Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – III • EXAMINATION – WINTER • 2013

Subject code: 1720202 **Date: 27-12-2013**

Subject Name: Design of Language Processor

Time: 10.30 am – 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.**

Q.1 **(a)** What is called symbol table? Explain its' importance during compilation process. **07**

(b) What is the difference between compiler and interpreter? Explain two pass compiler. **07**

Q.2 **(a)** Define token. Explain how it differs from pattern and lexeme. Find token, pattern and lexeme from following expressions. **07**

1. if(x<=5)
2. total = sum + 12.5

(b) Construct NFA for following regular expression and convert it into DFA. **07**

$a^+ b^* \ (c \mid d \mid e) \ a^* \ \#$

OR

(b) Construct DFA for following regular expression without constructing NFA and optimize the same. **07**

$(a \mid b)^* \ a \ b \ (a \mid b)^* \ \#$

Q.3 **(a)** What is the difference between syntax tree and parse tree? Explain it with proper example. **07**

(b) Find LR(0) items for following grammar and construct SLR parsing table. **07**

$S \rightarrow A \ a \ A \ b$
$S \rightarrow B \ b \ B \ a$
$A \rightarrow \in$
$B \rightarrow \in$

OR

Q.3 **(a)** What is the difference between syntax tree and DAG? Explain it with proper example. **07**

(b) Find LR(1) items fro following grammar and construct CLR parsing table. **07**

$S \rightarrow A \ a \mid a \ A \ c \mid B \ c \mid b \ B \ a$
$A \rightarrow d$
$B \rightarrow d$

Q.4 **(a)** What is called ambiguous grammar? Explain it with suitable example. **07**

(b) Which are the different ways to implement three address code? Explain each with suitable example. **07**

OR

Q.4	**(a)**	Find first and follow for following grammar and construct predictive parsing table. Is this grammar LL(1)? $S \rightarrow a\ A\ B\ b$ $A \rightarrow c \mid \in$ $B \rightarrow d \mid \in$	**07**
Q.4	**(b)**	Explain peephole optimization.	**07**
Q.5	**(a)**	Explain design specification of an assembler.	**07**
	(b)	What are the advanced macro facilities? Explain each with its use.	**07**
		OR	
Q.5	**(a)**	Explain pass structure of an assembler.	**07**
	(b)	Explain macro definition and macro call in detail.	**07**

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