

## LESSON PLAN SUMMER(2024-25)

|  |   |   |                               |
|--|---|---|-------------------------------|
| <b>DISCIPLINE:</b><br>Mathematics        | <b>SEMESTER:</b><br>2ND   | <b>NAME OF THE TEACHING FACULTY:</b><br>Smt Mamata Nayak ,Smt Sanghamitra Nath  |                               |
| <b>Subject:Mathem</b><br><b>atics-II</b> | <b>No. of</b><br><b>Days/per</b><br><b>week class</b><br><b>allotted:</b><br><b>04classes</b> | <b>Semester From date:04.02.2025 to Date : 17:05:2025</b>   |                               |
| <b>Total period allotted: 60</b>         |   | <b>No. of Weeks: 15</b>   |                               |
| <b>Week</b>                              | <b>Class Day</b>  | <b>Theory/Practical Topics</b>  | <b>No of periods allotted</b> |
| 1ST                                      | 1st   | UNIT - I: Determinants and Matrices   | 1                             |
|  | 2nd   | Elementary properties of determinants up to 3rd order,  | 1                             |
|  | 3rd   | consistency of equations,   | 1                             |
|  | 4th   | Cramer's rule.  | 1                             |
| 2nd                                      | 1st   | Algebra of matrices,  | 1                             |
|  | 2nd   | nverse of a matrix,   | 1                             |
|  | 3rd   | matrix inverse method to solve a system of linear equations in 3 variables.   | 1                             |
|  | 4th   | Exercise  | 1                             |
| 3rd                                      | 1st   | UNIT - II: Integral Calculus Integration as inverse operation of differentiation  | 1                             |
|  | 2nd   | Simple integration by substitution  | 1                             |
|  | 3rd   | by parts<br>and by partial fractions (for linear factors only).   | 1                             |
|  | 4th   | . Use of formulas $\int_0^{\frac{\pi}{2}} \sin^n x dx$ , $\int_0^{\frac{\pi}{2}} \cos^n x dx$ and<br>for solving problems | 1                             |
| 4th                                      | 1st   | Applications of integration for i.  | 1                             |
|  | 2nd   | Simple problem on evaluation of area bounded by a curve and axes.   | 1                             |
|  | 3rd   | . Calculation of Volume of a solid formed by revolution of an area about axes. (Simple problems)                          | 1                             |
|  | 4th   | exercise  | 1                             |
| 5th                                      | 1st   | UNIT - III: Co-Ordinate Geometry<br>Equation of straight line in various standard forms (without proof),                  | 1                             |
|  | 2nd   | inter section of two<br>straight lines, angle between two lines   | 1                             |
|  | 3rd   | Parallel and perpendicular lines, perpendicular<br>distance formula.  | 1                             |
|  | 4th   | General equation of a circle and its characteristics.   | 1                             |
| 6th                                      | 1st   | To find the equation of a circle, given:<br>Centre and radius,  | 1                             |
|  | 2nd   | Three points lying on it and  | 1                             |
|  | 3rd   | Coordinates of end points of a diameter;  | 1                             |

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|      | 4th | Definition of conics (Parabola, Ellipse, Hyperbola) their standard equations without proof.<br>Problems | 1 |
| 7th  | 1st | on conics when their foci, directories or vertices are given.   | 1 |
|      | 2nd | Exercise  | 1 |
|      | 3rd | UNIT -IV: Vector Algebra<br>Definition notation and rectangular resolution of a vector                  | 1 |
|      | 4th | Addition and subtraction of vectors.<br>Scalar  | 1 |
| 8th  | 1st | and vector products of 2 vectors  | 1 |
|      | 2nd | Simple problems related to work, moment and angular velocity  | 1 |
|      | 3rd | Exercise  | 1 |
|      | 4th | UNIT-V: Differential Equations<br>Solution of first order and first degree differential equation        | 1 |
| 9th  | 1st | degree differential equation by variable separation method (simple problems)                            | 1 |
|      | 2nd | . MATLAB – Simple Introduction.   | 1 |
|      | 3rd | Exercise  | 1 |
|      | 4th | Revision  | 1 |
| 10th | 1st | Revision  | 1 |
|      | 2nd | Revision  | 1 |
|      | 3rd | Revision  | 1 |
|      | 4th | Revision  | 1 |
| 11th | 1st | Revision  | 1 |
|      | 2nd | Revision  | 1 |
|      | 3rd | Revision  | 1 |
|      | 4th | Revision  | 1 |
| 12th | 1st | Revision  | 1 |
|      | 2nd | Revision  | 1 |
|      | 3rd | Revision  | 1 |
|      | 4th | Revision  | 1 |
| 13th | 1st | Revision  | 1 |
|      | 2nd | Revision  | 1 |
|      | 3rd | Revision  | 1 |
|      | 4th | Revision  | 1 |
| 14th | 1st | Revision  | 1 |
|      | 2nd | Revision  | 1 |
|      | 3rd | Revision  | 1 |
|      | 4th | Revision  | 1 |
| 15th | 1st | Revision  | 1 |
|      | 2nd | Revision  | 1 |
|      | 3rd | Revision  | 1 |
|      | 4th | Revision  | 1 |

## LESSON PLAN WINTER(2024-25)

|                                   |  |  |                               |
|-----------------------------------|--|--|-------------------------------|
| <b>DISCIPLINE:</b><br>Mathematics | <b>SEMESTE R:</b><br>1st                                 | <b>NAME OF THE TEACHING FACULTY:</b><br>Smt Mamata Nayak ,Smt Sanghamitra Nath   |                               |
| <b>Subject:</b><br>Mathematics-I  | <b>No. of Days/per week class allotted:</b><br>04classes | <b>Semester From date:02.09.2024 to Date 10.12.2024</b>  |                               |
| <b>Total period allotted: 60</b>  |  | <b>No. of Weeks: 15</b>  |                               |
| <b>Week</b>                       | <b>Class Day</b>   | <b>Theory/Practical Topics</b>   | <b>No of periods allotted</b> |
| <b>1ST</b>                        | <b>1st</b>   | <b>UNIT-I: Trigonometry</b><br><b>Concept of angles, measurement of angles in degrees,</b>                                       | <b>1</b>                      |
|                                   | <b>2nd</b>   | grades and radians and their conversions   | <b>1</b>                      |
|                                   | <b>3rd</b>   | <b>T-Ratios of Allied angles (without proof),</b>  | <b>1</b>                      |
|                                   | <b>4th</b>   | Sum, difference formulae and their applications (without proof).   | <b>1</b>                      |
| <b>2nd</b>                        | <b>1st</b>   | <b>Product formulae (Transformation of product to sum, difference and vice versa)</b>  | <b>1</b>                      |
|                                   | <b>2nd</b>   | <b>T- Ratios of multiple angles, sub-multiple angles (2A, 3A, A/2).</b>  | <b>1</b>                      |
|                                   | <b>3rd</b>   | Graphs of $\sin x$ , $\cos x$ , $\tan x$ and $e^x$ .   | <b>1</b>                      |
|                                   | <b>4th</b>   | <b>Exercise</b>  | <b>1</b>                      |
| <b>3rd</b>                        | <b>1st</b>   | <b>Exercise</b>  | <b>1</b>                      |
|                                   | <b>2nd</b>   | <b>UNIT-II: Differential Calculus</b><br><b>Definition of function; Concept of limits.</b>                                       | <b>1</b>                      |
|                                   | <b>3rd</b>   | <b>Four standard limits</b>  | <b>1</b>                      |
|                                   | <b>4th</b>   | <b>Differentiation by definition of x and .</b>  | <b>1</b>                      |
| <b>4th</b>                        | <b>1st</b>   | <b>Differentiation of sum, product and quotient of functions. Differentiation of function of a function</b>                      | <b>1</b>                      |
|                                   | <b>2nd</b>   | <b>Differentiation of trigonometric and inverse trigonometric functions, Logarithmic differentiation, Exponential functions.</b> | <b>1</b>                      |
|                                   | <b>3rd</b>   | <b>Exercise</b>  | <b>1</b>                      |
|                                   | <b>4th</b>   | <b>Exercise</b>  | <b>1</b>                      |
|                                   | <b>1st</b>   | <b>UNIT - III: Algebra</b><br><b>ComplexNumbers: Definition, real and imaginary parts of a Complex number</b>                    | <b>1</b>                      |

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|------|-----|---|---|
| 5th  | 2nd | polar and Cartesian, representation of a complex number and   | 1 |
|      | 3rd | conjugate of a complex number, modulus and amplitude of a complex number<br>Addition,                                 | 1 |
|      | 4th | Subtraction, Multiplication and Division of a complex number. De-moivre's theorem, its application.                   | 1 |
| 6th  | 1st | Exercise  | 1 |
|      | 2nd | Exercise  | 1 |
|      | 3rd | Partial fractions: Definition of polynomial fraction proper & improper fractions and definition of partial fractions. | 1 |
|      | 4th | To resolve proper fraction into partial fraction with denominator containing non-repeated linear factors              | 1 |
| 7th  | 1st | repeated linear factors and irreducible non-repeated quadratic factors.   | 1 |
|      | 2nd | To resolve improper fraction into partial fraction.   | 1 |
|      | 3rd | Exercise  | 1 |
|      | 4th | Exercise  | 1 |
| 8th  | 1st | Permutations and Combinations: Value of $nPr$ and $nCr$   | 1 |
|      | 2nd | Binomial theorem: Binomial theorem (without proof) for positive integral index (expansion and general form);          | 1 |
|      | 3rd | binomial theorem for any index (expansion without proof)  | 1 |
|      | 4th | first and second binomial approximation with applications to engineering problems                                     | 1 |
| 9th  | 1st | first and second binomial approximation with applications to engineering problems                                     | 1 |
|      | 2nd | Exercise  | 1 |
|      | 3rd | Exercise  | 1 |
|      | 4th | Revision  | 1 |
| 10th | 1st | Revision  | 1 |
|      | 2nd | Revision  | 1 |
|      | 3rd | Revision  | 1 |
|      | 4th | Revision  | 1 |
| 11th | 1st | Revision  | 1 |
|      | 2nd | Revision  | 1 |
|      | 3rd | Revision  | 1 |
|      | 4th | Revision  | 1 |

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|-------------|------------|-----------------|----------|
| <b>12th</b> | <b>1st</b> | <b>Revision</b> | <b>1</b> |
|             | <b>2nd</b> | <b>Revision</b> | <b>1</b> |
|             | <b>3rd</b> | <b>Revision</b> | <b>1</b> |
|             | <b>4th</b> | <b>Revision</b> | <b>1</b> |
| <b>13th</b> | <b>1st</b> | <b>Revision</b> | <b>1</b> |
|             | <b>2nd</b> | <b>Revision</b> | <b>1</b> |
|             | <b>3rd</b> | <b>Revision</b> | <b>1</b> |
|             | <b>4th</b> | <b>Revision</b> | <b>1</b> |
| <b>14th</b> | <b>1st</b> | <b>Revision</b> | <b>1</b> |
|             | <b>2nd</b> | <b>Revision</b> | <b>1</b> |
|             | <b>3rd</b> | <b>Revision</b> | <b>1</b> |
|             | <b>4th</b> | <b>Revision</b> | <b>1</b> |
| <b>15th</b> | <b>1st</b> | <b>Revision</b> | <b>1</b> |
|             | <b>2nd</b> | <b>Revision</b> | <b>1</b> |
|             | <b>3rd</b> | <b>Revision</b> | <b>1</b> |
|             | <b>4th</b> | <b>Revision</b> | <b>1</b> |