PROBLEM NO:05 DATE:22/03/2023

ROLL NO:1120

STATEMENT OF THE PROBLEM:

From the following table compute f(x) at $x = 10.5 + (\frac{R}{100})$ by Lagrange interpolation Formula:

х	f(x)
10.5	R.36969
10.6	R.43839
10.8	R.49544
10.9	R.50022
11.1	R.48332
11.4	R.42257

where R denotes the last digit of your Roll Number.

WORKING RULE: LAGRANGE INTERPOLATION FORMULA

$$f(x) \approx \mathsf{L}_{\mathsf{n}}(\mathsf{x}) = \omega(x) \sum_{r=0}^{n} \frac{f(x_r)}{(x - x_r)\omega'(x_r)} = \omega(x) \sum_{r=0}^{n} \frac{f(x_r)}{D_r}$$
 where $\omega(x) = (x - x_0)(x - x_1)(x - x_2) \dots (x - x_{n-1})(x - x_n)$,
$$\omega'(x_r) = (x_r - x_0)(x_r - x_1) \dots (x_r - x_{r-1})(x_r - x_{r+1}) \dots (x - x_n) \text{ and }$$

$$D_r = (x_r - x_0)(x_r - x_1) \dots (x_r - x_{r-1})(x - x_r)(x_r - x_{r+1}) \dots (x - x_n).$$

RESULT:

*******NEWTON DIVIDED DIFFERENCE INTERPOLATION*******

PROBLEM NO:06 DATE:27/03/2023

ROLL NO:1120

STATEMENT OF THE PROBLEM:

Compute the value of H(x) at $x=0.29+(\frac{R+3}{100})$ by using Newton divide difference interpolation formula.

х	f(x)
0.24	0.21462
0.30	0.28493
0.42	0.39617
0.50	0.43752
0.61	0.49031
0.69	0.55286
0.83	0.69756

where R denotes the last digit of your Roll Number.

WORKING RULE:

NEWTON DIVIDED DIFFERENCE INTERPOLATION FORMULA

$$f(x) \approx L(x) = f(x_0) + (x - x_0)f(x_0, x_1) + (x - x_0)(x - x_1)f(x_0, x_1, x_2) + (x - x_0)(x - x_1) (x - x_2)f(x_0, x_1, x_2, x_3) + + (x - x_0)(x - x_1)...(x - x_n)f(x_0, x_1, x_2,x_n) \text{Where,} f(x_0, x_1, x_2,x_n) = \frac{f(x_0, x_1, x_2, ..., x_{n-1}) - f(x_1, x_2, ..., x_n)}{x_0 - x_1}.$$

RESULT:

SIGNATURE OF THE TEACHER

DATE: