SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code: Compiler Design (18CS0514) **Course & Branch**: B.Tech - CSE

Year & Sem: III-B.Tech & I-Sem **Regulation:** R18

UNIT –I
INTRODUCTION AND LEXICAL ANALYSIS

1	**a**	List the various phases of a compiler.	[L1][CO1]	[2M]
	b	Differentiate tokens, patterns, and lexeme.	[L4][CO1]	[2M]
	c	Differences between compiler and Interpreter.	[L4][CO1]	[2M]
	d	Define the Role of Lexical Analyzer.	[L1][CO1]	[2M]
	e	List the various error recovery strategies for a lexical analysis.	[L1][CO1]	[2M]
2		Explain the phases of a compiler with neat diagram?	[L2][CO1]	[10M]
3		a) Explain in detail about the role of lexical analyzer in Compiler Design.	[L2][CO1]	[5M]
		b) Write about input buffering?	[L2][CO1]	[5M]
4		Explain about Language Processor in compiler Design?	[L2][CO1]	[10M]
5		Discuss the following terms a) Specification of Tokens	[L2][CO1]	[5M]
		b) Recognition of Tokens	[L2][CO1]	[5M]
6		a) Explain the Structure of Compiler?	[L3][CO1]	[5M]
		b) What is the need for separating lexical analysis and syntax analysis?	[L2][CO1]	[5M]
7		Explain LEX Tool with a Lex Program?	[L2][CO1]	[10M]
8		Write short notes a) pass and phases of a compiler	[L3][CO1]	[5M]
		b) Bootstrapping	[L3][CO1]	[5M]
9		How to design the compiler by using the source program position:=intial+rate*60.	[L1][CO1]	[10M]
10		Write short notes a) Application of compiler technology	[L3][CO1]	[5M]
		b) Compiler construction Tools	[L3][CO1]	[5M]

UNIT –II
SYNTAX ANALYSIS AND TOP DOWN PARSING

1	**a**	Define LL(1)?	[L1][CO2]	[2M]
	b	What is Role of Parser?	[L1][CO2]	[2M]
	c	Problems in Top Down Parsing?	[L1][CO2]	[2M]
	d	Define Context Free Grammar.	[L1][CO2]	[2M]
	e	Define Ambiguous grammar?	[L1][CO2]	[2M]
2	a) Construct the recursive decent parser for the following grammar? E-> E+T/T T-> T*F/F F-> (E)/id		[L3][CO2]	[5M]
	b) Explain about Left factoring and Left Recursion with an examples?		[L2][CO2]	[5M]
3	Calculate FIRST and FOLLOW for the following grammar? a) E-> E+T/T T-> T*F/F F-> (E)/id		[L3][CO2]	[5M]
	b) S->xABC A->a|bbD B->a|ε C->b| ε D->c| ε		[L3][CO2]	[5M]
4	Consider the grammar E->E+T/T,T->T*F/F,F->(E)|id Construct predictive parsing table and check given grammar is LL(1) or not?		[L3][CO2]	[10M]
5	a) Eliminate left recursion for the following grammar i) E-> E+T/T T-> T*F/F F-> (E)/id ii) S->Aa/b B->Bad/c C->Cde/f		[L2][CO2]	[5M]
	b) Explain about Left factoring with simple example?		[L3][CO2]	[5M]
6	Consider the grammar S->AB|ABad A->d E ->b D->b| ε B->c Construct the predictive parse table and check whether the given grammar is LL(1) or not.		[L3][CO2]	[10M]
7	Consider the grammar $E \rightarrow TE^1$ $E^1 \rightarrow +TE^1 \mid -TE^1 \mid \varepsilon$ $T \rightarrow FT^1$ $T^1 \rightarrow *FT^1 \mid / FT^1 \mid \varepsilon$ $F \rightarrow GG^1$ $G^1 \rightarrow \wedge F/ \varepsilon$ $G \rightarrow (E)/ id$ Calculate FIRST and FOLLOW for the above grammar Calculate LL(1) Table for the above grammar.		[L3][CO2]	[10M]
8	a) Write about left most and right most derivations?		[L3][CO2]	[5M]
	b) How to eliminate ambiguity for the given Ambiguous Grammar.		[L1][CO2]	[5M]
9	Explain Error recovery in predictive parsing with an Example.		[L1][CO2]	[10M]
10	(a)Explain parse trees?		[L2][CO2]	[5M]
	(b)Describe about ambiguity?		[L1][CO2]	[5M]

UNIT –III
BOTTOM UP PARSING AND SEMANTIC ANALYSIS

1	**a**	Define a syntax-directed translation.	[L1][CO3]	[2M]
	b	Differences between SLR,CLR, LALR parsers?	[L2][CO3]	[2M]
	c	Define Handle pruning?	[L1][CO3]	[2M]
	d	What is mean by shift reduce parsing?	[L1][CO3]	[2M]
	e	What is bottom up parsing?	[L1][CO3]	[2M]
2	(a) Write about handle pruning?		[L3][CO3]	[5M]
	(b) Write about SLR parsing?		[L3][CO3]	[5M]
3	Construct CLR Parsing table for the given grammar S->CC C->aC/d		[L3][CO3]	[10M]
4	Perform Shift Reduce Parsing for the input string using the grammar. S->(L)|a L->L,S|S a)(a,(a,a)) b)(a,a)		[L2][CO3]	[10M]
5	Explain syntax directed definition with simple examples?		[L2][CO3]	[10M]
6	Describe the evaluation order of SDT with an example.		[L2][CO3]	[10M]
7	Discuss Type Checking with suitable examples?		[L2][CO3]	[10M]
8	Explain the Translation scheme of SDD.		[L2][CO3]	[10M]
9	Define augmented grammar? Construct the LR(0) items for the following Grammar? S->L=R S->R L->*R L->id R->L		[L1][CO3]	[10M]
10	Write about YACC tool?		[L3][CO3]	[10M]

UNIT –IV
RUN TIME ENVIRONMENT AND INTERMEDIATE CODE GENERATION

1	**a**	Define Activation Record.	[L1][CO4]	[2M]
	b	Write properties of memory management	[L3][CO4]	[2M]
	c	Describe scope and life time of variable.	[L2][CO4]	[2M]
	d	Define symbol table.	[L1][CO4]	[2M]
	e	Define rules for type checking.	[L1][CO4]	[2M]
2	Draw the format of Activation Record in stack allocation and explain each field in it.		[L4][CO4]	[10M]
3	(a) Discuss about symbol table entries?		[L2][CO4]	[5M]
	(b)Write about operations on symbol table?		[L3][CO4]	[5M]
4	Describe the Storage Organization with simple examples.		[L2][CO4]	[10M]
5	Define Symbol table. Explain different types of Data structure for symbol table		[L1][CO4]	[10M]
6	Write about Different types of Intermediate code with an Example.		[L3][CO4]	[10M]
7	Explain Representation of Three Address Codes with suitable Examples.		[L1][CO4]	[10M]
8	Discuss Storage allocation strategies with suitable examples?		[L2][CO4]	[10M]
9	Write about heap management mechanism.		[L3][CO4]	[10M]
10	Describe about Control Flow Statements.		[L2][CO4]	[10M]

UNIT –V
CODE OPTIMIZATION AND CODE GENERATION

1	**a**	What is the Role of peephole optimization in compilation process	[L1][CO5]	[2M]
	b	List the Issues in the design of a code generator. (any 4)	[L1][CO5]	[2M]
	c	Give the different forms in target program	[L2][CO5]	[2M]
	d	Give the applications of DAG.	[L2][CO5]	[2M]
	e	Define Dead-code elimination with example.	[L1][CO5]	[2M]
2	Write about all issues in code generation. Describe it.		[L3][CO5]	[10M]
3	Explain the target machine architecture?		[L2][CO5]	[10M]
4	Describe about optimization techniques on Basic Blocks with simple examples?		[L2][CO5]	[10M]
5	(a) Discuss the various strategies in register allocation.		[L2][CO5]	[5M]
	(b)Write about loop optimization techniques?		[L3][CO5]	[5M]
6	Explain the peephole optimization Technique?		[L2][CO5]	[10M]
7	(a)Construct the DAG for following statement. a+b*c+d+b*c		[L3][CO5]	[5M]
	(b)Discuss function preserving transformations?		[L2][CO5]	[5M]
8	Construct the DAG for the following basic blocks 1. t1:=4*i 2. t2:=a[t1] 3. t3:=4*i 4. t4:=b[t3] 5. t5:=t2*t4 6. t6:=prod+t5 7. prod:=t6 8. t7:=i+1 9. i:=t7 10. if i<=20 goto 1		[L3][CO5]	[10M]
9	Describe about global data flow analysis?		[L2][CO5]	[10M]
10	Write short notes on i) Simple code generator		[L3][CO5]	[5M]
	ii) Register allocation and assignment		[L3][CO5]	[5M]

Prepared by:
S.JYOSHNA
Assistant Professor/CSE