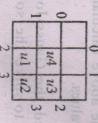
(b) Solve the following linear system using matrix inversion method:

$$3x + 2y + 3z = 16$$

$$x + 6y + 2z = 11$$

$$2x + 4y + z = 9$$

- (a) Find the root of the equation $x^5 3x^2 = 100$ correct upto three decimal place using: 3+4
- (i) Bisection Method
- (ii) Newton-Raphson Method.
- (b) Give the geometrical Newton-Raphson Method significant of
- (a) Discuss the solution of Partial differential equation by Finite-Difference method
- (b) Solve the Laplace equation for square region with boundary condition shown below in the



M.Sc.-2nd (AP)/Numerical Techniques in Physics (Set-1) (Continued)

(a) Fit the following data set using:

(i) Linear fit

(ii) Quadratic fit

(b) Construct the Lagrange interpolated polynomial using above data.

(a) Using Runge-Kutta method, find out y at x = 0.4 from the following differential equations using h = 0.2 with initial values at x = 0, y = 1 and dy/dx = 0.

$$\frac{d^2y}{dx^2} = xy + 1$$

(b) Discuss how to solve Schrödinger equation Oscillator potential (explain the boundary for linear one dimensional Harmonic conditions).

(a) Derive the nth differences of a polynomial and discuss the results.

(b) Derive the Newton's Backward formula of interpolation.