Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

FIRST SEMESTER B.TECH END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: PROBLEM SOLVING USING COMPUTERS [CSE-1001]

REVISED CREDIT SYSTEM

Date: 27-11-2015 Time: 9 AM – 12 NOON

TIME: 3 HOURS MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data, if any, may be suitably assumed.

1. A) Define operating system and write its function in a computer. [2M]

   B) Distinguish between Assembly level and High level language (any four points). [2M]

   C) With an appropriate example explain the type cast operator in C++. [2M]

   D) What will be the output for each of the following expressions? [4M]

   i) **(int)21.3/(int)4.5;** iii) **(10>10 ? (10 <=10 ? 10 : 20): 30);**

   ii) **3 * (1,2,3,4,3,2,1);** iv) **10>15 && -6<0 || 5>0**

2. A) Write an algorithm to print the square of first ***n*** natural numbers without using Multiplication. [3M]

   B) With appropriate example for each, explain **typedef** and **enum** data types in C++. [4M]

   C) Write a C++ program to compute the Sine series, $\mathbf{sin(x) = x - x^3/3! + x^5/5! - x^7/7! + \ldots..}$ for ***n*** terms. [3M]

3. A) Illustrate all the steps involved in searching an element **14** in the list **58, 62, 75, 88, 92** using linear search method. [2M]

   B) Explain ***while*** loop with a neat flow control diagram. Write a complete C++ program to

   (i) Read 'N' elements to an integer array.

   (ii) Remove all duplicate elements in the array.

   (iii) Display the resultant array after duplicate(s) removed. [2M +3M]

   C) Write a C++ program to print the words in a given string ending with a given input letter without using any string handling built-in functions. (E.g. For input string "***This is an example***" and letter '***s***', the output will be "***This***" and "***is***" words ending with letter '***s***'.) [3M]

4. A) Write a C++ program to copy one string to another without using any in-built functions. Discuss the working of in-built string handling function for copying one string to another with appropriate syntax. [3M]

   B) Create an array of student structure **stud** to store the **roll no**., **name** and **marks** in 2 subjects. Write a C++ program to input details of **10** students into the structure, and compute and display the following.

      (i) Roll number and highest mark in each subject
      (ii) Name with highest total; without using sorting technique. [4M]

   C) Distinguish between Array and Structure. Write a C++ function to swap elements using pointers in cyclic order. In the main, call the function to swap **3** elements read and show the results. (See **fig.1** for e.g.)

Input		
a	b	c
1	2	3

output		
a	b	c
3	1	2

fig. 1

[1M+2M]

5. A) Discuss the following in Object Oriented Programming with examples.

      (i) Inheritance

      (ii) Polymorphism [2M]

   B) Write a recursive function ***product( )*** which takes two integer numbers as parameter and returns its product (multiplication result). Write a main function which reads two integer numbers and displays their product using the recursive function ***product( )***. [4M]

   C) Discuss the following cybercrimes in brief.

      (i) Email Spoofing
      (ii) Cyber Stalking
      (iii) Denial of Service attack
      (iv) Logic Bombs [4M]

ALL THE BEST