GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2017

Subject Code: 2170701   **Date:02/11/2017**
Subject Name: Complier Design
Time: 10:30 AM TO 01:00 PM   **Total Marks: 70**
Instructions:
    1. **Attempt all questions.**
    2. **Make suitable assumptions wherever necessary.**
    3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	What is the difference between compiler and interpreter?	**03**
	(b)	Explain analysis phase of the source program with example.	**04**
	(c)	Write an algorithm for Thompson's construction method. Apply the algorithm to construct NFA for following regular expression. (a | b)*abb.	**07**
Q.2	**(a)**	What is a pass in a compiler? What is the effect of reducing the number of passes?	**03**
	(b)	Explain error recovery strategies used by parser.	**04**
	(c)	What is operator grammar? Generate precedence function table for following grammar. E -> EAE | id A -> + | *	**07**

OR

	(c)	Define handle and handle pruning. Explain the stack implementation of shift reduce parser with the help of example.	**07**
Q.3	**(a)**	Give the translation scheme that converts infix to postfix notation. Generate the annotated parse tree for input string 3-5+4.	**03**
	(b)	Explain buffer pairs and sentinels.	**04**
	(c)	Check given grammar is LL(1) but not SLR(1). S -> AaAb | BbBa A -> ϵ B -> ϵ	**07**

OR

Q.3	**(a)**	Write a rule of Left factoring a grammar and give example.	**03**
	(b)	Explain role of lexical analyzer.	**04**
	(c)	Define syntax tree. What is s-attributed definition? Explain construction of syntax tree for the expression a-4+c using SDD.	**07**
Q.4	**(a)**	Translate the arithmetic expression a*-(b+c) into 1. Syntax tree 2. Postfix notation 3. Three address code	**03**
	(b)	Write Syntax Directed Definition to produce three address code for the expression containing the operators := , + , - (unary minus), ( ) and id.	**04**
	(c)	What is activation record? Explain stack allocation of activation records using example.	**07**

OR

Q.4	**(a)**	What is activation tree?	**03**
	(b)	Explain parameter passing techniques for procedure.	**04**
	(c)	What is importance of intermediate code? Discuss various representations of three address code using the given expression. a = b * -c + b * -c .	**07**

Q.5 **(a)** Explain three loop optimization techniques with example. **03**
     (b) What is code optimization? Explain data flow equation. **04**
     (c) Describe code generator design issues. **07**

OR

Q.5 **(a)** Define following : DAG, Basic Blocks, Flow graph **03**
     (b) Explain peephole optimization. **04**
     (c) Explain function preserving transformations with example. **07**

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