

MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END THEORY EXAMINATION

B.Sc.(Hons.) Agriculture / B.Sc.(Hons.) Horticulture / B.Sc.(Hons.) Forestry /
B.Sc.(Hons.) Community Science

Semester	: I (New)	Term	: First	Academic Year	: 2024-25
Course No.	: MATH-111	Title	: Introductory Mathematics		
Credits	: 1(1+0)	Day & Date	: Tuesday, 11.02.2025	Time	: 10:00 to 12:00 hrs.
				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 diagram wherever necessary.

SECTION 'A'

Q.1 Evaluate: $\begin{vmatrix} 6 & 4 & 2 \\ 4 & 0 & 7 \\ 5 & 3 & 4 \end{vmatrix}$

- Q.2 Find the area of curvilinear figure by Simpson's rule whose ordinates are 4, 7, 8, 10, 7, 6, 3 meter and common distance is one meter.
- Q.3 The first and second terms of H.P. are $\frac{1}{3}$ and $\frac{1}{5}$ respectively, find the 9th term.
- Q.4 Explain any four types of matrices.
- Q.5 Evaluate the following:
- a) $\int 4x^3 dx$ b) $\int_0^{\pi} \sin x dx$
- Q.6 State the equation of Euler's Theorem on homogeneous function.
- Q.7 Differentiate the following function with respect to x ,
- a) $e^x \cdot \sin x$ b) $\sin 2x$
- Q.8 State the Theorem (Rules) on integration.
- Q.9 If $A = \begin{bmatrix} 3 & 2 \\ 6 & 4 \end{bmatrix}$, then prove that matrix A is a singular matrix.
- Q.10 State the Theorem (Rules) on differentiation.

SECTION 'B'

- Q.11 Fill in the blanks:
- 1) A matrix in which number of rows is equal to the number of columns, then it is called as _____ matrix.
 - 2) Derivative of a constant term is _____.
 - 3) Simpson's rule is used to find approximate _____ of a figure bounded by a curve.
 - 4) $\int \sin x dx =$ _____.
- Q.12 State True or False:
- 1) Integration and derivatives are similar processes.
 - 2) If any two rows or columns of a determinant are identical, then the value of the determinant is zero.
 - 3) Derivative of $\log x$ w.r.t. x is $1/x$.
 - 4) The definite integral of a function is unique.

