

2008

**APPLIED MATHEMATICS WITH OCEANOLOGY
AND COMPUTER PROGRAMMING**

PAPER – MA2111

(Practical)

Full Marks : 25

Time : 2 hours

Answer any one questions

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary

Problem : 20 marks; Lab. note book and Viva : 5

(Advanced Numerical and Statistical Lab)

Question will be selected by lottery

1. Write a program to evaluate a determinant by Gauss elimination method, using partial pivoting.
2. Write a program to find the inverse of a matrix by partial pivoting.

(Turn Over)

3. Write a program to solve a system of linear equations by LU decomposition method.
4. Write a program to solve a system of linear equations by Gauss-Seidal iteration method.
5. Write a program to solve a system of linear equations by Matrix inversion method.
6. Write a program to solve a Tri-diagonal system of equations.
7. (a) Write a program to find the integration of a function $f(x)$ by Gauss-Legendre quadrature (use 6-point formula)

(b) Write a program to solve an ODE by Modified Eulers method.

8. Write a program to solve an ODE by Runge-Kuta (2nd and 4th order) methods.
9. Write a program to solve an ODE by Milne predictor and corrector methods.
10. Write a program to solve a second order PDE by finite difference method.
11. Write a program to find the largest Eigenvalue of a matrix by power method.
12. Write a program to find the Eigenvalue of a matrix by Jacobi method.
13. Write a program to find the correlation coefficient for bivariate sample.

(4)

14. Write a program to find the regression lines for bivariate sample.

15. Write a program to fit a linear curve.

16. Write a program to fit a quadratic curve.

[*Internal Assessment* – 05 Marks]
