Reg. No.										

INTERNATIONAL CENTRE FOR APPLIED SCIENCES

(Manipal University)

IV SEMESTER B.S. DEGREE EXAMINATION - MAY 2016

SUBJECT: LANGUAGE PROCESSORS (CS 244)

16TH MAY, 2016

Time: 3 Hours **Max. Marks: 100**

✓ **Answer ANY FIVE Questions.**

1. A) Explain the different Compiler Construction Tools that are commonly used.
   B) What is the role of a Symbol table in the design of compilers?
   C) Define Regular Definition. Write the Regular Definition for the language of all unsigned numbers. Also rewrite the above regular definition using the shorthands.

   (9+2+9= 20 marks)

2. A) Differentiate between a token, a pattern and a lexeme.
   B) Construct an NFA for the regular expression (a|b)*abb and convert it to DFA using subset construction method
   C) What is the drawback of having one input buffer scheme in Lexical Analysis? How is it overcome? Explain with the diagram.

   (5+10+5= 20 marks)

3. A) Check if the given grammar is SLR (1) by filling the parse table entries.

   S→AS | **b**
   A→SA | **a**

   B) Explain the possible actions of Shift-reduce parser.
   C) What is the use of LR(0) Automaton?

   (10+5+5= 20 marks)

4. A) For the given grammar

   S→UVW
   U→Ugd| ϵ
   V→Vds | a| ϵ
   W→cW| ϵ

   Construct LR (1) automaton.

   B) Construct LALR parsing table for the grammar given below

   S' → S
   S →L=R | R
   L→*R | id
   R→L

C) Give the transition diagram for accepting unsigned numbers.

(7+8+5= 20 marks)

5. A) Explain Semantic Directed Definition. Differentiate between synthesized and inherited semantic attributes with the help of annotated parse tree.
   B) Write the algorithm to construct the canonical-LR parsing tables.
   C) Write the Directed Acyclic Graph for the expression **a + a*(b-c) + (b-c) * d** and generate the assembly code for the same.

   (10+5+5=20 marks)

6. A) With the help of neat diagram, explain the concept of multi pass translation in assemblers.
   B) Explain the different kinds of instructions that are available in a simple target machine model?

   (10+10 = 20 marks)

7. A) Explain the various fields of general Activation record.
   B) Translate the following into quadruple, triple and indirect triple representations.
   a=b*-c+b*-c
   C) What is basic block? Write the algorithm to partition the three address statements into basic blocks?

   (4+8+8 = 20 marks)

8. A) Generate TAC for the following program segment
   while(A<C and B>D)
   do if (A=1 then c=c+1)
   else
   while(A<=D)
   do A=A+B
   B) With a neat diagram, explain the structure of LR parser.

   (10+10 = 20 marks)