

VI SEMESTER B.TECH.(COMPUTER SCIENCE AND ENGINEERING) DEGREE
MAKE-UP EXAMINATION-JULY 2015
SUBJECT: LANGUAGE PROCESSORS (CSE 302)
DATE: 01-07-2015

TIME: 3 HOURS

MAX.MARKS: 50

Instructions to Candidates

- **Note:** Answer any **FIVE** full questions.

1A. Give the format of a LEX input file identifying all its sections. Write a LEX program that will convert all uppercase letters to lowercase, except for letters in inside C style comments[i.e., anything inside delimiter /* ... */]

1B. Explain the pattern matching based on NFA and DFA using an example.

(5+5)

2A. What are the techniques used to allow usage of ambiguous grammars for bottom up parsing without re-writing the grammar? Explain any one of the technique with an example.

2B. Consider a context free grammar

$$\begin{aligned} S &\rightarrow aABe \\ A &\rightarrow Abc \mid b \\ B &\rightarrow d \end{aligned}$$

Construct CLR(1) parse table for the above grammar and show the parsing actions for the input string “**abbcd**e”.

(5+5)

3A. Show the output of various phases of compilation for the input
 $A[index] = b + c$

3B. Explain the implementation of DAG using Syntax directed definition with an example.

3C. Consider the grammar

$$\begin{aligned} S &\rightarrow UVW \\ U &\rightarrow (S) \mid kSb \mid \epsilon \\ V &\rightarrow gv \mid \epsilon \\ W &\rightarrow dw \mid \epsilon \end{aligned}$$

Find first and follow for the above grammar.

(4+4+2)

4A. For the grammar given in question 3C, write the LL(1) parse table.

4B. Write the three address code for the following C statements

```
while(i>0){  
    val=val * i;  
    i = i-1;  
}  
x=0;
```

4C. Translate the following expression into quadruple, triple and indirect triple.

$(x+y)*(y+z)+(x+y+z)$

(3+2+5)

5A. Show the parsing action for input string “ **k(g)bgd**” for the grammar given question 3C.

5B. Consider the following code

```
for i from 1 to 10 do  
    for j from 1 to 10 do  
        a[i][j]=0.0;  
for i from 1 to 10 do  
    a[i,i]=1.0;
```

i) Write three address code for above code by assuming that array element consumes 8 units.

ii) Draw flow graph for the above code by finding the basic blocks.

(3+(3+4))

6A. Explain any three principles used in designing calling sequence and layout of activation records.

6B. Explain three kinds of assembly language statements.

(5+5)