**********LAGRANGE INTERPOLATION**********

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 :

x	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

$$f(x) \approx L_n(x)=\omega(x)\sum_{r=0}^{n}\frac{f(x_r)}{(x-x_r)\omega'(x_r)}=\omega(x)\sum_{r=0}^{n}\frac{f(x_r)}{D_r}$$

where $\omega(x) = (x-x_0)(x-x_1)(x-x_2)\dots(x-x_{n-1})(x-x_n)$,

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

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

RESULT:

SIGNATURE OF THE TEACHER

**********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.

x	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

$f(x) \approx L(x) = f(x_0) + (x - x_0)f(x_0, x_1) + (x - x_0)(x - x_1)f(x_0, x_1, x_2) + (x - x_0)(x - x_1)(x - x_2)f(x_0, x_1, x_2, x_3) + \ldots\ldots + \ldots\ldots + (x - x_0)(x - x_1)\ldots(x - x_n)f(x_0, x_1, x_2, \ldots x_n)$

Where, $f(x_0, x_1, x_2, \ldots\ldots x_n) = \frac{f(x_0, x_1, x_2, \ldots, x_{n-1}) - f(x_1, x_2, \ldots, x_n)}{x_0 - x_1}$.

RESULT:

SIGNATURE OF THE TEACHER

SIGNATURE OF THE TEACHER

DATE: