GYANMANJARI INNOVATIVE UNIVERSITY

GYANMANJARI INSTITUTE OF TECHNOLOGY

B.Tech.-Mid Semester Examination (MSE)-W2026

Enrollment No.:_____

Subject Code: BETXX10209 **Date: 21-09-2026**

Subject Name: Mathematics-II **Semester: 3**

Time: 10:30 AM to 12:30 PM **Total Marks: 60**

Instructions:

1. **Question No. 1 is compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			Marks
Q.1	**(a)**	Consider the following data: 6,8,10,4,20,18,16,14,12,10. Find Q.D.	**05**
	(b)	There are 3 statisticians, 2 economists and 4 engineers. A committee of 4 persons is to be formed in such a way that (i) There are 2 statisticians and 2 engineers (ii) Engineer is not in the committee.	**05**
	(c)	Find the mean, median and mode of the following data:	**10**

Class	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	12	17	28	23	7	8	5

Q.2	**(a)**	Solve the given equations and obtain value of x,y,z using Gauss elimination method $x + y + z = 9, 2x - 3y + 4z = 13, 3x + 4y + 5z = 40$	**05**
	(b)	Obtain the root of given function using False position method correct up to 3 decimal places. $x^3 + 2x^2 + 10x - 20 = 0$	**05**
		OR	
	(b)	Obtain the root of function using False position method correct up to 3 decimal places where function is $x \log_{10} x = 1.2$	**05**
	(c)	Obtain the root of $x3 - 48 = 0$ using Newton Raphson method correct up to three decimal place	**10**
		OR	
	(c)	Find cube root of 701 by Newton-Raphson iteration formula correct up to three decimal places.	**10**
Q.3	**(a)**	Using Newton's forward interpolation formula, estimate the population of 1895.	**05**

year	1891	1901	1911	1921	1931
population	46	66	81	93	101

	(b)	Solve $y' = x + y,\ y(0) = 1$ by Taylor's series method. Hence find value of y at x=0.1	**05**
	(c)	Evaluate the integral $\int_0^6 \frac{1}{1+x} dx$ by Simpson's $\frac{1}{3}$ rule, Simpson's 3/8 rule with h=1.	**10**
		OR	

Q.3 **(a)** Obtain the value of y at $\boldsymbol{x = 4}$ **05**

X	0	1	2	3
Y	1	0	1	10

(b) Solve $y' = x^2y - 1, y(0) = 1$ by Taylor's series method. Hence find value of y at x=0.1 **05**

(c) Evaluate $\int_{0.2}^{1.4}(\sin x - \log x + e^x)\,dx$ by using Simpson's $\frac{3}{8}$ rule with h=0.2 and compare with actual value. **10**