Nirma University

Institute of Technology

Semester End Examination (IR), Dec-2021

B.Tech. in Computer Science & Engineering, Semester -VII

2CS701 – Compiler Construction

Roll / Exam No. _____ Supervisor's Initial with Date _____

Time: 2 Hours Max Marks: 50

Instructions:
1. Attempt all the questions.
2. Figures to right indicate full marks.
3. Draw neat sketches wherever necessary.
4. Assume suitable data wherever required.

Q-1 (A) CLO-1 Demonstrate a method (step by step process) to construct DFA directly from regular expression for regular expression (a+b)*(abb*) [6]

Q-1 (B) CLO-2 Construct the CLR parsing table for following grammar [6]

S→ L = R
S→ R
L→ * R
L→id;
R→ L

Q-1 (C) CLO-2 Explain any one register allocation method using an appropriate example. [6]

OR

Q-1 (C) CLO-2 Design a LL(1) Parse table for the following grammar. Explain the error recovery strategy for the input string "aab".

S → AbS | e | ε A → a | cAd

Q-2 (A) CLO-3 List optimization approaches after code generation phase and explain any two methods with suitable example. [6]

Q-2 (B) CLO-4 Convert the following C code into 3 address code: [6]

```
If ( A>B && C>D )
{
 X=1;
 If (E<F)
  X=9;
}
Else
{
 X=5;
}
```

[PTO]

OR

Q-2 (B) CLO-4 Compare various intermediate representation formats with suitable example. [6]

Q-2 (C) CLO-4 "For any Top down parsing, Left recursion removal and left factoring is important". Write your opinion about the statement and justify with suitable example. [4]

Q-3 (A) CLO-4 Construct operator precedence function table from given operator precedence relation table. [6]

	$	+	*	(	)
$	=	<	<	<	<
=	>	>	<	<	>
*	>	>	>	<	>
(		<	<	<	=
)	>	>	>		>

Q-3 (B) CLO-2 Construct the DAG for the given below expression [6]
((x + y) - ((x + y) /(x – y))) + ((x + y) * (x – y))

Q-3 (C) CLO-3 What is dead code in code optimization? Eliminate the dead code from the following code fragment, if exists: [4]

```
int x;
void insert()
    { int i;
      i=1;
      x=1;
      x=2;
      return;
      x=3;}
```