**SRM Institute of Science and Technology**

Mode of Exam

**OFFLINE**

**College of Engineering and Technology**

**School of Computing**

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu

**Academic Year: 2024 (EVEN)**

**Test: CLAT-1 Date: 13/2/2024**

**Course Code & Title: 18CSC304J COMPILER DESIGN Duration: 50Min**

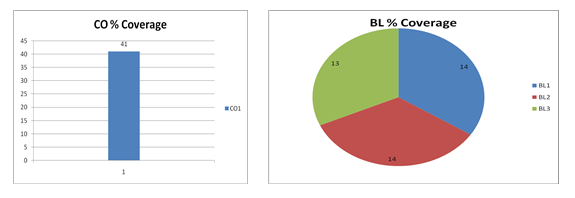
**Year & Sem: III & VI Max. Marks: 25**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Part – A( 5 x 1 = 5 Marks) Instructions: Answer ALL** | | | | | | |
| **Q. No** | **Question** | **Marks** | **BL** | **CO** | **PO** | **PI Code** |
| 1 | NFA with ϵ transitions \_\_\_\_\_\_\_   1. Increases computations 2. Decreases computations 3. Decreases number of states 4. Increases uncertainty   **Ans a** | 1 | 1 | 1 | 1 | 1.3.1 |
| 2 | **What are the maximum number of tokens generated in the lexical analysis phase for the statement? printf("a = %f, &a = %d, b=%d", a, &a,b);**  **a) 10**  **b) 12**  **c) 17**  **d) 18**  **Ans b** | 1 | 2 | 1 | 1 | 1.1.2 |
| 3 | If L,D, S denote the sets of letters, digits and underscore respectively. Then , which can possibly define an identifier?   1. **S(LUD)+** 2. **(LUS)(LUDUS)\*** 3. **(LUS)(LUD)\*** 4. **L(L.D.S)\***   **Ans b** | 1 | 2 | 1 | 1 | 1.1.2 |
| 4 | The error of missing parenthesis detection occurs in \_\_\_\_\_\_\_ phase.  a) Semantic  b) Lexical  c) Syntax  d) Syntax and lexical  **Ans c** | 1 | 1 | 1 | 1 | 1.3.1 |
| 5 | I: DFA’s can be constructed for all the languages  II: The strings accepted by DFA will be accepted by NFA  What can be said about these two statements?   1. Only II is false 2. Only I is false 3. I is false and II is true 4. II is true and I is false   **Ans c or d** | 1 | 2 | 1 | 2 | 2.1.1 |
| **Part – B ( 2 x 4 = 8 Marks) Instructions: Answer TWO** | | | | | | |
| **6** | Explain the process of input buffering for the given source code.  int i,j;  i=i+1;  j=j+1;  Explain the process with one buffer(size:5) and two buffer (size 5 ) concepts  **Answer**   * Sometimes lexical analyzer needs to look ahead some symbols to decide about the token to return   + In C language: we need to look after -, = or < to decide what token to return   + In Fortran: DO 5 I = 1.25 * We need to introduce a two buffer scheme to handle large look-aheads safely     Two pointers – Begin pointer (bp), Forward pointer (fp) | **4** | **3** | **1** | **2** | **2.1.1** |
| **7** | Construct a syntax tree with firstpos and lastpos for all nodes of (a|b)\*abb.  **Answer**  **NzhWPVIRyLRJ_OuUWZRNdJFdF4ypwF4zPFfG0MDptdCm0qkBpz7QSYZaXjZFQz0Q7Qf-6tvGW5WJ3qa-Y1LEylrRkCVzFSAIoEEASmZ349D6vN3MhIrJBWF846whrQOJsQxgdxSzaF2zZaviL7TtFQ** | **4** | **2** | **1** | **2** | **1.1.2** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **8** | Draw the transition diagrams for unsigned integers and relational operators.  Answer  unsigned integers – 2marks  relational operators – 2marks  Unsigned integers:    Relational operators: | **4** | **1** | **1** | **1** | **1.3.1** |
|  | | | | | | | **Part – C (1 x 12 = 12 Marks) Instructions: Answer any ONE** |
| **9** | 1. In a certain language there are only four alphabets namely y &, \*, % and ε. The pattern of words that is formed in the language always has ε as its third alphabet and no two alphabets can occur consequently. The language has a limitation that the maximum number of allowable alphabets in the word is only 6 (including ε). Create a Finite state automata for generating the words of the language and convert the same to a deterministic machine.   **Answer**  **A drawing of a diagram  Description automatically generated** | **12** | **3** | **1** | **2** | **2.1.2** |
| **OR** | | | | | | |
|  | 1. Perform minimization technique on the following DFA      1. Define token, pattern and lexeme with example   Definitions – each 1 mark  **Answer**        A token is a pair a token name and an optional token value  A pattern is a description of the form that the lexemes of a token may take  A lexeme is a sequence of characters in the source program that matches the pattern for a token | **9+3** | **3** | **1** | **2** | **2.1.2** |

**\*Performance Indicators are available separately for Computer Science and Engineering in AICTE examination reforms policy.**

**Course Outcome (CO) and Bloom’s level (BL) Coverage in Questions**



**Approved by the Audit Professor/Course Coordinator**