DR. MPS MEMORIAL COLLEGE OF BUSINESS STUDIES

SIKANDRA, AGRA

QUESTION BANK
2022
Numerical Methods
BCA SEMESTER – 2

Q1: Find a root of an equation **f(x)=x^3-x-1** using Bisection method

Q2. Find a root of an equation ***f*(*x*)=√12** using Newton Raphson method

Q3. The population of a town in decimal census was as given below. Estimate population for the year 1895.

Year	1891	1901	1911	1921	1931
Population (in Thousand)	46	66	81	93	101

Q4. **Find Solution using Lagrange's Interpolation formula**

x	f(x)
300	2.4771
304	2.4829
305	2.4843
307	2.4871

x = 301

Q5. Using Stirling's interpolation formula, find f(12.2)

x	10	11	12	13	14
f	0.23967	0.28060	0.31788	0.35209	0.38368

Q6. From the following table of values of x and y, obtain $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ for x = 2.0

x	1.4	1.6	1.8	2.0	2.2
f	4.0552	4.9530	6.0496	7.3891	9.0250

Q7. **Find Solution using Trapezoidal rule**

x	**f(x)**
1.4	**4.0552**
1.6	**4.9530**
1.8	**6.0436**
2.0	**7.3891**
2.2	**9.0250**

Q8. **Find y(0.2) for $y'=x-y^2$, y(0) = 1, with step length 0.1 using Euler method**

Q9. **Find y(0.2) for $y'=x-y^2$, y(0) = 1, with step length 0.1 using Runge-Kutta 4 method**

Q10. WAP to demonstrate i) Bisection Method, ii) Newton Backward Interpolation, iii) Lagrange Interpolation