Time: 3 hours

Max. Marks: 70

## III B. Tech I Semester Supplementary Examinations, August - 2021 COMPILER DESIGN

(Computer Science and Engineering)

	11	me: 3 nours Max. Mark	s: 70	
		Note: 1. Question Paper consists of two parts (Part-A and Part-B)		
	2. Answering the question in <b>Part-A</b> is compulsory			
3. Answer any <b>THREE</b> Questions from <b>Part-B</b> *****				
<u>PART –A</u> (22 Mar			/Iarks)	
1.	a)	What are the differences between a compiler and an interpreter?	[3M]	
	b)	List the rules for computing FOLLOW SET.	[4M]	
	c)	Differentiate between SLR, LALR and CLR parsers.	[4M]	
	d)	Write the three-address code for a while-do statement.	[4M]	
	e)	Define Basic Block.	[4M]	
	f)	Discuss about common sub expression elimination.	[3M]	
		$\underline{PART -B} \tag{48 M}$	/Iarks)	
2.	,	What are the various phases of Compiler? Explain the functions of each phase with its input and output for the example statement A=X*Y.	[8M]	
	b)	Construct a transition diagram to recognize all the relational operators and real numbers with exponential.	[8M]	
3.	a)	Write the steps to remove left recursion and design LL(1) predictive parser for the grammar: $E \rightarrow E + E \mid E - E \mid E \mid$	[8M]	
	b)	Define Context Free Grammar. Explain how it is suitable for parsing?	[8M]	
4.	a)	Design LALR(1) parser for the following grammar: S ->aAd   bBd   aBc   bAc A -> <b>\varepsilon</b> B -> <b>\varepsilon</b>	[8M]	
	b)	where a, b, c, d, e are terminals.  Write a short note on error recovery with LR parsers. How it is different from LL parsers?	[8M]	
5.	a)	Generate syntax directed translator scheme for the given Grammar: L->En, E->E+T/T, T->(T/F)/F, F->(E)/num.	[8M]	
	b)	Give Three-Address Code and its quadruple, triple representation for the assignment: $a = b * - c + b * - c$ .	[8M]	
6.	a)	Discuss the advantages and disadvantages of heap storage allocation strategy.	[8M]	
	b)	Write the algorithm for a simple code generator. And explain various issues that affect the efficiency of generated code.	[8M]	
7.	a)	Explain the algebraic transformations of local machine independent optimization.	[8M]	
	b)	Discuss about the following: i) Copy propagation; ii) Dead code elimination.	[8M]	