

## 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

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**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.  $t6:=prod+t5$   
7.  $prod:=t6$   
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]