VIT
Vellore Institute of Technology
CHENNAI

Reg. Number:

Continuous Assessment Test (CAT) – I AUGUST 2025

Programme	:	B.Tech. Data Science	Semester	:	Fall 2025 - 26
Course Code & Course Title	:	BCSE307L & Compiler Design	Class Number	:	CH2025260101337
Faculty	:	Dr. S. Kiruthika	Slot	:	C1
Duration	:	90 minutes	Max. Mark		50

General Instructions: < Use this space to provide additional information such as graph sheet, data book etc.>

- Write only your registration number on the question paper in the box provided and do not write other information
- Use statistical tables supplied from the exam cell as necessary
- Use graph sheets supplied from the exam cell as necessary
- Only non-programmable calculator without storage is permitted

Answer all questions

Q. No	Sub Sec.	Description	Marks	CO	BT Level
1	a	Illustrate each phases of compilers along with the input and output for the programming statement a=b*c/d+e-(q/w)	6	1	K2

	b	Categorize and label each lexeme present in the given code snippet
		
		#include <stdio.h>
		int main() {
		int i, n;
		// initialize first and second terms
		int t1 = 0, t2 = 1;
		int nextTerm = t1 + t2;
		printf("Enter the number of terms: ");
		scanf("%d", &n);
		// print 3rd to nth terms
		for (i = 3; i <= n; ++i) {
		printf("%d, ", nextTerm);
		t1 = t2;
		t2 = nextTerm;
		nextTerm = t1 + t2;
		}
		}
			4	1	K1

2		Construct a deterministic finite automata for the regular expression (a*b*)*c|(b|c)* using direct method **(8 marks)** and check whether the input "abcbc" is accepted by the DFA or not **(2 marks)**.	10	1	K3

3		Construct the predictive parsing table for the given grammar G = (V, T, P,R) where
		
		V = {R, S, Q, W},
		T = {a,b,t,d} and
		P = {
		R → QSa | bWS,
		Q → RSt | tt | ε,
		S → t,
		W → dt | dda | c
		}
			10	2	K3

4		Construct the operator precedence table for the grammar G = (V,T,P,I) where (7 marks)
		V = { I, J, E },
		T = {a, s, 0,1} and
		P={
		I → JaJ | aJ | J
		J → EsE | sE | E
		E → 0 | 1
		}
		Parse the input "0s1as1" (3 marks)
			10	2	K3

5		Consider the given languages and its strings L = {c, d, e, f, g} and S = {1, 2, 3, 4, 5} and perform the following operations: a. $L \cup (L\ S)$ (3 marks) b. Generate the L^3 (2 marks) c. $S^* L^+$ (2 marks) d. $S (L \cup S^+)$ (3 marks) Note: Provide 6 strings for each operation	10	1	K2

**********All the best **********