Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 09

B.Sc. (Hons)Agriculture (2019 Batch) (Sem.–1)

ELEMENTARY MATHEMATICS

Subject Code : BSAG-106-19(B)

M.Code : 76930

Date of Examination : 20-01-2023

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Write briefly :

a) Write equation of line passing through (–1, 1) and (2, 4).

b) If equation of line is $3x - 4y + 10 = 4$. Then find its slope.

c) Reduce the equation $\sqrt{3}x + y - 8 = 0$ into normal form.

d) Find equation of circle with centre (–3, 2) and radius 4.

e) Define the limit of a function with the help of an example.

f) Evaluate $\lim_{x \to 4} \frac{4x+3}{x-2}$

g) Find derivative of $4\sqrt{x} - 2$ with respect to x.

h) Evaluate $\int (x^3 + x + 1)\, dx$.

i) Construct a 2×3 matrix whose elements a_{ij} are by $i + j$

j) Find slope of tangent to the circle $x^2 + y^2 - 3x + 4y - 31 = 0$ at (2, 3).

SECTION-B

2. Find the equation of line perpendicular to the line $x - 2y - 3 = 0$ and passing through the point $(1, -2)$.

3. Find the area of triangle formed by the lines $y - x = 0$; $x + y = 0$; and $x - 1 = 0$

4. Show that $AB \neq BA$, where $A = \begin{bmatrix} 5 & -1 \\ 6 & 7 \end{bmatrix}$ $B = \begin{bmatrix} 2 & 1 \\ 3 & 4 \end{bmatrix}$

5. Find the equation of circle with radius 5, center lies on x-axis and passing through $(2, 3)$.

6. Evaluate $\int (2x + 1)(4x + 2)dx$.

SECTION-C

7. Using section formula, prove that three points $(-4, 6, 10)$, $(2, 4, 6)$ and $(14, 0, -2)$ are collinear.

8. Using first principle, find the derivative of $\sin x$.

9. Show that $f(x) = \begin{cases} 5x - 4 & 0 < x \leq 1 \\ 4x^3 - 3x & 1 < x < 2 \end{cases}$ is continuous at $x = 1$.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.