MAT-206

Mathematics practical's

Lecture 1

Introduction

- 2.1 Topics of practicals

1. **Problem based on relation between roots and coefficients of a polynomial equations and problem finding equations from given conditions.**
2. **Cardon's Method to solve cubic polynomial equation.**
3. **Ferrari's method to solve bi-quadratic polynomial equation.**
4. **Graphical method to find the real root of an equation.**

2.1 Topics of practicals

5. **Bisection method and method of false position to find root of an equation.**
6. **Fixed point iteration method and newton Raphson method.**
7. **Euler's method to solve an initial value problem (IVP) and modified Euler's method to solve an IVP.**
8. **Taylor's series method to solve an IVP, picard's method to solve an IVP.**

2.1 Topics of practicals

9. **Range-kutta method of order two and order four to solve an IVP.**
10. **Numerical differentiation for equi-spaced arguments : newton's forward and backward formula, gauss's forward differentiation formula.**
11. **Numerical differentiation for un equispaced arguments : Newton's divided difference formula and langrages formula.**
12. **Numerical integration : trapezoidal rule, simpson's 1/3 rule, simpson's 3/8 rule & weddle's rule.**

2.1 Topics of practicals

13. **Problems on change of order of integration.**
14. **Problems on line integrals and volume integrals**
15. **Examples of permutations & symmetric groups.**
16. **Examples on cyclic groups, its subgroups and lattice diagram.**

Projects ideas for real life applications :

1. **Methods , applications and history regarding problems to find roots of an equations.**
2. **Polynomial equations solution methods and applications.**
3. **Initial value problem applications and methods history and application.**
4. **Numerical differentiation and integration problems with real word and solution.**

- Thank you