

**ANDHRA LOYOLA COLLEGE (AUTONOMOUS) VIJAYAWADA  
B.Sc/B.A.-MATHEMATICS**

**SPECIMEN COPY**

**MODEL QUESTION PAPER**

**Time: 2 Hrs**

**Max.Marks : 100**

**I Answer any FIVE Questions from the following**

**5X20=100M**

1. State and prove Fundamental Theorem of Difference Calculus
2. Express  $f(x) = x^4 - 4x^3 + 7x^2 + 3x - 6$  in terms of Factorial notation.
3. State and prove Newton- Gregory Backward interpolation formula.
4. Given that

X	654	658	659	661
F(x)	2.8156	2.8182	2.8189	2.8202

find  $f(656)$  by using Newton's divided difference formula

5. State and prove Gauss forward interpolation formula.
6. Use Strling's formula to find  $y_{28}$  given that  
 $y_{20}=49225, y_{25}=48310, y_{30}=47236, y_{35}=45926, y_{40}=44306$
7. Derive Simpson's  $\frac{1}{3}$  rule.
8. Evaluate  $\int_0^1 \frac{dx}{1+x^2}$  by using Simpson's  $\frac{3}{8}$ th rule.
9. Find the real root of the equation using Iterative method  $x^3 - 3x - 5 = 0$   
taking  $x_0 = 2$  Correct to five places of decimals.
10. Find the real root of the equation  $e^x - 3x = 0$  that lies between 0&1 correct to four places of decimals. Using Newton-Rapson's method.

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