CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

Seventh Semester of B. Tech. Examination (C.E.)

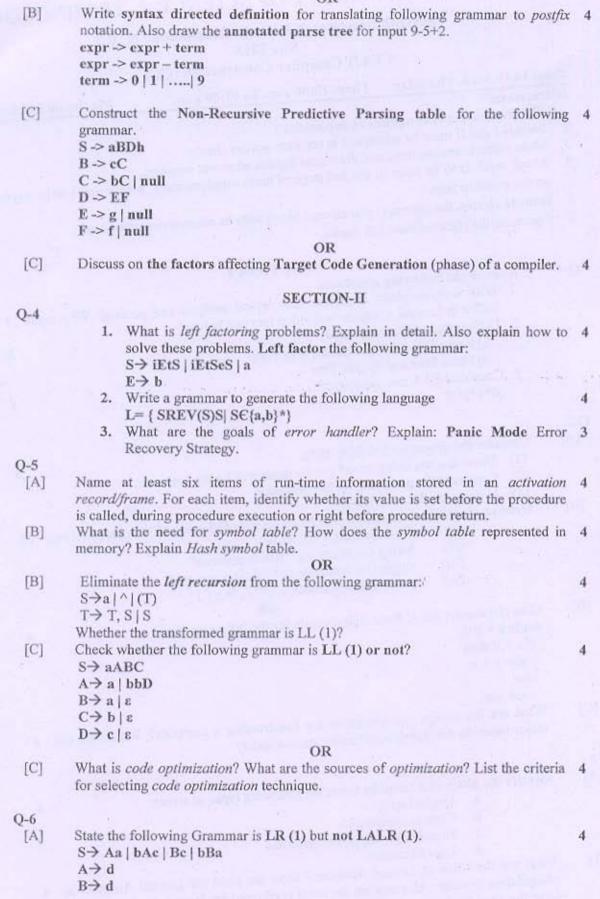
Nov 2013

CE401 Compiler Construction (CC)

Time: 10:00 a.m. To 01:00 p.m. Maximum Marks: 70 Date: 14.11.2013, Thursday Instructions: 1. The question paper comprises of two sections. Section I and II must be attempted in separate answer sheets. 3. Make suitable assumptions and draw neat figures wherever required. 4. Rough work is to be done in the last page of main supplementary, please don't write anything on the question paper. 5. Indicate clearly, the option(s) you attempt along with its respective question no. Figures to the right indicate full marks. SECTION-I 0 - 1Answer the following questions. Why analysis phase is divided into lexical analysis and parsing? Why input 3 buffer in Lexical Analyzer is divided into two halves? Differentiate following terms. a) Parse Tree and Annotated Parse Tree b) Parse Tree and Syntax Tree 3. Construct DFA and minimize it 4 (0*1*)*00-2 3 [A] Consider the grammar: S→SS+| SS*|a (1) Show that the string aa+a* can be generated by the grammar. (2) Construct the parse tree for the grammar. (3) Is the grammar ambiguous? Write an algorithm for scanner, which can identify following 'C' language tokens. [B] Keywords (if, else, while) (i) String constants e.g. "this is constant" (ii) single line comments-/* this is comment*/ (iii) punctuation symbols - "," ',', %,;, {,} (iv) 5 Give the translation of three address code for the following stmt: [B] while a < b do if c < d then x := y + zelse x:= y-z. What are the design considerations for constructing a compiler? Which are the 4 [C] major issues in designing/constructing the compiler? Q-3 Identify the phase of a compiler detecting following types of errors: [A] a. Logical errors b. Code is unreachable c. Function prototype not specified d. Type Mismatch What are the roles of Lexical Analyzer? Give the need for Lexical Analysis in 4 [B]

Give the need for Syntax Analysis in compilation process.

compilation process. Also explain the roles performed by Syntax Analyzer phase.



(B)	Compute the FIRST and FOLLOW sets for the following grammar:	-4
	S→ aAbc BCf	
	B→ Cd (ε	
	A→ C E	
	C→df ε	
	OR	
[B]	Construct canonical LR (0) parsing states for following grammar:	- 4
	S→ L=R	
	S→R	
	L→*R	
	L→id	
	R→L	
[C]	Consider the following augmented grammar:	4
	S'→ S	
	S →CC	
	$C \rightarrow cC d$	
	Prepare the goto graph for it.	
	OR	
[C]	Construct SLR parsing table and find set of LR (1) items.	4
	S→ aA.Be	- 1
	A→Abc	100
	A→b	
	$R \rightarrow d$	