University Institute of Engineering & Technology, Panjab University,
Subject:- Compiler Design CSE-6th , Test- 1

1. The given grammar is not LL(1) since it will have multiple entries in the parsing table. You are supposed to find out the reason for it 3

   S --> iCtSS1|a

   S1 --> eS|ϵ C --> b

2. Consider the following language 3

   L = { x = {a,b}* | number of a's in x is divisible by 2 but not divisible by 3}

   Find the minimum number of states in DFA that accepts L?

3. Find the number of tokens in the following C code segment 3

```
switch(inputvalue)
{
case 1 : b = c * d;
;
case 2: printf("%d", b);

break;
default : b = b++; break;   }
```

4. Write Lex program to **scan and return** a token for identifiers of the format : (string)(number) strings are not case sensitive like : a0 , A1 , ab2 , AB4 , aBc5. 4

5. Find whether this Grammar is LL(1) or not? 6

   S-> Aa / bAc /bBa /Bc A->d B->d

   If a, b, c, d, $ are indexed as 1,2,3,4 and 5

   Find the value of following after writing in ascending order:

   - Follow(B) * Follow(A)
   - Follow(A) – Follow(S)

6. Implement a recursive descent parser for the following grammar and illustrate the steps in parsing for input **id *id** 7

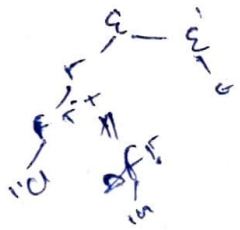
   E → T E'

   E' → + TE' | ϵ

   T → F T'

   T' -> * F T' | ϵ

   F →(E) | id



7. A lexical analyzer uses the following patterns to recognize three tokens T_1, T_2, and T_3 over the alphabet {a,b,c}.

   T_1: a?(b|c)*a

   T_2: b?(a|c)*b

   T_3: c?(b|a)*c

   If the string *bbaacabc* is processes by the analyzer, which one of the following is the sequence of tokens it outputs? 4

bba a ca bc

↓ ↓ ↓

T_1 T_1 T_3