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VI-SEMESTER

END SEMESTER EXAMINATION

Roll No.....

B.Tech.(CO)

May- 2024

CO302 Compiler Design

Time: 3:00 Hours

Max. Marks: 40

Note: Attempt any Five questions

Q.No. 1

- a. Construct SLR (1) parsing table and compute FIRST & FOLLOW for the following grammar: [4] CO4

$S \rightarrow aXb|aYb|aXc$

$X \rightarrow xS/d$

$Y \rightarrow d$

- b. What is Lexical analyzer generator? Explain Implementation of Lexical analysers with suitable example. [4] CO1

Q.No. 2

- a. Explain algorithm for predictive parsing and design predictive parsing table for the following grammar. [4] CO4

$A \rightarrow aDbA$

$A \rightarrow aDbAdA$

$A \rightarrow f$

$D \rightarrow g$  (where 'A' is start symbol)

- b. How LALR is different from CLR? explain and Construct LALR parsing table for the following grammar. [4] CO4

$A \rightarrow BB$

$B \rightarrow 0B$

$B \rightarrow 1$  (where 'A' is start symbol)

Q.No. 3

- a. Translate the following expression into three address instructions  $a = -b * (x+y)$  and give quadruple and triple representation for the same. [4] CO2

- b. What is the role of DFA in compiler design? What is the use of viable prefixes? Explain various phases of compiler using example. [4] CO1

Q.No. 4

- a. Write three address code and construct program flow graph for the following program fragment [4] CO6

```
Fact(a) {  
    int f=1;  
    for(j=2; j<=a; j++)  
        f=f*j  
    return (f) }
```

- b. What is the difference between the LEX and YACC? Create a cross compiler for X using C compiler, written in Y, producing code in Y and a X language producing code for DEL written in C. [4] CO3

Q.No. 5

- a. Explain the midsquare method and folding method used for generating hash values. [4] CO3
- b. What is the difference between Loop unrolling and Loop jamming? Explain with suitable example and create Syntax tree and DAG for expression  $\text{if}(x > 0) \text{ then } x = 3 * (y + 1) \text{ else } y = y + 1.$  [4] CO6

Q.No. 6

- a. What is the role of Context free grammar (CFG) in Compiler Design? Construct a Context free grammar for language  $L = \{ a^n b^n c^m d^m \mid n \geq 1, m \geq 1 \}.$  [4] CO2
- b. Explain following with suitable example [4] CO5
- Syntax directed Translation(SDT) And Syntax directed Definition(SDD).
  - Error recovery strategies in compiler design.