

## COMPUTATIONAL AND NUMERICAL METHODS

### Lab-4

Date: 26-09-2016

Q. 1). Find  $f(0.15)$  for the following data using Newton's Forward and Backward difference interpolation.

X	f(x)
0.1	0.09983
0.2	0.19867
0.3	0.29552
0.4	0.38942
0.5	0.47943

Q.2). for the given function  $f(x) = e^x$  and given data:

X	f(x)
-1	f(-1)
-0.8	f(-0.8)
-0.6	f(-0.6)
-0.4	f(-0.4)
-0.2	f(-0.2)
0	f(-0)
0.2	f(0.2)
0.4	f(0.4)
0.6	f(0.6)
0.8	f(0.8)
1	f(1)

- Plot  $f(x)$ .
- Plot Newton's Forward difference interpolation.
- Plot Newton's Backward difference interpolation.
- Find  $f(-0.9)$  by using both Newton's forward and backward difference interpolation.
- Whether you find any difference?
- Construct Newton's Forward difference interpolation by using initial 5 nodes.
- Construct Newton's backward difference interpolation by using last 5 nodes.
- Now find approximate value of  $f(-0.9)$  and  $f(0.9)$  by using both the polynomials.  
Which one is more accurate?  
Newton's Forward (or) Newton's Backward.