Roll Number: _____

Thapar Institute of Engineering and Technology
Department of Computer Science and Engineering

B.E. COE: Semester-VII Auxiliary Examination

Course Code: UCS 802
Course Name: Compiler Construction
Name of Faculty: Geeta Kasana

February 23, 2024 at 5:30 PM
Time: 3 Hours M. Marks: 100

Note: Attempt all questions with ***proper Justification***. Assume missing data, if any, suitably.

Q1	Given the regular expression r = (a | b)*aba . Convert it into NFA using Thompson's Construction. Convert the obtained NFA into DFA and minimize it.	10
Q2	Show the following grammar S→Aa|bAc|Bc|bBa A→d B→ d Is LR (1) but not LALR (1).	10
Q3	Draw the syntax tree and DAG for the following expression: (a*b) +(c-d) *(a*b) +b	10
Q4	Discuss the various data structures used to implement the Symbol table.	10
Q5	Consider the following expression: (a + b) * (c + d) + (a + b + c) a) Write sequence of three address instructions that would be generated by above expression b) Represent the Quadruple, Triple and Indirect triple implementation for the above three address code.	10
Q6	Explain various code optimization techniques with the help of suitable examples.	10
Q7	Discuss the comparison among Static, Stack and Heap Allocation with their merits and limitations. Give suitable examples.	10
Q8	Explain the five phases of compiler. Illustrate with help of suitable example.	10
Q9	Using suitable examples, differentiate between i) Synthesized and Inherited attributes ii) Dependency graph and Annotated Parse tree	10

Q10	Draw possible organization (in stack form) for the run time environment of the following code:
	int Fact (int n)
	{ int x;
	if (n>1)
	x= n*Fact(n-1);
	else
	x=1;
	return x; }
	void main ( )
	{
	Fact(4); }
		10

********** All The Best**********s