PG/IIS/MTM-207/13(Pr.)

M.Sc. 2nd Semester Examination, 2013

APPLIED MATHEMATICS WITH OCEANOLOGY AND COMPUTER PROGRAMMING

(*Computer Programming*)

(Practical)

PAPER – MTM- 207

Full Marks : 25

Time : $1\frac{1}{2}$ hours

Answer **one** question from each Group

The figures in the right hand margin indicate marks

Questions are to be selected by lottery

GROUP – A

1. Write a program in C to find the average of n numbers using dynamic memory allocation. 8

2. Write a program in C to find out the correlation coefficient for a set of points (x_i, y_i), $i = 1,2, ..., n$. 8

3. Write a program in C for printing all triplets (a, b, c) which satisfies the Pythagoras condition lies between 1 and 50. 8

4. A file named DATA contains a series of integer numbers. Write a program in C to read these numbers and then write all odd numbers to a file called ODD and all even numbers to a file called EVEN. 8

5. Write a program in C that will generate a table of 1st n integers and identify each as perfect, abundant and deficient. 8

6. Write a program in C to find the first n Fibonacci numbers. 8

7. Write a program in C to check whether a matrix is orthogonal or not. 8

8. Write a program in C to find a real root of an equation by iteration method. 8

9. Write a program in C to fit a straight line through a set of points (x_i, y_i), $i = 1, 2, ..., n$. 8

10. The value of π can be calculated from the following infinite series

$$\pi = 4 - \frac{4}{3} + \frac{4}{5} - \frac{4}{7} + \frac{4}{9} - \frac{4}{11} + \cdots$$

Write a program in C to find out the number of terms which have to be used before first getting the value 3.1415. 8

GROUP – B

1. Write a program in C to find the value of *ncr* using recursive function. 12

2. Using a structure to define a complex number, write a program in C to multiply two complex numbers using a function. 12

3. Write a program in C to check whether a square matrix is orthogonal or not. 12

4. Write a program in C to find a real root of an equation by Newton-Raphson method. 12

5. Write a program in C to find the product of two polynomials. 12

6. Write a program to compute the difference between two dates using a function. 12

7. Write a program in C to find an item from a list of items by binary search technique using function. 12

8. Write a program in C to find mean, median, mode and standard deviation for discrete data. 12

9. Write a program in C to find AUB using a function where A and B are two non-empty sets. 12

10. Write a program in C to compare two strings using pointers and user defined function. 12

[Viva-voce + Note Book – 5 Marks]