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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Sixth Semester, B.E. - Computer Science and Engineering

Semester End Examination; July / Aug. - 2022

Compiler Design

Time: 3 hrs *Max. Marks: 100*

Course Outcomes

The Students will be able to:

CO1: Design simple lexical analyzer.

CO2: Construct simple top down parser for a given context free grammar.

CO3: Construct simple bottom up parser for a given context free grammar.

CO4: Apply different syntax directed translation schemes.

CO5: Generate intermediate and machine dependent code.

***Note**: I) **PART - A** is compulsory. **Two** marks for each question.*

*II) **PART - B**: Answer any **Two** sub questions (from a, b, c) for a Maximum of **18 marks** from each unit.*

Q. No.		Questions	Marks	BLs	COs	POs
		I : PART - A	**10**			
I	a.	Define pattern and lexeme.	2	L2	CO1	PO1
	b.	What is ambiguous grammar?	2	L1	CO2	PO1
	c.	What is Handle?	2	L1	CO3	PO1
	d.	Define syntax directed definition.	2	L1	CO4	PO1
	e.	What is a flow graph?	2	L1	CO5	PO1
		II : PART - B	**90**			
		UNIT - I	**18**			
1	a.	Explain the concept of input buffering in the lexical analysis.	9	L1,2	CO1	PO1,2
	b.	Give the regular expression and finite automata for the specification and recognition of identifier, constants and logical operators.	9	L5	CO1	PO1,2
	c.	Briefly explain different phases of compiler taking the example statement; position = initial + rate * 60.	9	L1,2	CO1	PO1,2
		UNIT - II	**18**			
2	a.	Define left recursion, left factoring. Write an algorithm used for eliminating left recursion.	9	L1	CO2	PO1,2
	b.	Write an algorithm for recursive decent parsing with an illustrative example.	9	L3	CO2	PO1,2
	c.	Give algorithm for first and follow set construction and also compute first and follow for the give grammar. $E \rightarrow TE^1$; $E^1 \rightarrow +TE \mid E$; $T \rightarrow FT^1$; $T^1 \rightarrow *FT^1 \mid E$, $F \rightarrow (E) \mid id$	9	L4	CO3	PO1

Contd… 2

	UNIT - III	**18**			
3 a.	Write an algorithm for shift reduce parser with example.	9	L3	CO3	PO1,2
b.	consider the following grammar: $E \rightarrow E + T \mid T;\quad T \rightarrow T^* F \mid F;\ F \rightarrow (E) \mid id$ Compute canonical collection of sets of LR(0) items.	9	L3	CO3	PO1,2
c.	Write an algorithm to construct SLR parsing table and construct SLR parsing tale for the grammar: $E \rightarrow E + T \mid T;\ T \rightarrow T^*F \mid F;\ F \rightarrow (E) \mid id$	9	L3	CO3	PO1,2
	UNIT - IV	**18**			
4 a.	Write the SDD for simple desk calculator and give annotated parse tree for 3*5+4n.	9	L3	CO4	PO1,2
b.	Explain in detail different storage allocation strategies.	9	L2	CO4	PO1,2
c.	Explain the following with an example: i) Inherited attribute ii) Synthesized attribute	9	L2	CO4	PO1,2
	UNIT - V	**18**			
5 a.	What are the basic blocks? Explain in detail DAG representation of basic blocks.	9	L1,2	CO5	PO1
b.	Briefly explain the different types of intermediate codes for the expression a: = b*–c+b*–c.	9	L2	CO5	PO1,2
c.	Explain various issues in the design of code generation.	9	L2	CO5	PO1

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