



# ADITYA DEGREE COLLEGES

## ANDHRA PRADESH

II B.Sc Statistics IV SEMESTER - I MID EXAMINATIONS

(NUMERICAL ANALYSIS)

Max. Marks : 60

Time : 2 Hours

Date: \_\_\_\_\_

### SECTION - A

Answer any FIVE Questions

5X4=20M

1. Evaluate  $1 + \mu^2 \delta^2 = \left(1 + \frac{1}{2} \delta^2\right)^2$
2. Evaluate  $\left(E^{1/2} + E^{-1/2}\right)(1 + \Delta)^{1/2} = 2 + \Delta$
3. Find the cubic polynomial from the data by Newton's forward method  

x	0	1	2	3	4
f(x)	3	6	11	18	27
4. By Gauss's forward formula, find  $Y_{32}$   
 from the data :  $Y_{25} = 0.2707$   
 $Y_{30} = 0.3027$ ,  $Y_{35} = 0.3386$ ,  $Y_{40} = 0.3794$
5. State and prove Stirling's formula.
6. For the data  $Y_{20} = 24$ ,  $Y_{24} = 32$ ,  $Y_{28} = 35$ ,  $Y_{32} = 40$ , find  $Y_{32}$  by Bessel's formula.
7. Evaluate  $\Delta(\tan ax)$ , h being the interval of differencing.
8. Evaluate  $\Delta^2(ab^{cx})$

### SECTION - B

Answer all the Questions.

4X10= 40M

9. a) Explain about difference operators

(OR)

b) Evaluate (i)  $\mu = \sqrt{1 + \frac{1}{4} \delta^2}$  (ii)  $\mu \delta = \frac{1}{2}(\Delta + \nabla) = \frac{1}{2} \Delta E^{-1} + \frac{1}{2} \Delta$

10. a) Evaluate  $\Delta^n(\sin(a+b))$

(OR)

- b) State and prove fundamental theorem on finite differences.

11. a) state and prove Newton's forward formula for interpolation.

(OR)

b) From the following data find Y at  $x=0.26$

x	0.10	0.15	0.20	0.25	0.30
y	0.1003	0.1511	0.2027	0.2553	0.3093

12. a) State and prove Gauss's forward formula for interpolation.

(OR)

b) Find by Gauss's backward formula for the year 1936.

Year	1901	1911	1921	1931	1941	1951
Sales	12	15	20	27	39	52

(in lakhs)