School of Computer Applications *BBDU*

Roll No. 1 2 3 0 9 1 1 0 2 6

BCA First Sessional Test 2024-25

Third Semester

BCAN13204: Numerical and Statistical Methods

Time: 1 Hour Max. Marks: 30

Section-A

Q1. Attempt all questions. (5 x 1 = 5)

a. If 0.333 is approximate value of 1/3, find absolute error.
b. Normalize the floating point number 0.003957E10.
c. What is the rate of convergence of Newton Raphson Method?
d. What is the difference between Interpolation and Extrapolation?
e. Add the floating point numbers 0.4545E7 and 0.3636E5.

Section-B

Q2. Attempt any two questions. (7.5 x 2 = 15)

a. Find the real root of the equation $x^3 - 9x + 1 = 0$ using bisection method.
b. Solve the following system of equation by Gauss Elimination Method:

$3x + 2y - z = 7$ $5x - 3y + 2z = 4$ $-x + y - 3z = -1$

c. Using Gauss backward interpolation formula, find the population for the year 1936, given that:

Year:	1901	1911	1921	1931	1941	1951
Population (in thousands)	12	15	20	27	39	52

d. Find the f(4) by Lagrange's interpolation formula from the following data:

x	0	1	2	5
f(x)	2	3	12	147

Section-C

Q3. Attempt any One question. (10 x 1 = 10)

a. Find a positive root of the equation $xe^x = 3$, using Regula Falsi method correct upto 3 decimal places.
b. Solve the following system of equations by Gauss-Jacobi method

$8x - 3y + 2z = 20$ $6x + 3y + 12z = 35$ $4x + 11y - z = 33$

c. Using Newton's forward Interpolation formula; find f(46) from following data.

x	45	50	55	60	65
f(x)	114.84	96.16	83.32	74.48	68.48