B.Sc.(Hons.) Agriculture/B.Sc.(Hons.) (Forestry)/ B.Sc. (Hons.) A.B.M.

Semester	: I (New)	Term : I	Academic Year : 2017-18
Course No.	: MATH 111	Title : Elementary Mathematics	
Credits	: 2(1+1)		
Day & Date	: Friday, 29.12.2017	Time : 09.00 to 11.00	Total Marks : 40

Note :
1. Solve **ANY EIGHT** questions from **SECTION "A"**.
2. All questions from **SECTION "B"** are compulsory.
3. All questions carry equal marks.
4. Draw neat diagrams wherever necessary.

SECTION "A"

Q.1   If $A = \begin{pmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{pmatrix}$, show that $A^2 - 4A$ is a scalar Matrix.

Q.2   Evaluate

$$\begin{vmatrix} 2 & 6 & 2 \\ 5 & 9 & 4 \\ 8 & 12 & 7 \end{vmatrix}$$

Q.3   Find the acute angle between the lines $2x + y - 1 = 0$ and $3x + y + 4 = 0$

Q.4   Find the area of a field by Simpson's rule, if the ordinates are 2, 7, 9, 15, 21, 30, 12 meters and common distance is 33 meters.

Q.5   Find the equation of straight line passing through the two points P (1, 2) and Q (4, 3).

Q.6   Explain any four types of function with one example each.

Q.7   Explain the ordinates of the curve and common distance between the ordinates. State the Simpson's $1/3^{rd}$ rule.

Q.8   Find derivatives of the following w.r.t.x. (Any Two)

1) $x^2 \tan x$ 2) $\cos^3 x$ 3) $(\sin x) / (e^x)$

Q.9   Evaluate the following definite integrals. (Any Two)

1) $\int_2^5 \left(\frac{1}{x}\right) dx$ 2) $\int_1^3 x^2 \, dx$ 3) $\int_0^1 2^x \, dx$

Q.10   Evaluate the limit $-\lim\limits_{x \to 3} \dfrac{x^2 - 7x + 12}{x^2 - 5x + 6}$

(P.T.O.)

SECTION "B"

Q.11 State True or False.

1) Limit of product of two functions is equal to product of their limits.

2) The point (3, -4) lies in the third quadrant.

3) Simpson's rule is applied only if the numbers of ordinates are odd.

4) A square matrix 'A' is said to be non singular if $|A| = 0$

Q.12 Select the correct answer.

1) The area bounded by the curve y = f(x), X axis and the lines x = a and x = b is_____.

a) $\int_a^b y\,dx$ b) $\int y\,dx$ c) $\int_b^a y\,dx$ d) $\int_a^b dx$

2) A square matrix in which all the non diagonal elements are zero is called_____.

a) Scalar matrix   b) Diagonal matrix   c) Identity matrix   d) Null matrix

3) The radius of the circle $x^2 + y^2 = 49$ is_____.

a) 49   b) 4   c) 9   d) 7

4) $\int a^x\,dx =$_____ + c.

a) $a^x \log a$ b) a^x c) $a^x/\log a$ d) $\log a$

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