Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

V SEMESTER B.TECH (COMPUTER SCIENCE AND ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: DESIGN AND IMPLEMENTATION OF PROGRAMMING LANGUAGES [CSE 301]

REVISED CREDIT SYSTEM

Time: 3 Hours **25-11-2015** MAX. MARKS: 50

Instructions to Candidates:

- Answer **ANY FIVE FULL** questions.
- Missing data, if any, may be suitably assumed.

1A.With an example of map and reduce explain higher order functions in scheme. 3M

1B.What is a Syntactic Sugar? Give examples of syntactic sugar. Which design principles are affected by syntactic sugar? Explain. 3M

1C. Convert the following English statements into horn clauses

i. Alan speaks English.
ii. Bob speaks Russian.
iii. Mary speaks English.
iv. Mary speaks Russian.
v. Two persons talks with each other if they speak same language.

Consider the Converted statements as axioms, Use the axioms, resolution and unification to answer the question "**who talks with Mary?"** 4M

2A. Write Equivalent EBNF for the following BNF.

E→EE+|EE-|EE*|EE\|N
N→ND|D
D→0|1|2|3|4|5|6|7|8|9 3M

2B. Check whether RDP is possible for following grammar, if yes write the RDP. If no why not?

E→+EE|-EE|*EE|\EE|D
D→0|1|2|3|4|5|6|7|8|9 5M

2C.Give an example for anonymous discriminated union in C++. 2M

3A.What is memory management? Explain how memory is managed in different languages. 3M

3B. List and Explain

i. The Different binding times for attributes of names with examples.
ii. Different types of constants with suitable example. 5M

3C. With an example explain overload resolution. Give an example of a language where overloading is not possible. 2M

4A. What is a side effect? Explain two types of evaluation in presence of side effects. 3M

4B. Briefly explain different models of continuation of execution of exception. 2M

4C. What is constructor chaining? Write a program which applies constructor chaining. 5M

5A. Write a function in Scheme

i. To find and replace an element from the list.

ii. To generate Fibonacci numbers and store it in a list. 5M

5B. Write the pre and post condition for the following

i. Swap two elements

ii. Find sum of n numbers 2M

5C. With an example explain different domains of denotational semantic. 3M

6A. Write a multithreaded program in Java for matrix multiplication using one thread for each element of the matrix. 4M

6B. What support an operating system need to provide to achieve parallelism. 4M

6C. List and explain different computational paradigms. 2M