

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination-III, May 2022

B. Tech. in Computer Science & Engineering, Semester VI

Roll No.....

CS1112: COMPILER DESIGN

Time: 2 hours

Max. Marks: 30

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Marks are mentioned against each question.

1. Check the following grammar is LALR(1) or not using canonical structure and parsing table:

$S \rightarrow BB$

$B \rightarrow bB \mid c$

(CO2)5

2. Find the output for the call by need, call by name and call by copy restore for the following code:

```
int i=100, j=5
Procedure P( integer x)
{
    Printf(x*5);
    i=46;
    j=34;
    j=i+j*2;
    i=67;
    printf(x);
}
main()
{
    P(i*j);
}
```

(CO5)5

3. Discuss all the possible code optimization for the following example:

```
main()
{
    for(i=0; i<N; i++){
        for(j=0; j<N; j++){
            if(i%2)
            {
                x = x + (4*i + 3*j)
                y = y + (5*i + 3*j)
                z = (x + y) / (sin(A) + sin(B))
            }
        }
    }
}
```

(CO4)5

4. Compute FIRST and FOLLOW for each nonterminal of the above grammar and show that the grammar is LL (1) using predictive parsing table for the grammar.

$S \rightarrow ACB Cbb Ba$	$B \rightarrow g \epsilon$
$A \rightarrow da BC$	$C \rightarrow h \epsilon$

(CO1)5

5. Check for the following grammar, whether it will parse LR(1), LR(0) and SLR(1) or not

$S \rightarrow AS | b$

$A \rightarrow SA | a$

(CO2)5

6. Construct DAG and 3-address code for the program of checking any number is prime number or not.

(CO3)5
