Seat No. : _____

TC-121

M.Sc. Sem.-II
April-2013

410 : Statistics

(Computer Programming)

Time : 3 Hours] **[Max. Marks : 70**

Instruction : All questions carry equal marks.

1. (a) Explain difference between : (any **five**)
   (i) Input device and Output device.
   (ii) Computer Hardware and Software.
   (iii) Source program and Object program.
   (iv) Algorithms and Flowcharts.
   (v) Machine language and High level language.
   (vi) System software and Applications software.

OR

(a) Discuss Evolution of Computers. Define Central processing unit, Memory unit and Arithmetic Unit. Discuss applications of computer in different fields.

(b) Draw a flow chart to compute 'Range' from the following n observations :

$x_1, x_2, x_3 \ldots\ldots x_n$.

OR

From the following table of marks obtained by students A and B in 10 tests of 100 marks each. Draw Slow chart to find out the student with more consistent marks :

A :	25	50	45	30	70	42	36	48	10	90
B :	17	70	50	20	95	55	42	60	88	45

2. (a) Explain the terms :
   (i) Input and Output statements
   (ii) Type Declaration Instruction
   (iii) Arithmetic Instruction
   (iv) Integer and Float conversions
   (v) Hierarchy of operations

OR

(a) Explain the following terms with suitable examples :

(i) If statement and Multiple statements within if.

(ii) If – else statement and Nested if – elses

(iii) Logical operators and conditional operators

(b) Write a C^{++} program to determine the value of the game for player A for following two-person zero-sum game having payoff matrix.

		Player B	
		B_1	B_2
Player A	A_1	+1	– 1
	A_2	– 1	+ 1

OR

The monthly commission paid to a sales person is as follows :

(i) If sales < ₹ 10,000, no commission.

(ii) If ₹ 10,000 ≤ sales < ₹ 50,000 then 10% commission.

(iii) If sales ≥ ₹ 50,000 then 12% commission.

Write a C^{++} program to compute commission.

3. (a) Discuss while loop, for Loop and Nesting of Loops with suitable examples.

OR

Discuss break statement, continue statement and do – while loop in details.

(b) Consider the quadratic polynomial $y = 2x^2 - 3x + 5$. Write a C++ program which finds y for values of x from – 4 to + 4 in steps of 0-5.

OR

The acceleration of gravity (g) as a function of altitude is given by

$$g = \begin{cases} 32.17\left(\frac{4390}{4396 + h}\right)^2 \text{ if } h > 0 \\ 32.17\left(1 + \frac{h}{4390}\right)^2, \text{ if } h \le 0 \end{cases}$$

Where h is the height alone sea level in statute miles. Write a C^{++} program to compute and print the value of g for h = – 5 to 150 in steps of 5.

4. (a) What is a Function ? What are the reasons of using functions ? What are Painters ? What is meant by painters to functions ?

OR

Explain the terms :

(i) Assay initialization

(ii) Two-dimensional Assays

(iii) Assay of painters

(iv) Structures

(v) Strings

(b) Write a C^{++} program to obtain TRACE of a matrix A. where $A = (a_{ij})_{3\times3}$.

OR

Write a C++ program to obtain TRANSPOSE of a matrix B. where $B = (b_{ij})_{3\times3}$.

5. Complete the following statements by filling gaps : (any **fourteen**)

(a) If *x* is an integer, after the operation $x = 9/7 + 10/8 * 5$; the value of *x* will be _____.

(b) The conversion of equation $r = \dfrac{2v + 6.23(c + d)}{(g + v)\left(\dfrac{1}{y}\right)}$ in to corresponding C++ statement is _____.

(c) If y is an integer variable, the expression $y = 10/25 * (24.11 + 5)/3 * (2/7)$; evaluates to _____.

(d) The decimal equivalent of binary number $(0101)_2$ is _____.

(e) The conversion of binary number $(1010.1111)_2$ into corresponding octal number is _____.

(f) The conversion of binary number $(10011011.1010)_2$ into corresponding hexadecimal number is _____.

(g) The conversion of decimal number $(111.11)_{10}$ into corresponding binary number is _____.

(h) The conversion of hexadecimal number $(AFD)_{16}$ into corresponding binary number is _____.

(i) The conversion of decimal number $(555.5)_{10}$ into corresponding hexadecimal number is _____.

(j) The conversion of hexadecimal number $(BDFA)_{16}$ into corresponding octal number is _____.

(k) The conversion of hexadecimal number $(FAD)_{16}$ into corresponding decimal number is _____.

(l) $(1111)_2 + (0101)_2$ = _____.

(m) $(1110)_2 - (0110)_2$ = _____.

(n) $(111)_2 \times (101)_2$ = _____.

(o) The conversion of octal number $(125)_8$ into Hexadecimal number is _____.

_____