	Utech
Name :	
Roll No.:	Admin of Exemples and Explana
Invigilator's Signat	ure:
	CS/B.Tech(CSE)/SEM-7/CS-701/2011-12
	0011

# 2011

# LANGUAGE PROCESSOR

Time Allotted: 3 Hours Full Marks: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

# GROUP – A ( Multiple Choice Type Questions )

1. Choose the correct alternatives for the following:

 $10 \times 1 = 10$ 

- - c) if (nullable(c1))firstpos(c1)  $\bigcup$  firstpos(c2) else firstpos(c1)
  - d) if (nullable(c2))firstpos(c1)  $\bigcup$  firstpos(c2)else firstpos(c1).

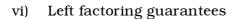
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- ii) Parse tree is generated in the phase of
  - a) Syntax Analysis
  - b) Semantic Analysis
  - c) Code Optimization
  - d) Intermediate Code Generation.
- iii) FIRST (  $\alpha\beta$  ) is
  - a) FIRST ( $\alpha$ )
  - b)  $FIRST(\alpha) \cup FIRST(\beta)$
  - c) FIRST (  $\alpha$  )  $\bigcup$  FIRST (  $\beta$  ) if FIRST (  $\alpha$  ) contains  $\square$  else FIRST (  $\alpha$  )
  - d) none of these.
- iv) A given grammer is not LL(1) if the parsing table of a grammer may contain
  - a) any blank field
  - b) any e-entry
  - c) duplicate entry of same production
  - d) more than one production rule.
- v) White spaces and tabs are removed in
  - a) Lexical analysis
- b) Syntax analysis
- c) Semantic analysis
- d) all of these.





- a) not occurring of backtracking
- b) cycle free parse tree
- c) error free target code
- d) correct LL(1) parsing table.
- vii) A parse tree showing the values of attributes at each node is called in particular
  - a) Syntax tree
  - b) Annotated parse tree
  - c) Syntax Direct parse tree
  - d) Direct Acyclic graph.
- viii) Which of the following is not true for Dynamic Type Checking?
  - a) It increases the cost of execution
  - b) Type checking is done during the execution
  - c) All the type errors are detected
  - d) None of these.

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- ix) Which of the following is not a loop optimization?
  - a) Induction variable elimination
  - b) Loop jamming
  - c) Loop unrolling
  - d) Loop heading.
- x) YACC builds up
  - a) SLR parsing table
  - b) LALR parsing table
  - c) canonical LR parsing table
  - d) none of these.

#### **GROUP - B**

# (Short Answer Type Questions)

Answer any *three* of the following.

 $3 \times 5 = 15$ 

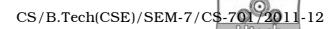
2. Describe analysis phase of a compiler in respect of the following example.

Position = initial + rate \* 60.

1 + 4

- 3. Describe with diagram the working process of Lexical Analyzer.
- 4. What is error handling? Describe the Panic Mode and Phrase level error recovery technique with example. 1+4

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- 5. What do you understand by L-attributed definitions? Illustrate with an example. 2 + 3
- 6. What is recursive descent parsing? Describe the drawbacks of recursive descent parsing for generating the string 'abc' from the grammar:

 $S \varnothing aBc$ 

 $B \varnothing bc \mid b$  1 + 4

#### **GROUP - C**

# (Long Answer Type Questions)

Answer any *three* of the following.  $3 \times 15 = 45$ 

7. Describe with a block diagram the parsing technique of LL(1) parser. Parse the string 'abba' using LL(1) parser where the parsing table is given below:

	а	b	\$
S	S ∅ aBa		
В	$B \varnothing \epsilon$	$B \varnothing bB$	

Check whether the following grammer is LL(1) or not.

 $S \varnothing i C t SE \mid a$ 

 $E \varnothing e S \mid \varepsilon$ 

 $C \varnothing b$ . 4+4+7

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8. Describe LR parsing with block diagram. What are the main advantages of LR parsing? Construct SLR parsing table for the grammer given below:

 $S \varnothing Cb$ 

 $C \varnothing bC / d$ .

4 + 3 + 8

9. Construct DFA directly from [ Not by generating NFA ] the regular expression  $L = (a \mid b) * ab$ 

What are the main contributions of Syntax Directed Translation in Compiler ? Design a Dependency Graph and Direct Acyclic Graph for the string:

$$a + a * (b - c) + (b - c) * d$$
.

7 + 3 + 5

10. a) Translate the expression

$$a = -(a + b) * (c + d) + (a + b + c)$$
 into

- i) Quadruple
- ii) Triple
- iii) Indirect Triple
- iv) 3-address code.
- b) Draw the flow graph for the following code:
  - i) location = -1
  - ii) i = 0
  - iii) i < 100 goto 5
  - iv) goto 13
  - v)  $t_1 = 4i$

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- vi)  $t_2 = A[t_1]$
- vii) if  $t_2 = x$  goto 9
- viii) goto 10
- ix) location = i
- $x) \qquad t_3 = i + 1$
- xi)  $i = t_3$
- xii) goto 3
- xiii) ......
- c) What do you understand by terminal table and literal table? 8 + 5 + 2
- 11. Write short notes on any *three* of the following:  $3 \times 5$ 
  - a) LEX and YAAC
  - b) Activation Record
  - c) Symbol Table
  - d) Peephole optimization
  - e) Input Buffering.