B.C.A DEGREE EXAMINATION,APRIL 2019
I Year II Semester
Allied Mathematics - II

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define transcendental equation with example.
2. Define Gauss elimination method.
3. Write the Newton's divided difference interpolation formula for unequal intervals.
4. Write the Lagrange's interpolation formula for unequal intervals.
5. Define Newton backward for differentiation.
6. State Simpson's 3/8 rule.
7. Define random variable.
8. Write any two uses of Poisson distribution.
9. Write the properties of correlation coefficient.
10. Define Regression equation.
11. Write the first four central moments about the origin.
12. Find the first four moments of a distribution about x =2 are 1,2.5,5.5 and 16.

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Find the real root of $x\ log_{10}\ x - 1.2 = 0$ correct to three decimal places using Newton's – Raphson Method.
14. Find $\mathbf{f(5)}$ from the following $\mathbf{f\,(3) = 4,\quad f\,(4) = 13,\quad f\,(6) = 43}$
15. From the following data find the first derivative of $(\mathbf{x})^{\frac{1}{3}}$ at $\mathbf{x=50}$.

x:	50	51	52	53	54	55
$x^{\frac{1}{3}}$:	3.6840	3.7084	3.7325	3.7563	3.8030	3.8259

16. First three moments of a variable measured by point "2" are gradually 1,16 and -40. Prove that mean is 3, variance is 15 and $\mu_3 = -86$.
17. Write the merits of scatter diagram method.

18. The ranking of 10 students in two subjects A and B are as follows.

A:	6	5	3	10	2	4	9	7	8	1
B:	3	8	4	9	1	6	10	7	5	2

calculate rank correlation coefficient.

19. Write the characteristics of least square using regression method.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Solve the system of equations

$\mathbf{28x+4y-z = 32}$

$\mathbf{x +3y+10z=24}$

$\mathbf{2x +17y+4z=35}$

using Gauss elimination method.

21. Find the value of x when $\mathbf{y=85}$, using Lagrange's inverse formula from the following table.

$\mathbf{x}$	2	5	8	14
$\mathbf{y}$	94.8	87.9	81.3	68.7

22. Evaluate $\int_0^1 \mathbf{e^{-x^2}} \mathbf{d}x$ by dividing the range of integration into 4 equal parts using Simpson's $\frac{1}{3}$ rule.

23. After correcting the proofs of the first 50 pages of a book, it is found that on the average there are 3 errors per 5 pages. Use Poisson probabilities and estimate the number of pages with 0,1,2,3 errors in the whole book of 1000 pages $(\mathbf{e^{-6}=0.5488})$.

24. Find the line of regression of y on x.

$\mathbf{x}$	1	2	3	4	5	8	10
$\mathbf{y}$	9	8	10	12	14	16	15

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