

## Unit - II

2. a) Find the inverse Z - transform of : (8)

$$\left[ \frac{2z^2 + 3z}{(z-2)(z-4)} \right]$$

- b) Establish the following Z - Transforms of (4)

$$\left[ \frac{a^{n+1} - b^{n+1}}{a-b} \right]$$

- c) Use Z - Transform to solve the following equation (4)

$$U_{n+2} + 6U_{n+1} + 9U_n = 2^n$$

$$\text{given } U_0 = U_1 = 0.$$

OR

2. a) Obtain the coefficient of correlation for x and y from the following data : (8)

x:	1	2	3	4	5	6	7	8	9
y:	9	8	10	12	11	13	14	16	15

- b) Find the best values of x and y from the equations : (8)

$$2x + y + 1 = 0$$

$$x - 3y + 4 = 0$$

$$x + 4y - 3 = 0$$

$$3x - 2y + 6 = 0$$

## Unit - III

3. a) Using Runge-Kutta method, to find y when x = 1.2 in steps of h = 0.1 given that x = 1 and y = 1.5 and  $f(x,y) = x^2 + y^2$  (8)

- b) Solve linear difference equation : (8)

$$U_{n+2} - 7U_{n+1} + 10U_n = 12e^{3n} + 4^n$$