



GIET UNIVERSITY, GUNUPUR - 765022
B. Tech (Sixth Semester Regular) Examinations, May - 2024
21BCSPC36004 - Compiler Design
(CSE)

Time: 3 hrs

Maximum: 70 Marks

(The figures in the right-hand margin indicate marks)

PART – A**(2 x 5 = 10 Marks)**Q.1. Answer **ALL** questions

	CO #	Blooms Level
a. What do you mean by cross compiler?	CO1	K1
b. Describe shift- reduce conflict.	CO2	K2
c. What is left recursive grammar? How can it be eliminated?	CO2	K1
d. What is inherited attribute? Explain with example.	CO3	K1
e. What is basic block in code segment?	CO4	K1

PART – B**(15 x 4 = 60 Marks)**Answer **ALL** questions

	Marks	CO #	Blooms Level
2. a. Define compiler? Elaborate on the individual phases of a compiler with an example.	8	CO1	K2
b. Develop a Finite Automaton (FA) to recognize the language described by the regular expression $R = (a b)^*abb$ and then convert this FA into a Deterministic Finite Automaton (DFA).	7	CO1	K2
(OR)			
c. What does buffering entail? Elucidate its necessity and the various types of buffering in lexical analysis.	8	CO1	K3
d. Test whether the given grammar is LL (1) or not. Where, $G = \{S \rightarrow iCtSS' \mid a, S' \rightarrow eS \mid \epsilon, C \rightarrow b\}$	7	CO2	K2
3.a. Develop the SLR parsing table for the given grammar: $\{ E \rightarrow E+T \mid T, T \rightarrow T * F \mid F, F \rightarrow (E) \mid id \}$ and verify whether the string $w = id + id * id$ is generated by this grammar.	10	CO2	K3
b. Describe the steps to construct LALR parsing table.	5	CO2	K2
(OR)			
c. Construct the CLR parsing table for the following grammar: $S \rightarrow AA \ A \rightarrow aA, A \rightarrow b$ and verify whether the string $w = aab$ is generated by the above grammar or not.	10	CO2	K3
d. Explain Syntax-Directed Definitions (SDDs), and then provide the SDD for the production $S \rightarrow \text{if}(B) S1$.	5	CO2	K2
4.a. Explain the concept of Three-Address Code (TAC), and then provide the Quadruple representation for the instruction $a = (b * -c) + (b * -c)$.	8	CO3	K3
b. What is optimization in compilers? Provide a concise explanation of Peephole optimization.	7	CO3	K2

(OR)

c. Explain Three-Address Code (TAC), and then provide the Triple representation for the instruction $a = (b * -c) + (b * -c)$.	8	CO3	K1
d. Give a concise overview of runtime environment storage organization.	7	CO3	K2
5.a. Outline the steps for code generation.	8	CO4	K2
b. Mention the basic blocks and flow diagram for the instruction $\{x=1, P=1, \text{For } (i=2; i \leq x; i++)\{p=p*I, x=x+1\} p=p+1\}$ (OR)	7	CO4	K3
c. Elaborate on the different segments of the "Activation Record".	8	CO4	K2
d. Define DAG. Represent the DAG for instruction $x + x * (y-z) + (y-z) * a$	7	CO4	K3

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