

Roll No.....

Total No. of Printed Pages: 01

Total No. of Questions: [09]

B.Sc. (Hons.) Agriculture (Semester – 1st)

INTRODUCTORY MATHEMATICS

Subject Code: BAGRS 1169

Paper ID: [21130111]

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

Q1. Attempt the following:

- a. Find the distance between the points (2,3) and (4,1).
- b. Find the equation of straight line which is parallel to x-axis and passes through the points (3,5).
- c. Find the coordinates of the points which divide the line segment joining the points (4, -3) and (8,5) in the ratio 3:1 internally.
- d. If equation of line is $y = 2x + 1$, then find its slope with x-axis.
- e. Write the equation of circle, whose centre is (2, -3) and radius is 5.
- f. If equation of the line is $3x - 2y - 12 = 0$, write intercepts of the line on the y-axis.
- g. Find out the limit of the function $f(x) = 3x + 5$ at $x = 2$.
- h. Diameter of the circle $(x + 5)^2 + (y - 3)^2 = 36$ will be?
- i. If $A = \begin{bmatrix} 1 & 2 & 2 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & -1 & -1 & 0 \end{bmatrix}$; then find the value of $A - B$.
- j. Evaluate the determinate of $A = \begin{bmatrix} 1 & 2 & -1 & 3 \end{bmatrix}$.

Section – B

(5 marks each)

Q2. Write equation of the line which passes through the points (1,2) and (3,5).

Q3. Find point of intersection of two straight lines $x - y + 1 = 0$ and $3x + y - 5 = 0$.

Q4. Find centre and radius of the circle $x^2 + y^2 + 4x - 10y - 7 = 0$.

Q5. Solve the integral $\int (2x^2 + e^x) dx$.

Q6. If $A = \begin{bmatrix} 0 & 1 & 2 & 1 & 2 & 3 & 3 & 1 & 1 \end{bmatrix}$, then find A^{-1} .

Section – C

(10 marks each)

Q7. (a) If the origin is shifted to the points (-3, -2) by a translation of the axis, then find out the new coordinates of the point (3, -5).

(b) Find the angle between the straight lines $2x + 3y = 6$ and $3x - 2y + 11 = 0$.

Q8. (a) Find the equation of a line parallel to the line $y = 3x + 2$ and passing through the point (1,3).

(b) Write equation of the tangent at point P (3,4), which touches the circle $x^2 + y^2 = 25$.

Q9. (a) Find the derivation of $\cos(x^2)$.

(b) If $f(x) = x^2 - x + 1$, then find maximum and minimum of the function.