SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN (AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.
BCA. END SEMESTER EXAMINATIONS APRIL-2022
SEMESTER - II
15UCAAT2AM2 **&** UCA/CT/2AM2 - **Allied Mathematics - II**

Total Duration : 3 Hrs. **Total Marks : 60**

Section A

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Solve the system of equations $3x + y$ - $z = 3$, $2x$ - $8y + z =$ -5 and x - $2y + 9z = 8$ using Gauss elimination method.
2. Solve $x^3 + 2x^2 + 10x$ - $20 = 0$ by Newton – Raphson method.
3. Using Lagrange's formula, prove $y_1 = y_3$ - $0.3(y_5$ - $y_{-3}) + 0.2(y_{-3}$ - $y_{-5})$ nearly.
4. Find a cubic polynomial which takes the following set of values (0,1), (1,2), (2,1) and (3, 10).
5. Let X be a random variable with the following probability distribution:

X	-3	6	9
P(X=x)	1/6	1/2	1/3

   Find (i) E(X) (ii) E(X^2) (iii) Var(X).
6. X is a Poisson variate such that (i)If P (X = 2) = 3 P (X = 3), find P (X = 4).
7. Obtain the rank correlation coefficient for the following data;

X :	68	64	75	50	64	80	75	40	55	64
Y :	62	58	68	45	81	60	68	48	50	70

8. Apply Simpson's 1/3 rule, evaluate $\int_0^{10} \frac{dx}{1+x^2}$ correct to two places of decimals.

Section B

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. Solve the equations $28x$+$4y$-$z = 32$, x+$3y$+$10z = 24$ and $2x$+$17y$+$4z = 35$ by Gauss– Seidel method, correct to four decimal places.
10. Given log 654=2.8156, log 658=2.8182, log 659=2.8189, log 661=2.8202. Find by using Newton's divded difference formula, the value of log 656.

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11. Apply Simpson's 3/8 rule to evaluate $\int_0^2 \frac{dx}{(1+x^3)}$ to two decimal places by dividing the range into 8 equal parts.

12. Find the moment generating function of the Binomial distribution and hence find its mean and variance.

13. Obtain the equation of two lines of regression for the following data. Also obtain the estimate of X for Y = 70.

X:	65	66	67	67	68	69	70	72
Y:	67	68	65	68	72	72	69	71

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