MATHEMATICS MODEL PAPER

SRI A.S.N.M. GOVERNMENT COLLEGE(A), PALAKOL. W.G.DT

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SEMESTER VI Paper –VII B: ELECTIVE – B: NUMERICALANALYSIS

Time: 3 hours **Maximum Marks: 75**

SECTION –A

Answer any **FIVE** questions. Each question carries **FIVE** marks. **5 x 5 = 25 Marks**

1) Evaluate the sum S = $\sqrt{3}+\sqrt{5}+\sqrt{7}$ to four significant digits and find its absolute and relative errors.
2) Explain Bisection Method
3) Find a root of the equation x^3-2x-5=0 by using Newton- Raphson method.
4) Prove that 1) $E= e^{hD}$ 2) $\nabla = E^{-1}\Delta$
5) Prove that $\sqrt{1 + \delta^2 \mu^2} = 1 + \delta^2/2$
6) Derive Newton's forward interpolation formula.
7) Find the third divided difference for the function $f(x) = x^3 + x + 2$ for the arguments 1,3,6,11
8) Using the inverse Lagrange's Interpolation Formula if $y_1 = 4$, $y_3 = 12$, $y_4 = 19$, $y_x = 7$ then find the value of x

SECTION - B

Answer any FIVE questions at least two from each part. Each question carries Ten marks: 5 X 10 = 50 M

PART – I

9. If $u=4x^2y^3/z^4$ and errors in x, y, z be 0.001, compute the relative maximum error in u, when x=y=z=1.
10. Define absolute, relative, percentage error, and derive general error formula of a function of 'n' variables
11. Find the root of a equations $\cos x = 3x - 1$ correct to three decimal places using Iteration method.
12. Find the real root of the equation x^3-9x+1=0 by using Regula Falsi Method.
13. Given, sin 45° = 0.7071, sin 50° = 0.7660, sin 55° = 0.8192, sin 60° = 0. 8660, find sin 52°.

PART-II

14. State and prove Newton- Gregory backward interpolation formula

15. Apply Guass forward formula to find the value of f(9) if f(0)=14, f(4)=24, f(8)=32, f(12)=35, f(16)=40

. 16. State and prove Bessel's formula.

17. By means of Newton's divided difference formula, find the value f(8) and f(15) from the following table :

x	4	5	7	10	11	13
f(x)	48	100	294	900	1210	2028

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18. State and prove Lagrange's Interpolation Formula

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