Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– II(Old course) • EXAMINATION (Remedial) – WINTER- 2015

Subject Code: 1720202 **Date: 10/12/2015**

Subject Name: Design of Language Processor

Time:2:30 pm to 5:00 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: lexeme, pattern, token, annotated parse tree, syntax tree, parse tree, inherited attribute. **07**

(b) Compare and contrast the properties of macros and subroutines with respect to the followings: **07**

i) Code space requirement
ii) Execution speed
iii) Processing required by the assembler
iv) Flexibility and generality.

Q.2

(a) Attempt followings: **07**

1) Eliminate the left recursion from the grammar
   S –> (L) | a
   L –> L,S | S
2) Show that no left-recursive grammar can be LL (1).

(b) Construct a predictive parser for the grammar **07**

E –> E+T | T
T –> T*F | F
F –> Fô| (E) | 0 | 1

OR

(b) Show that the following grammar **07**

S –> AaAb | BbBa
A –> ε
B –> ε

is LL (1) but not SLR (1).

Q.3

(a) Construct NFA for regular expression (a|b)*abb (a|b)*. **07**

(b) Construct minimum-state DFA for the regular expression (a|b)*a(a|b)(a|b) **07**

OR

Q.3

(a) Write regular definitions for the following languages. **07**

i) All strings of letters that contain the five vowels in order.
ii) All strings of letters in which the letters are in ascending lexicographic order.

(b) Explain with illustration phases of a compiler. **07**

Q.4

(a) Explain the function preserving transformation. **07**

(b) Explain in detail peep-hole optimization. **07**

OR

Q.4

(a) Explain with suitable example shift reduce parser. **07**

(b) Explain with suitable example recursive descent parser. **07**

Q.5	**(a)**	Explain with suitable example, the data structures generated by the processing of macro definitions.	**07**
	(b)	Explain with suitable example single pass assembler with its data structures.	**07**
		OR	
Q.5	**(a)**	Explain with suitable example design of a linker.	**07**
	(b)	Explain with illustration, the expansion of nested macro calls.	**07**

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