

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI**  
**(END SEMESTER EXAMINATION)**

CLASS: BCA  
BRANCH: BCA

SEMESTER : BCA VI (Paper of II)  
SESSION: MO/2023

**SUBJECT: CA158 NUMERICAL AND STATISTICAL METHODS**

TIME: 3 Hours

FULL MARKS: 50

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Round off the following numbers correct to four significant figures and find absolute error, relative error, and percentage error : 3.27326, 0.80035.	[5] 1	1
Q.1(b)	Find a real root of the equation $x^3-2x-5=0$ by the method of Regula Falsi correct to three decimal places.	[5] 2	1
Q.2(a)	Using Newton's forward formula, find the value of $f(1.6)$ , if x: 1            1.4            1.8            2.2 f(x): 3.49       4.82       5.96       6.5	[5] 3	1
Q.2(b)	Using Newton's divided difference interpolation, find the polynomial of the given data: x : -1       0       1       3 f(x): 2       1       0       -1	[5] 3	1
Q.3(a)	Apply the Gauss Elimination method to solve the equations $x+4y-z=-5$ ; $x+y-6z=-12$ ; $3x-y-z = 4$ .	[5] 3	2
Q.3(b)	Using Euler's method, find the approximate value of y when $x=0.6$ of $dy/dx=1-2xy$ , given that $y=0$ when $x=0$ (take $h=0.2$ ).	[5] 3	2
Q.4(a)	Explain the terms Binomial Experiment, Normal Distribution, and Random Variable.	[5] 1	3
Q.4(b)	Find areas of the normal curve under the following conditions: (i) to the right of $z= +1.32$ (ii) to the left of $z= -0.64$ (iii) Between $z_1= -0.8$ to $z_2=1.5$ .	[5] 3	3
Q.5(a)	Define terms: parameter, statistic, point, and interval estimation.	[5] 1	2
Q.5(b)	Write short notes on correlation and regression.	[5] 1	3

:::23/11/2023:::E