



**SIDDHARTH INSTITUTE OF ENGINEERING & 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:=initial+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	a)	Calculate FIRST and FOLLOW for the following grammar? 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 ii) S->Aa/b T-> T*F/F B->Bad/c F-> (E)/id 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 -TE^1 $ $\epsilon T \rightarrow FT^1$ $T^1 \rightarrow *FT^1 / FT^1 $ $\epsilon F \rightarrow GG^1$ $G^1 \rightarrow \wedge F /$ $\& G \rightarrow (E) /$ 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 $i \leq 20$ goto 1	[L3][CO5]	[10M]
9		Describe about global data flow analysis?	[L2][CO5]	[10M]
10	i)	Simple code generator	[L3][CO5]	[5M]
	ii)	Register allocation and assignment	[L3][CO5]	[5M]

Prepared by:
N.SIVA
Assistant Professor/CSE