note on Error – Recovery Strategies.

(a) i. Construct the DAG for the following basic block:

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	d:=b*c	
	e := a + b	
	b:=b*c	
	a := e - d	
	ii. Describe issues in code generation process.	
	(b) Explain Peephole Optimization in detail.	07
	OR	
Q.5	(a) Write Short notes on	07
	i. Local and loop optimization	
	ii. induction variable elimination	
	(b) Explain automatic generation of lexical analyzer and parser.	07
