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- i) Show that mean of Uniform distribution over interval (a, b) is  $\frac{a+b}{2}$
- j) Give two properties of regression coefficients.

### SECTION-B

- Q2. Use Newton's iterative formula; establish the iterative formula  $x_{n+1} = x_n[2 - Nx_n]$  to calculate the reciprocal of N. Hence find the value of  $\frac{1}{37}$  upto four places of decimal.
- Q3. Determine the largest eigenvalue and the corresponding eigenvector of the matrix correct to three decimal places using the power method.

$$\begin{bmatrix} 4 & 1 & 0 \\ 1 & 20 & 1 \\ 0 & 1 & 4 \end{bmatrix}$$

- Q4. Apply Gauss elimination method to solve the following system of equations  
 $x + 4y - z = -5$ ;  $x + y - 6z = -12$ ;  $3x - y - z = 4$ .
- Q5. Using Newton's divided difference formula, find the missing value from the table

X	1	2	4	5	6
f(x)	14	15	5	.....	9

- Q6. The heights of 10 males of given locality are 70, 67, 62, 68, 61, 68, 70, 64, 64, 66 inches. It is reasonable to believe that the average height is  $> 64$  inches? Test at 5% significance level assuming that for 9 degree of freedom  $P(t > 1.83) = 0.05$ .

### SECTION-C

- Q7. Use Runge Kutta method of fourth order to approximate  $y(0.2)$  taking step size  $h = 0.1$  for the initial value problem  $\frac{dy}{dx} = \frac{y^2 - x^2}{y^2 + x^2}$ ,  $y(0) = 1$ .
- Q8. A shipment of 20 similar computers to a retail outlet contains 3 that are defective. If a school makes a random purchase of 2 of these computers, find the probability distribution, mean and variance for the no. of defectives.
- Q9. By using the method of least squares, fit a curve of the form  $y = a + bx$  to the following data :

x	1	2	4	6
y	2	6	12	18