22BRS1192

VIT

Vellore Institute of Technology

Continuous Assessment Test- I – August – 2024

Programme	**B.Tech**	**Semester**	**Fall Semester 2024- 25**
Course	**BCSE307L - Compiler Design**	**Slot(s) :**	**D1+TD1**
Course Faculty	**Dr. P. Mercy Rajaselvi** **Dr. Leninisha Shanmugam**	**Class Nbr**	**CH2024250102280** **CH2024250102282**
Time	**1.30 Hours**	**Max Marks**	**50**

General Instructions: Write only your registration number on the question paper in the box provided and do not write other information

Answer ALL Questions = 50 Marks

1	Demonstrate the different stages involved in the process of compilation (5marks) and display the results generated by each stage for the given input: a =((b+c)*(b+c)*2) / a+c (5marks) Where a, b, c are real numbers	10
2	a. Consider the following regular expression R (a|d*) (b|c)*da*(b|c) Construct a deterministic finite automaton using direct conversion method. Find nullable(), firstpos(), lastpos() and followpos() (10 marks) b. Construct Є-NFA for the regular expression by using Thompson's algorithm ((a+b)*+abb) + (ab*+a*b) (5 marks)	15
3	Construct predictive parsing table for the following grammar G A-> A+ B | B B -> id | id [ ] | id [C] C ->A, A |A a. Eliminate left recursion in G to construct G1 with L(G1) =L(G) (2 marks) b. Perform left factoring for G1 to construct G2 with L(G2) = L(G) (2 marks) c. Compute the FIRST and FOLLOW sets for all non-terminals in G2 (4 marks) d. Build an LL(1) parse table for the grammar G2 (2 marks) e. Parse the string id+id [id+id,id[]]. Show that stack, the input and the action taken at every stage of parsing (3 marks) f. Build the parse tree while you are parsing, show your parse tree (2 marks)	15
4	Construct operator precedence for the following grammar: S → b | ↑ | (T) T → T , S / S a. Find Leading and trailing of each non-terminal(2.5 marks) b. Construct precedence table (2.5 marks) c. Show the action of the parser for the input (b,b) (2.5 marks) d. Perform operator precedence function (2.5 marks)	10

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