

III B. Tech I Semester Supplementary Examinations, Dec/Jan -2022-23

COMPILER DESIGN

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

UNIT-I

- 1 a) Explain about Language Processor in compiler Design? [8M]
 b) Write short notes on i) pass and phases of a compiler ii) Bootstrapping [7M]
 (OR)
- 2 a) Give the minimized DFA for the following expression (a/b)*abb [8M]
 b) Define Lex and Lex specifications. How lexical analyzer is constructed using lex? Give an example [7M]

UNIT-II

- 3 a) Consider the following Grammar: [8M]
 A->ABd|Aala
 B->Belb
 Remove left recursion.
 b) Write about YACC tool [7M]
 (OR)
- 4 a) Write Rules to construct FIRST Function and FOLLOW Function. [8M]
 b) Consider the following grammar: [7M]
 S->AalbAc|BclbBa
 A-> d
 B-> d
 Compute closure and go to.

UNIT-III

5. a) Explain the functions of a symbol table with suitable examples. [8M]
 b) Explain the different representations of intermediate code forms [7M]
 (OR)
- 6 a) Describe the following with examples: [8M]
 (i) Synthesized Attributes
 (ii) Inherited attributes.
 b) Explain a syntax translation scheme for Assignment statements [7M]

UNIT-IV

- 7 a) Create the target machine instructions to implement the call statement in static allocation [8M]
 b) Explain heap management mechanism [7M]
 (OR)
- 8 a) Explain the fields in an Activation record. [8M]
 b) Explain in detail about the translation of source language details into run time environment [7M]

UNIT-V

- 9 a) What is the purpose of code optimization? Explain in detail about loop Optimization with example. [8M]
- b) Write global common sub expression elimination algorithm with an example [7M]
- (OR)
- 10 a) Construct the DAG for the following basic blocks [8M]
1. $t1 := 4 * i$
 2. $t2 := a[t1]$
 3. $t3 := 4 * i$
 4. $t4 := b[t3]$
 5. $t5 := t2 * t4$
 6. $t6 := \text{prod} + t5$
 7. $\text{prod} := t6$
 8. $t7 := i + 1$
 9. $i := t7$
 10. if $i \leq 20$ goto 1
- b) Explain optimization techniques on Basic Blocks with simple examples? [7M]