Syllabus 2021 - 22

Class-12

பாடத்திட்டம் 2021–2022

வகுப்பு –12 **பாடம் – பொதுத்தமிழ்**

இயல்	பாடப்பொருள்
1	செய்யுள் – இளந்தமிழே உரைநடை – தமிழ்மொழியின் நடைஅழகியல் செய்யுள் – தன்னேர் இலாத தமிழ் துணைப்பாடம் – தம்பி நெல்லையப்பருக்கு இலக்கணம் – தமிழாய் எழுதுவோம்
2	செய்யுள் – பிறகொருநாள் கோடை இலக்கணம் – நால்வகைப் பொருத்தங்கள்
3	உரைநடை – தமிழர் குடும்பமுறை செய்யுள் – விருந்தினர் இல்லம், கம்பராமாயணம் துணைப்பாடம் – உரிமைத்தாகம் இலக்கணம் – பொருள் மயக்கம் வாழ்வியல் – திருக்குறள்
4	உரைநடை – பண்டைய காலத்துப் பள்ளிக்கூடங்கள் செய்யுள் – இதில் வெற்றிபெற இலக்கணம் – பா இயற்றப் பழகலாம்
5	செய்யுள் – தெய்வமணிமாலை, தேவாரம் துணைப்பாடம் – தலைக்குளம்
6	செய்யுள் – சிலப்பதிகாரம் துணைப்பாடம் – நடிகர்திலகம் வாழ்வியல் – திருக்குறள்
7	உரைநடை – இலக்கியத்தில் மேலாண்மை செய்யுள் – புறநானூறு துணைப்பாடம் – சங்ககாலக் கல்வெட்டும் என் நினைவுகளும்
8	செய்யுள் – இரட்சணிய யாத்திரிகம்

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CLASS: 12 SUBJECT: ENGLISH

UNIT	CONTENTS
1	**Prose** Two Gentlemen of Verona **Supplementary** God Sees the Truth but Waits **Grammar** Tenses Modal Auxiliaries Reported Speech
2	**Poem** Our Casuarina Tree **Grammar** Prepositions Prepositional phrases Conjunctions Connectives or Linkers
3	**Prose** In Celebration of Being Alive **Poem** All the World's a Stage **Grammar** Active and Passive Voice Interrogatives
4	**Poem** Ulysses **Supplementary** The Midnight Visitor **Grammar** Kinds of Sentences Conditionals

5	**Prose** The Chair **Poem** A Father to his Son **Supplementary** All Summer in a Day **Grammar** Non-finite verbs Articles and Determiners Degrees of Comparison
6	**Prose** On the Rule of the Road **Grammar** Agreement of the Subject with the verb

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STANDARD: 12 SUBJECT: MATHEMATICS

UNIT	CONTENT
1. Applications of Matrices and Determinants	1.1 Introduction 1.2 Inverse of a Non-Singular Square Matrix 1.2.1 Adjoint of a square Matrix 1.2.2 Definition of inverse matrix of a square matrix 1.2.3 Properties of inverses of matrices 1.2.4 Application of matrices to Geometry 1.3 Elementary Transformations of a Matrix 1.3.1 Elementary row and column operations 1.3.2 Row-Echelon form 1.3.3 Rank of a Matrix 1.4 Applications of Matrices: Solving System of Linear Equations 1.4.1 Formation of a System of Linear Equations 1.4.2 System of Linear Equations in Matrix Form 1.4.3 Solution to a System of Linear equations 1.4.3 (i) Matrix Inversion Method 1.4.3 (ii) Cramer's Rule 1.4.3 (iii) Gaussian Elimination Method (*All properties without proof)
2. Complex Numbers	2.1 Introduction to Complex Numbers 2.1.1 Powers of imaginary unit 2.2 Complex Numbers 2.2.1 Rectangular form 2.2.2 Argand plane 2.2.3 Algebraic operations on complex number 2.3 Basic Algebraic Properties of Complex Numbers 2.3.1 Properties of complex numbers 2.4 Conjugate of a Complex Number 2.4.1 Geometrical representation of conjugate of a complex number 2.4.2 Properties of Complex Conjugates

	2.5 Modulus of a Complex Number 2.5.1 Properties of Modulus of a complex number 2.5.2 Square roots of a complex number 2.6 Geometry and Locus of Complex Numbers (*All properties without proof)
3. Theory of Equations	3.1 Introduction 3.2 Basics of Polynomial Equations 3.2.1 Different types of Polynomial Equations 3.2.2 Quadratic Equations 3.3 Vieta's Formulae and Formation of Polynomial Equations 3.3.1 Vieta's formula for Quadratic Equations 3.3.2 Vieta's formula for Polynomial Equations 3.3.2 (a) The Fundamental Theorem of Algebra 3.3.2 (b) Vieta's Formula 3.3.2 (b) (i) Vieta's Formula for Polynomial equation of degree 3 3.3.2 (c) Formation of Polynomial Equations with given Roots 3.4 Nature of Roots and Nature of Coefficients of Polynomial Equations 3.4.1 Imaginary Roots 3.4.2 Irrational Roots 3.4.3 Rational Roots 3.6 Roots of Higher Degree Polynomial Equations 3.7 Polynomials with Additional Information 3.7.1 Imaginary or Surds Roots 3.7.2 Polynomial equations with Even Powers Only 3.7.3 Zero Sum of all Coefficients 3.7.4 Equal Sums of Coefficients of Odd and Even Powers 3.8 Polynomial Equations with no additional information 3.8.2 Reciprocal Equations 3.9 Descartes Rule 3.9.1 Statement of Descartes Rule 3.9.2 Attainment of bounds (*All properties without proof)

4. Inverse Trigonometric Functions	4.1 Introduction 4.2 Some Fundamental Concepts 4.2.1 Domain and Range of trigonometric functions 4.2.2 Graphs of functions 4.2.3 Amplitude and Period of a graph 4.2.4 Inverse functions 4.2.5 Graphs of inverse functions 4.3 Sine Function and Inverse Sine Function 4.3.2 Properties of the sine function 4.3.3 The inverse sine function and its properties 4.4 The Cosine Function and Inverse Cosine Function 4.4.2 Properties of the cosine function 4.4.3 The inverse cosine function and its properties 4.5 The Tangent Function and the Inverse Tangent Function 4.5.2 Properties of the tangent function 4.5.3 The inverse tangent function and its properties 4.6 The Cosecant Function and the Inverse Cosecant Function 4.6.2 The inverse cosecant function 4.7 The Secant Function and Inverse Secant Function 4.7.2 Inverse secant function 4.8 The Cotangent Function and the Inverse Cotangent Function 4.8.2 Inverse cotangent function 4.9 Principal Value of Inverse Trigonometric Functions (*All properties without proof)

5. Two Dimensional Analytical Geometry-II	5.1 Introduction (Theorem 5.1–5.5 without proof) 5.2 Circle 5.2.1 Equation of a circle in standard form 5.2.2 Equations of tangent and normal at a point P on a given circle (without proof) 5.2.3 Condition for the line $y = mx + c$ to be a tangent to the circle $x^2 + y^2 = a^2$ and finding the point of contact (without proof) 5.3 Conics 5.3.1 The general equation of a Conic 5.3.2 Parabola 5.3.3 Ellipse (Theorem 5.3.3-without proof) 5.3.4 Hyperbola (Theorem 5.3.4-without proof) 5.4 Conic Sections 5.4.1 Geometric description of conic section 5.4.2 Degenerate Forms 5.5 Parametric form of Conics 5.5.1 Parametric equations 5.6 Tangents and Normals to Conics 5.6.1 Equation of tangent and normal to the parabola $y^2 = 4ax$ (without proof) 5.6.2 Equations of tangent and normal to Ellipse and Hyperbola (without proof) 5.6.3 Condition for the line $y = mx + c$ to be a tangent to the conic sections (without proof) 5.7 Real life Applications of Conics 5.7.1 Parabola 5.7.2 Ellipse 5.7.3 Hyperbola 5.7.4 Reflective property of parabola 5.7.5 Reflective property of Ellipse (*All properties without proof)

6. Applications of Vector Algebra	6.1 Introduction (Theorems 6.1-6.23-without proof) 6.2 Geometric Introduction to Vectors 6.3 Scalar Product and Vector Product 6.3.1 Geometrical interpretation 6.3.2 Application of dot and cross products in plane Trigonometry 6.3.3 Application of dot and cross products in Geometry 6.3.4 Application of dot and cross product in Physics 6.4 Scalar triple product 6.4.1 Properties of the scalar triple product 6.5 Vector triple product 6.6 Jacobi's Identity and Lagrange's Identity 6.7 Application of Vectors to 3D Geometry 6.7.1 Different forms of equation of a straight line 6.7.2 A point on the straight line and the direction of the straight line are given 6.7.3 Straight Line passing through two given points 6.7.4 Angle between two straight lines 6.7.5 Point of intersection of two straight lines 6.7.6 Shortest distance between two straight lines 6.8 Different forms of Equation of a plane 6.8.1 Equation of a plane when a normal to the plane and the distance of the plane from the origin are given 6.8.2 Equation of a plane perpendicular to a vector and passing through a given point 6.8.3 Intercept form of the equation of a plane 6.8.4 Equation of a plane passing through three given non-collinear points 6.8.5 Equation of a plane passing through a given point and parallel to two given non-parallel vectors 6.8.6 Equation of a plane passing through two given distinct points and is parallel to a non-zero vector

	6.8.7 Condition for a line to lie in a plane 6.8.8 Condition for coplanarity of two lines 6.8.10 Angle between two planes 6.8.11 Angle between a line and a plane 6.8.12 Distance of a point from a plane 6.8.13 Distance between two parallel planes (*All properties without proof)
7. Applications of Differential Calculus	7.1 Introduction 7.1.1 Early Developments 7.2 Meaning of Derivatives 7.2.1 Derivative as slope 7.2.2 Derivative as rate of change 7.2.3 Related rates 7.2.4 Equations of Tangent and Normal 7.2.5 Angle between two curves 7.5 Indeterminate Forms 7.5.1 A Limit Process 7.5.2 The l'Hôpital's Rule 7.5.3 Indeterminate forms $\left(\frac{0}{0}, \frac{\infty}{\infty}, 0 \times \infty, \infty - \infty\right)$ 7.6 Applications of First Derivative 7.6.1 Monotonicity of functions 7.6.2 Absolute maxima and minima 7.6.3 Relative Extrema on an Interval 7.6.4 Extrema using First Derivative Test 7.7 Applications of Second Derivative 7.7.1 Concavity, Convexity, and Points of Inflection 7.7.2 Extrema using Second Derivative Test 7.8 Applications in Optimization (*All properties without proof)
8. Differentials and Partial Derivatives	8.1 Introduction 8.2 Linear Approximation and Differentials 8.2.2 Errors: Absolute Error, Relative Error, and Percentage Error 8.2.3 Differentials (*All properties without proof)

9. Applications of integration	9.1 Introduction 9.3 Fundamental Theorems of Integral Calculus and their Applications 9.5 Improper Integrals 9.6 Reduction Formulae 9.7 Gamma Integral 9.8 Evaluation of Bounded Plane Area by Integration 9.8.1 Area of the region bounded by a curve, x – axis and the lines $x = a$ and $x = b$. 9.8.2 Area of the region bounded by a curve, y– axis and the lines $y = c$ and $y = d$. 9.8.3 Area of the region bounded between two curves (*All properties without proof)
10. Ordinary Differential Equations	10.1 Introduction 10.2 Differential Equation, Order, and Degree 10.4 Formation of Differential Equations 10.4.1 Formation of Differential equations from Physical Situations 10.4.2 Formation of Differential Equations from Geometrical Problems 10.5 Solution of Ordinary Differential Equations 10.6 Solution of First Order and First Degree Differential Equations 10.6.1 Variables Separable Method 10.6.3 Homogeneous Form or Homogeneous Differential Equation 10.7 First Order Linear Differential Equations 10.8 Applications of First Order Ordinary Differential Equations 10.8.1 Population growth 10.8.2. Radioactive decay 10.8.3. Newton's Law of cooling/warming 10.8.4 Mixture problems

11. Probability Distributions	11.1 Introduction 11.2 Random Variable 11.3 Types of Random Variable 11.3.1 Discrete random variables 11.3.2 Probability Mass Function 11.3.3 Cumulative Distribution Function or Distribution Function 11.3.4 Cumulative Distribution Function from Probability Mass function 11.3.5 Probability Mass Function from Cumulative Distribution Function 11.4 Continuous Distributions 11.4.1 The definition of continuous random variable 11.4.2 Probability density function 11.4.3 Distribution function (Cumulative distribution function) 11.4.4 Distribution function from Probability density function 11.4.5 Probability density function from Probability distribution function (*All properties without proof)
12. Discrete Mathematics	12.1 Introduction 12.2 Binary Operations 12.2.1 Definitions 12.2.2 Some more properties of a binary operation 12.2.3 Some binary operations on Boolean Matrices 12.2.4 Modular Arithmetic 12.3 Mathematical Logic 12.3.1 Statement and its truth value 12.3.2 Compound Statements, Logical Connectives, and Truth Tables 12.3.3 Tautology, Contradiction, and Contingency 12.3.4 Duality 12.3.5 Logical Equivalence (*All properties without proof)
(*All examples and exercise problems for the content mentioned above)	

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CLASS: 12 **SUBJECT: PHYSICS**

UNIT	CONTENT
1. Electrostatics	1.1 Introduction 1.1.1 Historical background of electric charges 1.1.2 Basic Properties of charges 1.2 Coulomb's law 1.2.1 Super position principle 1.3 Electric field and Electric field line 1.3.1 Electric Field 1.3.2 Electric field due to the system of point charges 1.4 Electric Dipole and its properties 1.4.1 Electric dipole 1.4.2 Electric Field due to a dipole 1.4.3 Torque experienced by an electric dipole in the uniform electric field 1.5 Electrostatic potential and potential energy 1.5.1 Electrostatic Potential energy & Electro static Potential 1.5.2 Electric Potential due to a point charge 1.5.3 Electro static Potential at a point due to an electric dipole 1.5.6 Electro static potential energy for collection of point charges 1.5.7 Electro static potential energy of a dipole in a uniform electric field 1.6 Gauss Law and its application 1.6.1 Electric Flux 1.6.2 Electric flux for closed surfaces 1.6.3 Gauss Law 1.6.4 Applications of Gauss Law 1.8 Capacitor and Capacitance 1.8.1 Capacitors 1.8.2 Energy stored in the capacitor 1.8.3 Application of capacitors 1.8.4 Effect of dielectrics in capacitors 1.8.5 Capacitors in series and parallel 1. 9 Distribution of charges in a conductor and action at points 1.9.1 Distribution of charges in a conductor 1.9.2 Action of points or corona discharge 1.9.4 Vande graff Generator

2. Current Electricity	Introduction 2.1 Electric Current 2.1.1 Conventional Current 2.1.2 Drift Velocity 2.1.3 Microscopic model of current 2.2 Ohm's Law 2.2.1 Resistivity 2.2.2 Resistors in Series and Parallel 2.2.3 Colour code for carbon resistors 2.2.4 Temperature dependence of resistivity 2.3 Energy and power in electrical circuits 2.4.1 Electromotive force and internal resistance 2.4.2 Determination of internal resistance 2.4.3 Cells in series 2.4.4 Cells in Parallel 2.5 Kirchhoff's rule 2.5.1 Kirchhoff's First rule 2.5.2 Kirchhoff's Second rule 2.5.3 Wheatstone's bridge 2.5.4 Metre bridge 2.5.7 Measurement of internal resistance of cell by Potentiometer 2.7 Thermo electric current 2.7.1 Seebeck effect 2.7.2 Peltier Effect 2.7.3 Thomson effect
3. Magnetism and magnetic effects of electric current	3.1 Introduction 3.1.2 Basic properties of magnets 3.2 Coulomb's inverse square law of magnetism 3.8 Biot – Savart law 3.8.1 Definition and explanation of Biot – Savart law 3.8.2 Magnetic field due to long straight conductor carrying current 3.8.3 Magnetic field produced along the axis of the current carrying circular coil 3.8.5 Current loop as a magnetic dipole 3.9 Ampere Circuital law 3.9.1 Ampere's circuital law 3.9.2 Magnetic field due to the current carrying wire of infinite length using Ampere's law

	3.9.3 Magnetic field due to a long current carrying solenoid 3.10 Lorentz force 3.10.1 Force on a moving charge in a magnetic field 3.10.2 Motion of a charged particle in a uniform magnetic field 3.10.3 Motion of a charged particle under crossed electric and magnetic field (velocity selector) 3.10.5 Force on a current carrying conductor placed in a magnetic field 3.10.6 Force between two long parallel current carrying conductors 3.11.2 Moving coil galvanometer
4. Electromagnetic Induction and Alternating current	4.1 Electromagnetic Induction 4.1.1 Introduction 4.1.2 Magnetic Flux (Φ_B) 4.1.5 Fleming's right hand rule 4.1.6 Motional emf from Lorentz force 4.3 Self-Induction 4.3.1 Introduction 4.3.2 Self-inductance of a long solenoid 4.3.3 Mutual Induction 4.3.4 Mutual Inductance between two long co-axial solenoids 4.4 Methods of producing induced emf 4.4.1 Introduction 4.4.2 Production of induced emf by changing the magnetic field 4.4.3 Production of induced emf by changing the area of the coil 4.4.4 Production of induced emf by changing relative orientation of the coil with the magnetic field 4.6 Transformer 4.6.1 Construction and working of transformer 4.6.2 Energy losses in Transformer 4.6.3 Advantages of AC in long distance power transmission. 4.7 Alternating Current 4.7.1 Introduction

	4.7.1 Mean or Average value of AC 4.7.2 RMS value of AC 4.7.3 AC circuit containing pure resistor 4.7.4 A Circuit containing pure inductor 4.7.5 AC circuit containing only a capacitor 4.7.6 AC circuit containing a resistor, an inductor and a capacitor in series – Series RLC circuit 4.7.7 Resonance in series RLC circuit 4.7.8 Q- factor 4.8 Power in AC circuits 4.8.1 Introduction of power in AC circuits 4.8.2 Wattless current 4.8.3 Power factor 4.8.4 Advantages and disadvantages of AC over DC 4.9 Oscillation in LC circuits 4.9.1 Energy conversion during LC oscillations 4.9.2 Conservation of energy in LC oscillations
5. Electromagnetic waves	5.1 Introduction 5.1.1 Displacement current and Maxwell's correction to Ampere's circuital law 5.1.3 Maxwell's equations in integral form 5.2 Electromagnetic waves 5.2.1 Production and properties of electromagnetic waves-Hertz experiments 5.2.3 Electromagnetic spectrum 5.3 Types of spectrum emission and absorption spectrum fraunhofer lines
6. Ray optics	6.1 Introduction 6.1.1 Ray optics 6.1.2 Reflection 6.1.3 Angle of deviation due to reflection 6.1.4 Image formed in plane mirror 6.1.5 Characteristics of the image formed by plane mirror 6.2 Spherical mirrors 6.2.1 Paraxial rays and marginal rays 6.2.2 Relation between f and r

	6.2.5 The mirror equation 6.2.6 Lateral magnification in spherical mirror 6.3 Speed of light 6.3.1 Fizeau's method to determine speed of light 6.3.3 Refractive index 6.3.4 Optical path 6.4 Refraction 6.4.1 Angle of deviation due to refraction 6.4.3 Principle of reversibility 6.4.4 Relative refractive index 6.4.5 Apparent depth 6.4.6 Critical angle and total internal reflection 6.4.8 Refraction in glass slab 6.5 Refraction at single spherical surface 6.5.1 Equation for refraction at single spherical surface 6.6 Thin lens 6.6.3 Lens makers formula and lens formula 6.6.4 Lateral magnification in thin lens 6.6.6 Focal length of lenses in contact 6.6.7 Silvered lenses 6.7 Prism 6.7.1 Angle of deviation produced by a prism 6.7.2 Angle of minimum deviation 6.7.3 Refractive index of the material of the prism 6.7.4 Dispersion of white light through a prism 6.7.5 Dispersive power 6.7.6 Scattering of sunlight
7. Wave optics	7.1 Theories on light 7.1.1 Corpuscular theory 7.1.2 Wave theory 7.1.3 Electromagnetic wave theory 7.1.4 Quantum theory 7.2 Wave nature of light 7.2.1 wave optics 7.2.2 Huygens' principle

	7.2.3 Proof for laws of reflection using Huygens principle
	7.2.4 Proof for laws of refraction using Huygens principle
	7.3 Interference
	7.3.1 Phase difference and path difference
	7.3.2 Coherant Sources
	7.3.3 Double slit as coherent source
	7.3.4 Young's double slit experiment
	7.3.5 Interference in white light (polychromatic light)
	7.3.6 Interference in thin films
	7.4 Diffraction
	7.4.2 Diffraction in single slit
	7.4.4 Fresnel's distance
	7.4.5 Difference between interference and diffraction
	7.4.9 Resloution
	7.5.3.1 Polariser and analyser
	7.5.3.2 Plane and partially polrised light
	7.5.3.3 Malus law
	7.5.3.4 Uses of polroids
	7.5.4 Polrisation by reflection
	7.5.4.1 Brewster's law
	7.5.4.2 Pile of plates
	7.6 Optical instruments
	7.6.1 Simple microscope
	7.6.1.1 Near Point focusing
	7.6.1.2 Normal focusing
	7.6.1.3 Resolving Power of Microscope
	7.6.1.4 Resolving Power of telescope
	7.6.2 Compound microscope
	7.6.2.1 Magnification in compound microscope
	7.6.3 Astronomocal telescope
	7.6.3.1 Magnification in astronomical telescope
	7.6.5 Reflecting telescope
	7.6.6.3 Astigmatism

8. Dual nature of radiation and mater	8.1 Introduction 8.1.1 Electron Emission 8.2 Photo Electric Effect 8.2.1 HERTZ, Hallwach and Lenards's Observation 8.2.2 Effect of intensity of incident Light on Photo Electric current 8.2.3 Effect of Potential Difference on Photo Electric current 8.2.4 Effect of Frequency on Incident Light on stopping potential 8.2.5 Laws of Photo Electric current 8.2.6 Concept of Quantization of Energy 8.2.7 Particle Nature of light - Einstein Explanation 8.2.8 Photo Electric cells and their Applications 8.3 Matter waves 8.3.1 Introduction wave Nature of Particles 8.3.2 De - Broglie wavelength 8.3.3 De Broglie wavelength of electron 8.3.4 Davisson - Germer Experiment 8.3.5 Electron Microscope 8.4 X - ray Spectra Continuous X Ray Spectra, Characteristic X Ray Spectra
9. Atomic and nuclear physics	9.1 Introduction 9.2 Electric Discharge Through gases Properties of Cathode Rays 9.2.1 Determination of Specific Charge (e/m) of electron - Thomsons experiment 9.2.2 Determination of charge of electron -Millikan's Oil Drop Experiment 9.3.2 Ruther ford Model 9.3.3 Bohr atom model 9.3.4 Atomic Spectra 9.4.3 Atomic and Nuclear masses 9.4.4 Size and density of Nucleus 9.4.5 Mass Defects and Binding energy 9.4.6 Binding Energy 9.5 Nuclear Force 9.6.1 Alpha decay

	9.6.2 Beta Decay 9.6.3 Gamma Emission 9.6.4 Laws of Radioactivity 9.6.5 Half Life, Mean life 9.6.6 Carbon dating 9.7 Nuclear fission 9.8 Nuclear fusion
10. Electronics and communication systems	10.1 Introduction 10.1.1 Energy Band Diagram 10.1.2 Classification of materials 10.2 Types of Semi conductors 10.2.1 Intrinsic Semiconductor 10.2.2 Extrinsic Semi conductor 10.3 DIODES 10.3.1 PN Junction Formation 10.3.2 PN Junction Diode 10.3.4 Rectification i) Half wave rectification circuit ii) Full wave rectification circuit 10.3.5 Breakdown Mechanism 10.3.6 Zener Diode 10.4 The Bipolar Junction transistor 10.4.1 Transistor circuit Configuration 10.4.2 Transistor action in CB mode 10.4.3 Relation between α and β 10.4.4 Operating point 10.4.5 Transistor as a switch 10.5 Digital Electronics 10.5.1 Analog and digital signal 10.6 Boolean Algebra 10.7 De Morgans Theorem 10.7.1 De Morgans 1st Theorem 10.7.2 De Morgans 2nd Theorem 10.7.3 Integrated chips 10.8 Communication System 10.9 Modulation 10.9.1 Amplitude modulation 10.9.2 Frequency modulation 10.9.3 Phase modulation

11. Recent developments in physics	11.1	Introduction
	11.2	Nano science and Nano technology
	11.2.1	Nano Science
	11.2.2	Interdisciplinary nature of nanotechnology
	11.2.3	Nano in nature
	11.3	Robotics
	11.3.1	What is Robotics ?
	11.3.2	Components of robotics
	11.3.3	Types of Robotics

PRACTICALS	
CLASS: 12	**SUBJECT: PHYSICS**
Sl.No	**Topic**
1	Determine the value of the Horizontal component of the earth magnetic field using tangent galvanometer. Take atleast four readings.
2	Compare the emf of two cells using potentiometer.
3	Adjust the grating for normal incidence using the spectrometer. Determine the wavelength of green, blue, yellow and red lines of mercury spectrum(the number of lines per metre length of the grating can be noted from the grating).
4	Voltage - current characteristics of a PN junction diode.
5	Verification of truth tables of logic gates using integrated circuits.
6	Verification of De morgan's Theorems.

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STANDARD: 12 SUBJECT : CHEMISTRY

UNIT	CONTENT
1.Metallurgy	Introduction 1.1 Occurrence of metals 1.1.1 Mineral and ore 1.2 Concentration of ores 1.2.1 Gravity separation or Hydraulic wash 1.2.2 Froth flotation 1.2.3 Leaching Cyanide leaching Recovery of metal of interest from the complex by reduction Ammonia leaching Alkali leaching Acid leaching 1.2.4 Magnetic separation 1.3 Extraction of crude metal 1.3.1 Conversion of ores into oxides Roasting Calcination 1.3.2 Reduction of metal oxides Smelting Reduction by carbon: Reduction by hydrogen Reduction by metal: Auto-reduction: 1.6 Refining process 1.6.1 Distillation 1.6.2 Liquation 1.6.3 Electrolytic refining 1.6.4 Zone Refining 1.6.5 Vapour phase method Mond process for refining nickel Van-Arkel method for refining zirconium/ titanium
2. P-block elements -I	Introduction 2.1 General trends in properties of p-block elements 2.1.1 Electronic configuration and oxidation state 2.1.2 Metallic nature: 2.1.3 Ionisation Enthalpy

	2.1.4 Electronegativity 2.1.5 Anomalous properties of the first elements 2.1.6 Inert pair effect 2.1.7 Allotropism in p-block elements 2.2 Group 13 (Boron group) elements 2.2.1 Occurrence 2.2.2 Physical properties 2.2.3 Chemical properties of boron Uses of boron 2.2.4 Borax [Na2B4O7.10H2O] Preparation Properties Uses of Borax 2.2.5 Boric acid [H3BO3 or B(OH)3] Preparation, Properties Structure of Boric acid Uses of boric acid 2.2.9 Alums Examples Preparation Properties of Alum Uses of Alum 2.3 Group 14 (Carbon group) elements: 2.3.1 Occurrence 2.3.2 Physical properties 2.3.3 Tendency for catenation 2.3.4 Allotropes of carbon Structure of Graphite Structure of Diamond Structure of Fullerenes Structure of carbon nanotubes Structure of Graphene 2.3.8 Silicones Preparation Types of silicones Properties, Uses
3. P-block elements -II	Introduction 3.1 Group 15 (Nitrogen group) elements 3.1.1 Occurrence 3.1.2 Physical properties 3.1.3 Nitrogen Preparation Properties of Nitrogen Uses of nitrogen

	3.1.4 Ammonia (NH3) Preparation Properties of Ammonia Chemical Properties Structure of ammonia 3.1.7 Allotropic forms of phosphorus 3.1.8 Properties of phosphorus Uses of phosphorus Oxoacids of Phosphorus-Structure Group 16 (Oxygen group) elements Occurrence Physical properties 3.2 Oxygen Preparation: Properties Chemical properties Uses of Oxygen 3.2.1 Allotropic forms of sulphur 3.2.2 Sulphur dioxide Preparation Properties Chemical properites Uses of sulphur dioxide Structure of sulphur dioxide Structure of oxoacids of sulphur 3.3 Group 17 (Halogen group) elements: 3.3.1 Chlorine Occurrence: Physical properties of Chlorine 3.3.1 Manufacture of chlorine Physical properties Chemical properties Uses of chlorine 3.3.4 Inter halogen compounds: Properties of inter halogen compounds Structure of inter halogen compounds 3.4 Group 18 (Inert gases) elements: 3.4.1 Occurrence: Physical properties Physical properties-Inert Gases Properties of inert gases Chemical Properties Structures of compounds of Xenon Uses of noble gases

4. Transition and inner transition elements	Introduction 4.1 Position of d- block elements in the periodic table 4.2 Electronic configuration 4.3 General trend in properties 4.3.1 Metallic behavior 4.3.2 Variation of atomic and ionic size 4.3.3 Ionization enthalpy 4.3.4 Oxidation state 4.3.5 Standard electrode potentials of transition metals 4.3.6 Magnetic properties 4.3.7 Catalytic properties 4.3.8 Alloy formation 4.3.9 Formation of interstitial compounds 4.3.10 Formation of complexes 4.4 Important compound of Transition elements f-block elements – Inner transition elements The position of Lanthanoids in the periodic table Electronic configuration of Lanthanoids Oxidation state of lanthanoids Atomic and ionic radii Causes of lanthanoid contraction Consequences of lanthanoid contraction Actinoids Electronic configuration of actinoids Oxidation state of actinoids Differences between lanthanoids and actinoids
5. Coordination chemistry	Introduction 5.1 Coordination compounds and double salts 5.2 Werner's theory of coordination compounds Postulates Werner's theory 5.2.1 Limitations of Werner's theory 5.3 Definition of important terms pertaining to co-ordination compounds 5.3.1 Coordination entity 5.3.2 Central atom/ion 5.3.3 Ligands Coordination sphere, Coordination polyhedron, Coordination number, Oxidation state (number)

	Types of complexes Classification based on the net charge on the complex Classification based on kind of ligands 5.4 Nomenclature of coordination compounds a. Naming the ligands b.Naming the central metal More examples with names – IUPAC Nomenclature 5.6 Theories of coordination compound 5.6.1 Valence Bond Theory Main assumptions of VBT Illustration(1-4) Limitations of VBT
6. Solid state	6. Introduction 6.1 General characteristics of solids 6.2. Classification of Solids 6.3. Classification of Crystalline Solids 6.3.1. Ionic solids 6.3.2. Covalent Solids 6.3.3. Molecular Solids 6.3.4. Metallic Solids 6.4. Crystal lattice and unit cell 6.5 Primitive and Non Primitive unit 6.5.1 Primitive (or) Simple Cube unit cell 6.5.2 Body Centered cubic unit cell 6.5.3 Face centered cubic unit cell 6.5.4 Calculations involving unit cell Dimensions 6.5.5 Calculation of density 6.6 Packing in Crystals 6.6.1 Linear arrangement of spheres in one direction 6.6.2 Two dimensional Close Packing 6.6.3 Simple Cubic arrangement 6.6.4. Body Centered Cubic arrangement 6.7. Imperfections in solids 6.7.1 Schottky defect 6.7.2. Frenkel defect 6.7.3. Metal Excess defect 6.7.4. Metal Deficiency defect 6.7.5. Impurity defect

7. Chemical kinetics	Introduction 7.1 Rate of Chemical reaction 7.1.1 Stoichiometry and rate of reaction 7.1.2 Average and instantaneous rate 7.3 Rate law and Rate Constant 7.4 Molecularity 7.5 Integrated Rate Equation 7.5.1 Integrated rate law for First order, Pseudo first order reaction 7.5.2 Integrated rate law for a Zero order reaction 7.6 Half life period of a reaction 7.8 Arrhenius Equation-The effect of temperature on reaction rate
8.Ionic Equillibrium	Introduction 8.1. Acids and bases 8.1.1 Arrhenius concept 8.1.2 Lowry - Bronsted Theory 8.1.3 Lewis Concept 8.2 Strength Of Acids and Bases 8.3 Ionisation of water 8.4 The pH Scale 8.4.1 Relation between pH and pOH 8.5 Ionistion of Weak Acids 8.5.1 Ostwalds Dilution Law 8.6 . Common ion effect 8.7 Buffer Solution 8.7.1 Buffer Action 8.7.3 Henderson Hasselbalch Equation 8.9 Solubility Product 8.9.1 Determination of solubility Product from Molar Solubility
9. Electro chemistry	Introduction 9.1 Conductivity of electrolytic solution 9.1.1 Molar conductivity 9.1.2 Equivalent conductance 9.1.3 Factors affecting Electrolytic conductance 9.1.4 Measurement of conductivity of ionic solutions 9.2 Variation of molar conductivity with concentration 9.2.2 Kohlrausch's law and Applications 9.3.2 Galvanic cell notation 9.3.4 Measurement of electrode potential 9.4 Thermodynamics of cell reactions

	9.4.1 Nernst equation Electrolytic cell and Electrolysis Faraday's law of electrolysis First law, Second law Electrochemical series
10. Surface chemistry	Introduction 10.1 Adsorption and Absorption Characteristics of adsorption 10.1.1 Types of Adsorption Distinction between Physical and Chemical Adsorption 10.1.2 Factors affecting Adsorption 10.1.3 Adsorption isotherms and isobars 10.1.3.1 Freundlich adsorption isotherm and limitations 10.2 Catalysis Positive and Negative Catalysis 10.2.1 Characteristics of Catalysis Promoters and Catalytic poison Auto Catalysis, Negative Catalysis 10.2.2 Theories of Catalysis The Intermediate compound formation theory, Adsorption Theory & Active Centers 10.5 Colloid, dispersion Phase and dispersion medium 10.5.1 Classification of colloidal solution 10.5.2 Preparation of Colloids (1)Dispersion methods [mechanical dispersion, electro dispersion, ultrasonic dispersion, peptisation] (2)Condensation method [oxidation, reduction, hydrolysis, double decomposition, Decomposition] (3)By exchange of solvent 10.5.3 Purification of colloids (i) Dialysis (ii)Electrodialysis (iii)Ultrafiltration 10.5.4 Properties of colloids 14 points [colour, size, Heterogeneous nature, Filtrability, Non- Setting nature, Concentration & density, Diffusability, Colligative Properties, Shape of Colloidal Particles, Optical, Kinetic and Electrical properties, Coagulation,Protective action]

11. Hydroxy compounds and ethers	Introduction 11.1 Classification of Alcohols 11.2 IUPAC Nomenclature Structure of functional group of alcohols Physical Properties of Alcohols Preparation of Alcohols Methods to differentiate primary, secondary,Tertiary Physical properties of alcohols Chemical Properties of Alchols (without mechanism) Uses of Alcohols Acidity of alcohols Acidity of phenols Preparation of phenol Physical Properties of Phenol Chemical properties of phenols Test to differentiate Alcohols & Phenols Uses of phenol ETHERS Ethers Classification Structure of funtional group IUPAC system Preparation of Ethers except mechanism Physical properties Chemical Properties of Ethers (except mechanism) uses
12. Carbonyl compounds and carboxylic acids	Introduction 12.1 Nomenclature of Aldehyde and Ketones 12.2 Structure of carbonyl group 12.3 General methods of preparation of Aldehydes and Ketones 12.4 Physical properties of Aldehydes and Ketones 12.5 chemical properties of Aldehydes and Ketones (Mechanism only for aldol and cannizaro reaction) 12.6 Test for Aldehydes (First two test only) CARBOXYLIC ACIDS 12.8 IUPAC Nomenclature of carboxylic acids 12.9 structure of carboxyl group 12.10 Methods of preparation of carboxylic acids except Sno 5 12.11 Physical properties of carboxylic acids 12.12 Chemical properties of carboxylic acids (except mechanism of esterification) Test for carboxylic acid 12.13 Acidity of carboxylic acids

13. Organic nitrogen compounds	Introduction 13.1 Nitro Compounds 13.1.1 Classification of Nitro compounds 13.1.2 Nomenclature of nitro alkanes 13.1.3 Isomerism 13.1.4 Acidic Nature of Nitro Alkanes 13.1.5 Preparation of Nitro Alkane first 3 methods only 13.1.6 Preparation of Nitro Arenes first method only 13.1.7 Physical Properties of Nitro Alkanes 13.1.8 Chemical properties of Nitro Alkanes Chemical properties of Nitro benzenes 13.2 Amines - Classification 13.2.1 Nomenclature IUPAC system of Amines 13.2.2 Structure of Amines 13.2.3 General Methods of Preparation of Amines 13.2.4 Properties of amines 13.2.5 Chemical properties 13.2.6 chemical properties of Amines
14. Bio molecules	Introduction 14.1 Carbohydrate 14.1.2 classification of carbohydrate 14.1.3 Glucose (except cyclic structure of glucose) 14.1.4 Fructose (except cyclic structure of fructose) 14.1.5 Disaccharides 14.1.7 Importance of carbohydrates 14.2 Proteins 14.2.1 Amino acids 14.2.3 properties of Amino acids 14.2.4 peptide bond formation 14.5 Nucleic acids 14.5.1 Composition and structure of nucleic acid 14.5.3 Types of RNA molecules

PRACTICALS	
CLASS: 12	SUBJECT: CHEMISTRY
Sl.No	Topic
Organic compounds	
1	Benzophenone
2	Cinnamic Acid
3	Urea
4	Glucose
5	Aniline
Volumetric analysis	
1	Estimation of Ferrous Sulphate (Permanganometry)
2	Estimation of FAS (Permanganometry)
3	Estimation of Oxalic acid (Acid Base Titration)

SYLLABUS 2021 - 2022

STANDARD - 12 SUBJECT : BOTANY (THEORY)

CHAPTER	CONTENT
CHAPTER: 1 Asexual and Sexual Reproduction in Plants	1.1 Asexual reproduction 1.2 Vegetative Reproduction 1.2.1 Natural Methods 1.4 Pre-fertilization structure and events 1.4.1 Male reproductive part-Androecium 1.4.2 Female reproductive part- Gynoecium 1.4.3 Pollination 1.6 Post fertilization structure and events 1.7 Apomixis 1.8 Polyembryony 1.9 Parthenocarpy
CHAPTER: 2 Classical Genetics	2.1 Heredity and variation 2.2 Mendelism 2.2.2 Mendel's experiments on pea plant 2.2.3 Terminology related to mendelism 2.3 Monohybrid cross 2.3.1 Mendel Analytical and empirical approach 2.3.2 Test cross 2.3.3 Back cross 2.3.4 Dihybrid cross 2.3.5 The Dihybrid test cross 2.4 Intragenic gene interactions 2.4.1 Incomplete dominance – No blending of genes 2.4.2 Codominance (1 : 2 : 1) 2.4.3 Lethal genes 2.4.4 Pleiotropy – A single gene affects multiple traits 2.5 Intergenic interactions
CHAPTER: 3 Chromosomal Basis of Inheritance	3.2 Linkage 3.2.1 Coupling and repulsion theory 3.2.2 Kinds of Linkage 3.2.3 Linkage & Groups 3.3.1 Mechanism of Crossing Over 3.3.3 Recombination 3.3.4 Genetic Mapping 3.4 Multiple alleles 3.4.1 Characteristic of multiple alleles 3.4.2 Self-sterility in Nicotiana 3.6 DNA Metabolism in plants 3.6.1 Eukaryotic DNA replication

	3.6.2 Taylors experiment 3.7 Protein synthesis in plants 3.7.1 Transcription 3.7.2 RNA splicing in plants 3.7.3 Translation 3.7.4 Alternative splicing in plants 3.7.5 RNA Editing 3.7.6 Jumping Genes
CHAPTER 4: Principles and Processes of Biotechnology	4.2 Methods of Biotechnology 4.2.1 Fermentation 4.2.2 Single cell Protein 4.3 Advancements in Modern Biotechnology 4.3.1 Genetic Engineering 4.4 Tools - Genetic Engineering 4.4.1 Restriction Endonuclease 4.4.2 DNA Ligase 4.4.3 Alkaline Phosphatase 4.4.4 Vectors 4.5 Methods of Gene Transfer 4.5.1 Direct or Vectorless Gene transfer 4.5.2 Indirect or vector-Mediated Gene transfer 4.6 Screening for Recombinants 4.6.1 Insertional Inactivation - Blue White Colony Method 4.6.2 Antibiotic resistant markers 4.6.3 Replica plating technique 4.6.4 Molecular Techniques - Isolation of Genetic Material and Gel Electrophoresis 4.6.5 Nucleic Acid Hybridation 4.6.6 Bioassay for Target Gene Effect 4.6.7 Genome Sequencing and Plant Genome Projects 4.6.8 Evolutionary pattern Assessed using DNA 4.6.9 Genome editing and CRISPR - Cas9 4.6.10 RNA Interference (RNAi) 4.7.2 Herbicide tolerant – Basta 4.7.3 Insect Resistance – BT Crop 4.7.7 Polyhydroxybutyrate – PHB 4.7.11 Bioremediation 4.7.13 Bioprospecting 4.8 Applications of Biotechnology

CHAPTER 5 Plant Tissue Culture	5.1 Basic concepts of Tissue Culture 5.2 Plant Tissue Culture 5.2.2 Technique involved in PTC 5.2.3 Types of plant Tissue culture 5.4 Applications of Plant Tissue Culture 5.4.2 Artificial Seed 5.5 Conservation of plant 5.5.2 Cryopreservation 5.7 Future of Biotechnology
CHAPTER 6 Principles of Ecology	6.1 Ecology 6.1.1 Definitions of ecology 6.1.2 Ecological hierarchy 6.1.4 Habitat and Niche 6.1.5 Ecological equivalents 6.2.1 Climatic Factors 6.2.b Temperature 6.2.c Water 6.2.2 Edaphic factors 6.2.3 Topographic factors 6.2.4 Biotic factors 6.3 Ecological adaptations: Hydrophytes, Xerophytes Mesophytes
CHAPTER 7 Ecosystem	7.2.1 Photosynthetically Active Radiation 7.2.3. Concepts of tropic level in an Ecosystem 7.2.4 Energy Flow 7.2.5 food chain 7.2.6 Food web 7.2.7 Ecological pyramids 7.2.9 Biogeo Chemical cycle carbon cycle & phosphorous cycle 7.2.10 Types of ecosystem 7.3 Plant succession 7.3.1 Causes of succession 7.3.2 Charateristics of Ecological succession 7.3.3 Types of succession 7.3.4 Process of succession 7.3.5 Classification of plant succession 7.3.6 Significance of plant succession

Chapter 8 Environmental Issues	8.1 8.1.4 8.1.5 8.3 8.4 8.7 8.7.1 8.7.2 8.8 8.10 8.12	Green house effect and Global warming Ozone Depletion Effects of Ozone depletion Deforestation Afforestation Conservation IUCN Endemic centres and Endemic plants Carbon capture and storage Sewage disposal GIS
Chapter 9 Plant Breeding	9.5 9.5.1 9.6 9.6.1 9.7 9.7.1 9.7.3 9.7.4 9.10 9.10.2	Organic Agriculture Biofertilizer Plant breeding Objectives of Plant Breeding Conventional plant breeding Plant Introduction Hybridization Heterosis Seed Storage Methods of Seed Storage
Chapter 10 Economically useful plants	10.1.3 10.2 10.4 10.9 10.10 10.11 10.11.1 10.11.3 10.11.4	Minor Millet Spices and Condiments Timber Traditional - Medicine Medicinal plants Entrepreneurial Botany Mushroom Culture Sea weed liquid fertilizer Organic farming

PRACTICAL

STANDARD: 12 SUBJECT : BOTANY

Sl.No	Topic
Perserved specimens	
1	Ecological Adaptations Hydrophytes, Xerophytes, Halophytes and Epiphytes
Models/ Photograph/ Pictures	
2	E.Coli cloning vector (pBR 322)
Solving problems	
3	To verify Monohybrid cross
4	Analysis – Dihybrid Cross
5	Flow of energy – 10 % Law
6	Quadrat method – Population density and frequency determintation
7	Genetic linkage maps
Experiments	
8	Dissect and display the Pollinia of Calotropis
9	Study of Pollen germination on a slide
10	Isolation of DNA from plant material

SYLLABUS- 2021 – 2022

STANDARD: 12 SUBJECT: ZOOLOGY

UNITS	CONTENT
1 Reproduction in Organisms	Introduction 1.1. Mode of Reproduction 1.3 Sexual reproduction
2 Human Reproduction	Introduction 2.1. Human Reproductive system 2.2. Gametogenesis 2.5. Fertilization and Implantation 2.6. Maintenance of pregnancy and Embryonic development
3 Reproductive Health	Introduction 3.1. Need for reproductive Health problems and strategies 3.2. Amniocentesis and its statutory Ban 3.3. Social impact of sex ratio - female foeticide and infanticide 3.4. Population explosion and Birth control 3.8. Assisted Reproductive Technology(ART) 3.9. Detection of foetal disorders during early Pregnancy
4 Principles of Inheritance and Variation	Introduction 4.1. Multiple alleles 4.2. Human blood groups 4.2.1 ABO blood types 4.3. Genetic control of Rh factor 4.3.1 Incompatibility of Rh Factor – Erythroblastosis foetalis 4.4. Sex determination 4.4.1 Genic balance in Drosophila 4.4.2 Dosage compensation – Barr body 4.5. Sex linked inheritance 4.5.1 Inheritance of X-linked genes 4.5.2 Inheritance of Y-linked genes 4.6. Karyotyping 4.7. Pedigree analysis 4.10. Extra chromosomal inheritance 4.11. Eugenics, Euphenics and Euthenics

5 Molecular Genetics	Introduction 5.1. Gene as the functional unit of Inheritance 5.2. In search of Genetic material 5.3. DNA is the Genetic Material 5.3.1 Hershey and Chase experiment on T2 bacteriophage 5.5. RNA - World 5.6. Properties of genetic Material 5.7. Packaging of DNA helix 5.9. Transcription 5.9.1 Transcription unit and gene 5.9.2 Process of transcription 5.10. Genetic Code 5.10.1 Mutation and genetic code 5.12. Translation 5.12.1 Mechanism of Translation 5.13 Regulation of gene Expression 5.14. Human genome project 5.14.1 Goals and methodologies of Human Genome Project 5.14.2 Salient features of Human Genome Project 5.14.3 Application and future challenges 5.15. DNA finger printing Technique
6 Evolution	Introduction 6.1 Origin of life 6.2. Geological Time Scale 6.3. Biological evolution 6.5. Theories of biological evolution 6.5.1 Lamarck's theory 6.5.2 Darwin's theory of Natural selection 6.5.3 Mutation theory 6.5.4 Modern synthetic theory 6.5.5 Evolution by anthropogenic sources 6.5.6 Adaptive Radiation 6.7. Hardy- Weinberg Principle
7 Human Health and Diseases	Introduction 7.1. Common diseases in human beings 7.1.1 Bacterial and viral diseases 7.1.2 Protozoan diseases 7.1.3 Fungal diseases 7.1.4 Helminthic diseases 7.2. Maintenance of personal and public hygiene 7.3. Adolescence -Drug and Alcohol abuse 7.3.1 Addiction and dependence 7.3.2 Effects of drugs and alcohol 7.3.3 Prevention and control 7.4. Mental health depression

8 Immunology	Introduction 8.1. Basic concepts of Immunology 8.2. Innate immunity 8.3. Acquired immunity 8.4. Immune responses 8.5. Lymphoid organs 8.6. Antigens 8.7. Antibodies 8.8. Antigen - Antibody interaction 8.9. Vaccines 8.10. Vaccination and Immunization 8.11 Hypersensitivity
9 Microbes in Human Welfare	Introduction 9.2 Microbes in industrial products 9.2.1 Antibiotic production 9.2.2 Fermented beverages 9.2.3 Chemicals, enzymes and other bioactive molecules 9.3 Microbes in sewage treatment 9.3.1 Microbial fuel cell (MFC) 9.5 Bioremediation 9.5.1 Microorganisms involved in bioremediation
10 Applications of Biotechnology	Introduction 10.1. Applications in medicine 10.1.1 Recombinant Human Insulin 10.1.2 Human alpha lactalbumin 10.1.3 Interferons 10.1.4 Recombinant Vaccines 10.2. Gene therapy 10.3. Stem cell therapy 10.4. Molecular Diagnostics 10.5. Transgenic Animals 10.6. Biological Products and their uses
11 Organisms and Populations	Introduction 11.1 Organisms and its environment 11.3. Major Abiotic components or factors 11.7 Populations 11.8 Population Attributes 11.12 Population Interaction

12 Biodiversity and Its Conservation	Introduction 12.1. Biodiversity 12.1.1 Concept of biodiversity 12.1.2 Levels of biodiversity 12.1.3 Magnitude of biodiversity 12.1.4 Patterns of biodiversity - distribution 12.2. Importants of Biodiversity -Global and India 12.5. Causes of biodiversity loss 12.5.1 Loss of biodiversity 12.5.2 Hotspots 12.5.3 Endangered organisms 12.5.4 Extinction 12.7. Biodiversity and its Conservation 12.7.1 In-situ Conversation (conversation in natural habitat) 12.7.2 Ex-situ Conversation 12.7.3 Role of WWF and CITES
13 Environmental Issues	Introduction 13.1 Pollution 13.1.1 Classifications of Pollutants 13.6. Bio Magnification 13.7. Eutrophication 13.7.1 Integrated Wastewater Management 13.8. Organic farming and its Implementation 13.9 Solid Waste Management 13.9.1 Waste management practices 13.9.2 Radioactive waste 13.9.3 Medical waste 13.9.4 E-Waste 13.9.5 Plastic Waste – Solutions and Remedies 13.10 Ecosan Toilets

PRACTICALS

STD: 12 SUBJECT : ZOOLOGY

Sl.No	Topic
1	Marking of wild life sanctuary and National parks in India Map
2	Human Mendelian traits
3	Human Sperm
4	Human Ovum
5	Paramecium - Conjugation
6	Entamoeba histolytica
7	Thymus T.S
8	Lymph node
9	Mutualism
10	Commensalism
11	tRNA
12	Homologous organs
13	Analogous organs
14	Animal cloning
15	X linked Disease
16	Autosomal Disease

SYLLABUS 2021 – 2022

STANDARD: 12 SUBJECT : BIO – BOTANY (THEORY)

CHAPTER	CONTENT
CHAPTER: 1 Asexual and Sexual Reproduction in Plants	1.1 Asexual reproduction 1.2 Vegetative Reproduction 1.2.1 Natural Methods 1.4 Pre-fertilization structure and events 1.4.1 Male reproductive part-Androecium 1.4.2 Female reproductive part- Gynoecium 1.4.3 Pollination 1.6 Post fertilization and events 1.7 Apomixis 1.8 Polyembryony 1.9 Parthenocarpy
CHAPTER: 2 Classical Genetics	2.1 Heredity and variation 2.2 Mendelism 2.2.3 Terminology related to Mendelism 2.3 Monohybrid cross 2.3.4 Dihybrid cross 2.3.5 The Dihybrid test cross 2.4 Intragenic interactions 2.4.1 Incomplete dominance – No blending of genes 2.4.2 Codominance (1 : 2 : 1) 2.4.3 Lethal genes 2.4.4 Pleiotropy – A single gene affects multiple traits 2.5 Intergenic interactions
Chapter: 3 Chromosomal Basis of Inheritance	3.2 Linkage 3.2.1 Coupling and repulsion theory 3.2.2 kinds of Linkage 3.2.3 Linkage Groups 3.3 Crossing Over 3.3.1 Mechanism of Crossing Over 3.3.3 Importance of Crossing Over 3.3.4 Recombination 3.3.5 Genetic Mapping 3.4 Multiple alleles 3.5.1 Types of mutation 3.5.3 Chromosomal mutations

CHAPTER 4: Principles and Processes of Bio-technology	4.2. Methods of Biotechnology 4.2.1 Fermentation 4.2.2 Single cell Protein 4.3 Advancements in Modern Biotechnology 4.4 Tools for Genetic Engineering 4.4.1 Restriction Endonuclease 4.4.2 DNA Ligase 4.4.3 Alkaline Phosphatase 4.4.4 Vectors 4.5 Methods of Gene Transfer 4.5.1 Direct or Vectorless Gene transfer 4.5.2 Indirect or vector-Mediated Gene transfer 4.6 Screening for Recombinants 4.6.1 Insertional Inactivation - Blue White Colony Selection Method 4.6.2 Antibiotic resistant markers 4.6.4 Molecular Techniques - Isolation of Genetic Material and Gel Electrophoresis 4.6.5 Nucleic Acid Hybridation 4.6.6 Bioassay for Target Gene Effect 4.6.7 Genome Sequencing and Plant Genome Projects 4.6.8 Evolutionary pattern assessed using DNA 4.6.10 RNA Interference (RNAi) 4.7.2 Herbicide Tolerant - Basta 4.7.3 Insect resistance - Bt Crops 4.7.7 Polyhydroxybutyrate (PHB) 4.7.11 Bioremediation 4.7.13 Bioprospecting 4.8 Applications of Biotechnology
Chapter 5 Plant Tissue Culture	5.1 Basic concepts of Tissue Culture 5.2 Plant Tissue Culture 5.2.2 Technique involved in PTC 5.2.3 Types of plant Tissue culture 5.4. Applications of Plant Tissue Culture 5.4.2 Artificial Seed 5.5.2 Cryopreservation 5. 7. Future of Biotechnology
Chapter 6 Principles of Ecology	6.1 Ecology 6.1.1 Definitions of ecology 6.1.2 Ecological hierarchy 6.1.4 Habitat & Niche 6.1.5 Ecological equivalents 6.2.1 Climatic Factors 6.2.b Temperature 6.2.c Water

	6.2.2 Edaphic factors 6.2.3 Topographic factors 6.2.4 Biotic factors 6.3 Ecological adaptations – Hydrophytes, Xerophytes Mesophytes
Chapter 7 Ecosystem	7.2.1 Photosynthetically Active Radiation 7.2.3. Concepts of trophic level in an Ecosystem 7.2.4 Energy flow 7.2.5 food chain 7.2.6. Food web 7.2.7 Ecological pyramids 7.2.9 Biogeo Chemical cycle carbon cycle &phosphorous cycle 7.2.10 Types of ecosystem 7.3 plant succession 7.3.1. Characteristics of Ecological succession 7.3.2. Types of succession 7.3.3 Classification of plant succession 7.3.4 Significance of plant succession
Chapter 8 Environmental Issues	8.1 Green house effect and Global warming 8.1.4 Ozone Depletion 8.1.5 Effects of Ozone depletion 8.2 Forestry 8.3 Deforestation 8.4 Afforestation 8.5 Alien species 8.7 Carbon capture and storage 8.9 Environmental impact assessment 8.10 GIS
Chapter 9 Plant Breeding	9.4 Organic agriculture 9.4.1 Biofertilizers 9.5 Plant breeding 9.5.1 Objectives of Plant Breeding 9.6 Conventional plant breeding methods 9.6.1 Plant introduction 9.6.3 Hybridization 9.6.4 Heterosis 9.7 Modern Plant breeding
Chapter 10 Economically useful plants	10.1.3 Minor Millet 10.2 Spices and Condiments 10.4 Timber 10.9. Traditional system of Medicine 10.10 Medicinal plants 10.11 Entrepreneurial Botany 10.11.1 Organic Farming

PRACTICAL

STANDARD: 12 SUBJECT : BIO – BOTANY

Sl.No	Topic
Preserved Specimens/ Model/ Photograph / Pictures	
1.	E.Coli cloning vector (pBR 322)
2.	Types of Ecological Pyramids – Number, Biomass, Energy
Solving Problems	
3.	To verify Monohybrid cross
4.	Analysis – Dihybrid Cross
5.	Flow of energy – 10 % Law
6.	Quadrat method – Population density and frequency determination
7.	Genetic linkage maps
Experiments	
8.	Study of Pollen germination on a slide
9.	Isolation of DNA from plant material

SYLLABUS- 2021 – 2022

STANDARD: 12 SUBJECT: BIO-ZOOLOGY

UNITS	CONTENT
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4 Principles of Inheritance and Variation	Introduction 4.1. Multiple alleles 4.2. Human blood groups 4.2.1 ABO blood types 4.3. Genetic control of Rh factor 4.3.1 Incompatibility of Rh Factor – Erythroblastosis foetalis 4.4. Sex determination 4.4.1 Dosage compensation – Barr body 4.5. Sex linked inheritance 4.5.1 Inheritance of X-linked genes 4.5.2 Inheritance of Y-linked genes 4.6. Karyotyping 4.7. Pedigree analysis

5 Molecular Genetics	Introduction 5.1. Gene as the functional unit of Inheritance 5.2. In search of Genetic material 5.3. DNA is the Genetic Material 5.3.1 Hershey and Chase experiment on T2 bacteriophage 5.5. RNA - World 5.6 Properties of genetic Material 5.7. Packaging of DNA helix 5.9. Transcription 5.9.1 Transcription unit and gene 5.9.2 Process of transcription 5.10. Genetic Code 5.10.1 Mutation and genetic code 5.12. Translation 5.12.1 Mechanism of Translation 5.13 Regulation of gene Expression 5.14. Human genome project 5.14.1 Goals and methodologies of Human Genome Project 5.14.2 Salient features of Human Genome Project 5.14.3 Application and future challenges 5.15. DNA finger printing Technique
6 Evolution	Introduction 6.1 Origin of life 6.2. Geological Time Scale 6.3. Biological evolution 6.5. Theories of biological evolution 6.5.1 Lamarck's theory 6.5.2 Darwin's theory of Natural selection 6.5.3 Mutation theory 6.5.4 Modern synthetic theory 6.5.5 Evolution by anthropogenic sources 6.5.6 Adaptive Radiation 6.7. Hardy- Weinberg Principle
7 Human Health and Diseases	Introduction 7.1 Common diseases in Human beings 7.1.1 Bacterial and viral diseases 7.1.2 Protozoan diseases 7.1.3 Fungal diseases 7.1.4 Helminthic diseases

	7.2 Maintenance of Personal and Public Hygiene 7.3 Basic concepts of Immunology 7.3.1 Innate Immunity 7.3.2 Acquired Immunity 7.3.3 Immune responses 7.3.4 Lymphoid organs 7.3.5 Antigens 7.3.6 Antibodies 7.3.7 Antigen – Antibody interaction 7.3.8 Vaccines 7.3.9 Vaccination and immunization 7.3.10 Hypersensitivity 7.6 Adolescence – Drug and Alcohol abuse 7.6.1 Addiction and dependence 7.6.2 Effects of drugs and alcohol 7.6.3 Prevention and control 7.7. Mental health and Depression
8 Microbes in Human Welfare	Introduction 8.2 Microbes in industrial products 8.2.1 Antibiotic production 8.2.2 Fermented beverages 8.2.3 Chemicals, enzymes and other bioactive molecules 8.3 Microbes in sewage treatment 8.3.1 Microbial fuel cell (MFC) 8.5 Bioremediation 8.5.1 Microorganisms involved in bioremediation
9 Applications of Biotechnology	Introduction 9.1. Applications in medicine 9.1.1 Recombinant Human Insulin 9.1.2 Human alpha lactalbumin 9.1.3 Interferons 9.2. Gene therapy 9.3. Stem cell therapy 9.4. Molecular Diagnostics
11 Organisms and Populations	Introduction 10.1 Organisms and its environment 10.3. Major Abiotic components or factors 10.7 Populations 10.8 Population Attributes 10.12 Population Interaction

11 Biodiversity and Its Conservation	Introduction 11.1 Biodiversity 11.1.1 Concept of biodiversity 11.1.2 Levels of biodiversity 11.1.3 Magnitude of biodiversity 11.1.4 Patterns of biodiversity - distribution 11.2 Importance of Biodiversity -Global and India 11.5 Causes of biodiversity loss 11.5.1 Loss of biodiversity 11.5.2 Hotspots 11.5.3 Endangered organisms 11.5.4 Extinction 11.7 Biodiversity and its Conservation 11.7.1 In-situ Conversation (conversation in natural habitat) 11.7.2 Ex-situ Conversation
12 Environmental Issues	Introduction 12.1 Pollution 12.1.1 Classifications of Pollutants 12.6. Bio Magnification 12.7. Eutrophication 12.7.1 Integrated Wastewater Management 12.8. Organic farming and its Implementation 12.9 Solid Waste Management 12.9.1 Waste management practices 12.9.2 Radioactive waste 12.9.3 Medical waste 12.9.4 E-Waste 12.9.5 Plastic Waste – Solutions and Remedies 12.10. Ecosan Toilets

PRACTICALS

STD: 12 SUBJECT : BIO-ZOOLOGY

Sl.No	Topic
1	Marking of wild life sanctuary and National parks in India Map
2	Human Mendelian traits
3	Human Sperm
4	Human Ovum
5	Paramecium Conjugation
6	Entamoebahistolytica
7	Thymus T.S
8	Lymph node
9	tRNA
10	Homologous organs
11	Analogous organs
12	X linked Disease
13	Autosomal Disease

SYLLABUS 2021-2022

CLASS: 12 SUBJECT: BIOCHEMISTRY

UNIT	CONTENT
1. Cell Membrane	Introduction 1.1 Chemical Composition 1.1.1 Lipid 1.1.2 Protein 1.1.2.1 Integral Protein 1.1.2.2 Peripheral Protein 1.2 Models proposed for Membrane Structure 1.2.1 Monolayer Model 1.2.2 Lipid Bilayer Model 1.2.3 Sandwich Model 1.2.4 Unit Membrane Model 1.2.5 Fluid Mosaic Model 1.3 Membrane Transport 1.3.1 Passive Transport 1.3.2 Facilitated Diffusion 1.3.3 Active Transport 1.3.4 Endocytosis 1.4 Viscosity & Surface Tension 1.4.1 Biological importance of Viscosity and Surface tension 1.5 Osmosis 1.5.1 Biological significance 1.6 .1 Hemoglobin buffer system, Chloride shift
2. Digestion	Introduction 2.2 Digestion 2.2.1 Mechanical Digestion 2.2.2 Chemical Digestion 2.2.2.1 Digestion and absorption of Carbohydrates 2.2.2.2 Digestion and absorption of Proteins 2.2.2.3 Digestion and absorption of Lipids 2.2.2.4 Digestion and absorption of Nucleic acids 2.3 Gastro Intestinal Hormones

3. Carbohydrate Metabolism	Introduction 3.1 Overview of metabolism 3.1.1 Catabolism and Metabolism 3.2 Carbohydrate as a source of energy 3.5 Hexose Monophosphate Shunt 3.5.1 Reaction of Oxidative Phase 3.5.2 Non Oxidative Phase 3.6 Glycogen metabolism 3.6.1 Glycogenesis 3.6.2 Glycogenolysis 3.7 Glyconeogenesis 3.7.1 key reactions of Gluconeogenesis 3.7.2 Reaction of Gluconeogenesis 3.7.3 Precursors for Glucose 3.7.4 Cori Cycle
4. Protein Metabolism	Introduction 4.1.4 Decarboxylation 4.1.5 Fate of Carbon Skeleton of Amino Acids 4.1.6 Trans Methylation 4.3 Formation of Niacin 4.4 Formation of Melanin 4.5 Formation of Thyroid Hormones 4.6 Formation of Catecholamine
5. Lipid Metabolism	5.1 Introduction 5.1.1 Biological Functions of Lipids 5.2 Biosynthesis of Fatty Acids 5.3 Oxidation of Fatty Acids 5.3.1 β Oxidation 5.4 Cholesterol 5.4.1 Biosynthesis of Cholesterol 5.4.2 Important derivatives of Cholesterol 5.4.2.1 Bile Salts 5.4.2.2 Steroid Hormones 5.4.2.3 Vitamin D 5.5 Phospholipids 5.5.1 Types of Phospholipids 5.5.2 Biosynthesis of Phospholipids

	5.5.3 Biosynthesis of Lecithin 5.5.4 Degradation of Phospholipids 5.5.5 Lysolecithins Formation 5.5.6 Effects of Lysolecithins 5.6 Cephalin
6. Molecular Biology	Introduction 6.1 Central dogma of molecular biology 6.2 DNA Replication 6.2.1 The Models of DNA Replication 6.2.2 The conservative Model 6.2.3 The semiconservative Model 6.2.4 The dispersive model 6.2.5 The Meselson –Stahl experiment and the conformation of semiconservative model 6.2.6 Overview of DNA Replication 6.2.7 The DNA Polymerase 6.2.8 Difference between Prokaryotes and Eukaryotes in DNA Replication 6.2.9 The Polymerase Chain Reaction- an essential tool for Molecular Biology 6.2.9.1 The steps involved in PCR amplication 6.3 Transcription 6.3.1 Genes and Genes Expression 6.3.2 Overview of transcription 6.3.2.1 Initiation of transcription 6.3.2.2 Elongation of transcription 6.3.2.3 Termination of transcription 6.3.4 post transcription Modification of RNA 6.4 Translation 6.4.1 The genetic code 6.4.2 Overview of Translation 6.4.3 Ribosomes 6.4.4 Molecular events in Translation 6.4.4.1 Translation Initiation 6.4.4.2 The Translation Elongation 6.4.4.3 Termination of Translation

	6.4.5 Post Translation Modification 6.4.6 Difference between Prokaryotes and Eukaryotes Translation
7. Inborn Errors of Metabolism	Introduction 7.1 Galactosemia 7.1.1 Causes 7.1.2 Symptoms 7.2 Von Gierke Disease 7.2.1 Clinical Manifestation 7.2.2 Symptoms 7.3 Hemophilia 7.3.1 Causes 7.3.2 Symptoms 7.6 Tay – Sachs disease 7.6.1 Causes 7.6.2 Symptoms
8. Biological Oxidation	Introduction 8.1 Redox Reaction 8.1.1 Redox Potential 8.2 Electron transport chain 8.2.1 Structure of Mitochondria 8.2.2 Components of the electron transport chain 8.2.3 Reaction of electron transport chain 8.2.4 Inhibitors of the electron transport chain 8.4 High Energy compounds 8.4.1 Storage form of high energy compounds 8.4.2 ATP as a high energy compounds 8.4.2.1 Structure of ATPase (F_1 F_0 ATPase) 8.4.2.2 Free energy of Hydrolysis of ATP 8.5 Uncouplers
9. Enzyme Kinetics	Introduction 9.1 Derivation Michaelis - Menten equation 9.1.1 Significance of Michaelis - Menten equation 9.1.2 Significance of K_m 9.1.3 Lineweaver-Burk equation 9.2 Enzyme action 9.3.3 Irreversible enzyme inhibition

10. Immunology	10.1	Introduction to immunology
	10.3	Immunity
	10.3.1	Classification
	10.3.1.1	Innate (Natural) Immunity
	10.3.1.2	Components involved in Innate Immunity
	10.3.1.3	Mechanisms involved in Innate Immunity
	10.3.2	Acquired Immunity
	10.3.2.1	Humoral Immunity
	10.3.2.2	Cell mediated Immunity
	10.4	Antigens
	10.4.1	Types of Antigens
	10.4.2	Factors influencing the antigenicity of antigens
	10.6	Antigen - Antibody Reaction
	10.6.1	Precipitation
	10.6.2	Agglutination

PRACTICAL

CLASS: 12	**SUBJECT: BIOCHEMISTRY**
Sl.No	**Topic**
1	Determination of blood grouping
2	Estimation of protein (BIURET METHOD)
3	Estimation of Glucose (Orthotoluidine method)
4	Estimation of Ascorbic acid (Vitamin C)
5	Estimation of urea by Diacetyl Monoxime method
6	Estimation of Calcium by titrimetric method
7	Estimation of amino acid by Sorensen's Formol titration method

SYLLABUS 2021 – 2022

STANDARD: 12 SUBJECT: MICROBIOLOGY

UNIT	CONTENT
1 Developments in Microbiology	1.1 Microbes in space 1.4 Nanoparticles production using microbes 1.5 Equipments 1.5.1 Confocal Microscopy 1.5.2 DNA sequencing system
2 Microscopy	2.1 Phase contrast Microscope 2.1.1 Principle 2.1.2 Optical components 2.1.3 Working mechanism 2.2 Fluorescence Microscope 2.2.1 Principle 2.2.2 Components of Fluorescence Microscope 2.2.3 Working Mechanism 2.3 Electron Microscope 2.3.1 Principle 2.3.2 Working principle and instrumentation of TEM 2.3.3 Working principle and instrumentation of SEM
3 Control of Microorganisms by chemical methods	3.1 Disinfectants, Antiseptics and antibiotics 3.5 Evaluation of Antimicrobial chemical agents 3.6 Antibiotics 3.6.1 Mode of action of antibiotics 3.7 Antimicrobial susceptibility testing 3.8 Drug resistance mechanisms
4 Microbial metabolism	4.2 Energy of chemical reaction 4.2.1 High energy phosphate 4.2.2 Oxidation-Reduction reaction 4.6.1 Chemiosmotic mechanism of ATP 4.10.4 enzyme regulation
5 Food Microbiology	5.1 Food Microbiology 5.1.1 Classification of foods 5.1.2 Sources of Microorganisms in food 5.1.3 Factors that influence Growth of microorganisms in food 5.2 Food spoilage 5.2.1 Causes of food spoilage 5.3 Food borne disease 5.3.1 Food borne infection 5.3.2 Food poisoning 5.5.5 Methylene Blue dye Reduction Test (MBRT)

6 Industrial Microbiology	6.2 Screening of industrially important microorganism 6.3 Strain improvement 6.4 Preservation of industrially important microorganisms 6.5 Fermentors 6.5.1 Basic design of a fermentor 6.6 Industrial production of Penicillin 6.9 Industrial production of citric acid 6.10 Immobilization
7 Medical Bacteriology	7.3 Staphylococcus aureus 7.3.1 Morphology 7.3.2 Cultural characteristics 7.3.3 Virulence Factors 7.3.4 Pathogenicity 7.3.5 Laboratory diagnosis 7.3.6 Treatment 7.4 Streptococcus pyogenes 7.4.1 Morphology 7.4.2 Cultural characteristics 7.4.3 Antigenic structure 7.4.4 Pathogenicity 7.4.5 Laboratory diagnosis 7.4.6 Treatment 7.5 Neisseria meningitides 7.5.1 Morphology 7.5.2 Cultural characteristics 7.5.3 Pathogenicity 7.5.4 Laboratory diagnosis 7.5.5 Treatment and prophylaxis 7.6 Corynebacterium diphtheriae 7.6.1 Morphology 7.6.2 Cultural characteristics 7.6.3 Pathogenicity 7.6.4 Clinical Manifestations 7.6.5 Laboratory diagnosis 7.6.6 Prophylaxis 7.6.7 Treatment 7.7 Clostridium tetani 7.7.1 Morphology 7.7.2 Cultural characteristics 7.7.3 Toxins 7.7.4 Pathogenesis

	7.7.5 Clinical feature 7.7.6 Laboratory diagnosis 7.7.7 Treatment 7.7.8 Prophylaxis 7.9 Salmonella typhi 7.9.1 Morphology 7.9.2 Cultural characteristics 7.9.3 Pathogenicity 7.9.4 Clinical Manifestations 7.9.5 Laboratory diagnosis 7.9.6 Prophylaxis 7.9.7 Treatment and control measures 7.11 Mycobacterium tuberculosis 7.11.1 Morphology 7.11.2 Cultural characteristics 7.11.3 Pathogenicity 7.11.4 Clinical symptoms 7.11.5 Laboratory diagnosis 7.11.6 Treatment 7.11.7 Prophylaxis and control measures 7.12 Treponema pallidum 7.12.1 Morphology 7.12.2 Cultural characteristics 7.12.3 Pathogenicity 7.12.4 Laboratory diagnosis 7.12.5 Treatment and preventive measure 7.13 Leptospira interogans 7.13.1 Morphology 7.13.2 Antigenic structure 7.13.3 Pathogenicity 7.13.4 Laboratory diagnosis 7.13.5 Treatment and preventive measure
8 Medical Parasitology	8.1 Parasite and host 8.1.1 Association between host and parasite 8.1.2 Types and classification of parasite 8.1.3 Types of host 8.1.4 Classification of medical parasitology 8.1.5 Life cycle of parasites 8.1.6 Tranmission of parasites 8.2 Entamoeba histolytica 8.2.1 Geographical Distribution 8.2.2 Habitat 8.2.3 Morphology

	8.2.4 Life cycle of Entamoeba histolytica 8.2.5 Pathogenesis 8.2.6 Clinical features 8.2.7 Laboratory diagnosis 8.2.8 Prevention and control 8.4 Leishmania donovani 8.4.1 Geographical Distribution 8.4.2 Habitat 8.4.3 Morphology 8.4.4 Life cycle of Leishmania donovani 8.4.5 Pathogenesis 8.4.6 Clinical features 8.4.7 Prevention and control 8.5 Plasmodium 8.5.1 Geographical Distribution 8.5.2 Habitat 8.5.3 Vectors 8.5.4 Life cycle 8.5.5 Human cycle 8.5.6 Mosquito cycle 8.5.7 Pathogenesis 8.5.8 Clinical features 8.5.9 Complication of server falciparum malaria 8.5.10 Recrudescence 8.5.11 Plasmodium vivax 8.5.12 Clinical features 8.5.13 Laboratory diagnosis 8.5.14 Treatment 8.5.15 Prevention and control
9 Medical Mycology	9.1 Classification of Fungi based on the Host-Parasitic relationship 9.1.1 Mycoses 9.2 Superficial cutaneous Mycoses 9.3 Cutaneous Mycoses 9.3.1 Pathogenesis and pathology 9.3.2 Clinical features 9.3.3 Laboratory diagnosis 9.4 Subcutaneous Mycoses 9.4.1 Mycetoma 9.4.2 Pathogenesis and pathology 9.4.3 Classification of mycetoma 9.4.4 Clinical features 9.4.5 Laboratory diagnosis

	9.5 Systemic Mycoses 9.5.1 Histoplasmosis 9.5.2 Pathogenesis and pathology 9.5.3 Clinical features 9.5.4 Laboratory diagnosis 9.6 Opportunistic Mycoses 9.6.1 Candidiasis 9.6.2 Cryptococcosis
10 Medical Virology	10.2 Cultivation of Viruses 10.3 Herpes Viruses 10.4 Hepatitis Viruses 10.5 Rabies Viruses 10.7 Arbo Viruses 10.7.1 Chikungunya virus 10.7.2 Dengue 10.7.3 Zika virus
11 Immunology	11.1.2 Immunofluorescence 11.1.3 ELISA 11.2 Western Blotting 11.3 Hypersensitivity
12 Microbial Genetics	12.6 Formation of mutants 12.7 Transfer of genetic material 12.7.1 Transformation 12.7.2 Conjugation 12.7.3 Transduction 12.11 Techniques in Genetic Engineering 12.11.1 Agarose Gel electrophoresis 12.11.2 PCR (Polymerase Chain Reaction

PRACTICAL

STANDARD :12 SUBJECT: MICROBIOLOGY

Sl.No	Topic
1	Major practical Gram's staining of curd/idly batter/yeast
2	Identification of the fungus (Aspergillus/ Mucor/ Rhizopus)
3	Blood grouping
4	Blood staining
5	Test for catalase
6	WIDAL test (slide test)
7	Demonstration of Rhizobium from root nodules and its isolation
	II B) Slide
8	Eggs of Ascaris lumbricoides
9	Heterocysts of Nostoc
10	Acid fast Bacilli
	II C) Spotter
11	Antibiotic sensitivity plate – Kirby Bauer technique
12	Sugar fermentation tube showing acid and gas production
13	Agarose gel electrophoresis apparatus
14	Spoiled food

SYLLABUS 2021 - 2022

STANDARD - 12 SUBJECT : GENERAL NURSING

UNIT	CONTENT
1. Human Anatomy and Physiology	Introduction 1.1 Integumentary System Diseases related to Integumentary system 1.3 Musculo-Skeletal System 1.4 Muscular System Diseases related to the bones 1.5 Nervous System Diseases related to nervous system 1.6 Gastrointestinal System Disease related to digestive system 1.7 Urinary System Disease related to urinary system 1.8 Respiratory System Disease of the respiratory tract 1.9 Endocrine System Diseases related to endocrine system
2. Medical Surgical and Nursing Management of Human Diseases	Introduction 2.1 Infection and Infestation Scabies Psoriasis 2.2 Myocardial Infarction 2.3 Congestive Cardiac Failure 2.10 Gastric Ulcer 2.11 Duodenal Ulcer 2.14 Haemorrhoids (Piles) 2.15 Renal Failure 2.16 Renal Stone/Renal Calculi/Urolithias

	2.19 Diabetes Mellitus 2.20 Hypothyroidism 2.21 Hyperthyroidism 2.24 Menstrual Disorder 2.25 Uterine Prolapse 2.26 Benign Prostatic Hyperplasia 2.27 Hydrocele
3. Applied Psychology	Introduction 3.1 Definition of Psychology 3.2 Importance of Psychology in Nursing 3.3 Maslow's Theory of Motivation 3.5 Attitude 3.6 Emotions
4. Applied Sociology	Introduction 4.1 Definition 4.2 Principles of Sociology 4.3 Importance of Sociology in Nursing
5. Applied Nutrition	Introduction 5.1 Terminology 5.2 Classification of Foods 5.3 Role of Nutrition in Maintaining Health 5.4 Factors Affecting Food and Nutrition 5.5 Carbohydrates 5.6 Fat 5.7 Proteins 5.8 Vitamins
6. Introduction to Sex Education	6.1 Definition Aims of sex education 6.2 Good touch 6.3 Bad touch 6.4 Sexual harassment
7. Midwifery Nursing	Introduction 7.1 Definition 7.2 Maternal Physiological Changes During Pregnancy 7.3 Diagnosis of Pregnancy

	7.4 High Risk Pregnancy 7.5 Normal Labour 7.7 Normal Puerperium
8. Child Health Nursing	Introduction 8.1 Definition of New Born 8.2 Medical and Special Care New Born 8.3 Universal Immunization Programme 8.7 Maternal and Child Health Services
9. Community Health Nursing	Introduction 9.1 Community Health Nursing 9.2 Health Problems in India 9.3 National Health Policy and Planning 9.4 Health Planning 9.5 Health Services Organization 9.6 National Health Programmes 9.7 National Programme for Control of Blindness 9.8 Twenty Point Programme (TPP) 9.9 School Health Programme 9.10 Five Year Plans
10. Mental Health Nursing Principles and Practices	Introduction 10.1 Terminologies 10.2 Characteristics of Mentally Healthy Person 10.3 Misconception about Mental Illness 10.4 Understanding of Patients 10.5 Psychosis and Neurosis 10.6 Mental Disorder 10.10 Attention Deficit Hyperactivity Disorder 10.11 Therapeutic Nurse Patient Relationship

11. Communicable Diseases	Introduction 11.1 Terminology 11.2 Sources of Reservoir 11.3 Mode of Transmission 11.4 Indirect Transmission 11.5 Classification of Communicable Diseases 11.6 Water Borne Diseases (Diseases Transmitted through Water) 11.7 Diseases Transmitted Through Air 11.8 Disease Transmitted Through Arthropods
12. Nursing Education and Management	Introduction 12.1 Principles of Nursing Education 12.2 Philosophy of Nursing Education 12.3 Curriculum Planning 12.4 Management 12.5 Qualities of a Good Administrator 12.6 Skills of an Effective Administrator 12.7 Extended Roles of the Nurse
13. Introduction to Nursing Research	Introduction 13.1 Importance of Research in Nursing 13.2 Types of Research 13.3 Steps in Nursing research 13.4 Related Websites/Software Used in Nursing Research

PRACTICALS	
STANDARD - 12	SUBJECT : GENERAL NURSING
Sl.No	Topic
1	Ryle's Tube Feeding
2	Instruments
3	Diet for Various Conditions
4	Home Nursing
5	Mental Status Examination

SYLLABUS 2021-2022

CLASS: 12 SUBJECT: NUTRITION AND DIETETICS

UNIT	CONTENT
1. Recommended Dietary Allowances And Meal Planning	1.1 Dietary allowance recommended 1.1.1 Factors influencing RDA 1.2 Balanced diet 1.3. Meal planning 1.3.1 objectives of meal planning 1.3.2 Factors affecting Meal planning 1.6. low cost balanced diet
2. Nutrition In Pregnancy, Lactation And Infancy	2.1 Nutrition requirements in pregnancy 2.1.1 Weight gain during pregnancy 2.1.2 Effects of under nutrition in the mother 2.1.3 Effects of maternal nutrition on the fetus 2.1.4 Nutrition requirements during pregnancy 2.1.5 Dietary guidelines 2.1.6 Dietary problems 2.1.7 Practices incompatible with pregnancy 2.3 Growth and development during infancy 2.3.1 Nutritional requirements for infants 2.3.2 Breast feeding 2.3.3 Advantages of breast feeding.
3. Nutrition During Pre-School, School Age and Adolescence	3.1 Preschool age. 3.1.1 Nutritional requirement for Preschool Children 3.1.2 Diet for preschool children. 3.1.3 Common feeding problems in children. 3.2.3 Nutritional problems in school aged children. 3.2.4 Key points for good nutrition in school aged children. 3.5. Adolescence 3.5.1 Growth and development of adolescence. 3.5.2 Physical, Physiological and Psychological changes in adolescents 3.5.3 Nutritional requirements of adolescents.

	3.5.4 Nutritional Problems of adolescents. 3.5.5 Nutrition and the menstrual cycle. 3.5.6 Acne vulgaris 3.5.7 Malnutrition due to teenage pregnancy. 3.5.8 Changes in eating habits during adolescence. 3.5.9 Dietary guidelines for adolescents.
4. Nutrition In Adulthood and Old Age	4.1 Adult. 4.1.1 Nutrition requirements of Adults. 4.2.1 Factors affecting intake of food. 4.2.2 Nutrition and food requirements of elderly 4.2.3 Dietary guidelines.
5. Therapeutic Diets	5.1 Principles of therapeutic diet. 5.1.1 The general objectives of therapeutic diet. 5.1.3 Factors to be considered in planning therapeutic diets. 5.2 Routine hospital diet. 5.2.1 Liquid diets 5.2.2 Soft diets 5.2.3 Restricted diets 5.2.4 Regular diets 5.3. Special feeding methods. 5.4. Dietitian. 5.4.1 Administrative dietetians 5.4.2 Clinical dietetians 5.4.3 Community dietetians 5.4.4 Research dietetians 5.4.5 Teaching dietetians 5.4.6 Consultant dietetians 5.5.1 Role of Dietitian. 5.5.2 Responsibilities of Dietitian. 5.5.3 Code of ethics of Dietitian.
6. Diet In Fever	6.1 Communicable and non communicable diseases. 6.2 Definition of fever 6.3 Causes of fever 6.4 classification types of fever 6.6 Diet therapy in fever.

7. Diet In Obesity And Underweight	7.1 Introduction for Obesity. 7.1.1 Aetiology. 7.1.2 Assessment of Obesity. 7.1.3 Complications of obesity. 7.1.4 Dietary Principles: 7.2 Underweight 7.2.1 Aetiology 7.2.2 Complications of underweight 7.2.3 Dietary principles.
8. Diet In Gastro Intestinal And Liver Disorder	8.1. Gastro intestinal disorder 8.1.1 Diarrhea 8.1.2 constipation, Diet therapy for constipation. 8.1.3 Diet therapy for peptic ulcer. 8.2. Liver disorder 8.2.1 Hepatitis – causes, types symptoms, Diet therapy for hepatitis 8.2.2 Cirrhosis symptoms and diet therapy
9. Diet In Diabetes Mellitus	9.1 Prevalence of Diabetes 9.3 Causes 9.4 signs and symptoms 9.6 Diagnosis of diabetes. 9.7 Management of diabetes 9.7.1 Dietary management. 9.10 Home remedies.
10. Diet In Kidney Diseases	10.1 Functions of Kidney. 10.2 Types of kidney diseases. 10.3 Glomerulo nephritis 10.3.1 Causes 10.3.2 Symptoms 10.3.3 dietary management 10.4 kidney stones 10.4.1 Causes. 10.4.3 Symptoms 10.4.5 Dietary management of kidney stones. 10.4.6 Home remedies for kidney stones. 10.4.7 Prevention of kidney stones.

11. Nutrition, Hypertension And Cardio-Vascular Diseases	11.1	Hypertension.
	11.2	Risk factors of Hypertension.
	11.3	Symptoms and complications of hypertension
	11.6	Dietary management and life style modification in hypertension.
	11.7	Cardiovascular Diseases
12. Nutrition In Cancer	12.1	What is cancer?
	12.2	Classification of cancer.
	12.3	Causes of cancer
	12.4	Symptoms of cancer
	12.5	Stages of cancer.
	12.6	Diagnosis of cancer.
	12.7	Nutritional implications of cancer.
	12.10	Nutritional care in cancer.
	12.11	Role of food in the prevention of cancer.

PRACTICAL	
CLASS: 12	**SUBJECT: NUTRITION AND DIETETICS**
Sl.No	**Topic**
1	Diet in pregnancy
2	Diet for infants.(6-12months)
3	Diet for preschool children
4	Diet for adolescence girl (10-18 years)
5	Diet in fever
6	Diet in obesity
7	Diet in diabetes mellitus
8	Diet in kidney diseases

SYLLABUS-2021-2022

STANDARD - 12 SUBJECT: HOME SCIENCE

UNIT	CONTENT
Therapeutic Diets	1.1 Introduction 1.1.1 Objectives of diet therapy 1.1.2 Principles of Therapeutic Diet 1.1.3 Routine hospital diets 1.2. Diet in fever 1.2.1 Typhoid 1.2.2 Tuberculosis 1.4 Diet in diseases of liver Functions of Liver 1.4.1 Hepatitis 1.4.2 Cirrhosis 1.6 Diet for cardio vascular disease (Structure of the heart) 1.6.1 Cardiovascular diseases 1.6.2 Hypertension 1.8 Diet for kidney diseases Structure of nephron 1.8.1 Glomerulonephritis 1.8.2 Nephrosis 1.8.3 Kidney stones
2. Consumer Protection and Education	2.1 Introduction 2.4 Consumer aids 2.4.1 Label on products 2.4.2 Advertisements 2.4.3 Internet 2.4.4 Standardization marks 2.5 Branding 2.5.1 Elements of branding 2.5.2 The types of brand 2.6 Packaging 2.6.1 Classification of packaging 2.6.2 Types of packaging materials 2.7 Consumer education 2.7.1 Role of consumer education 2.7.2 Rights of consumer 2.7.3 Consumer protection Act 1986 (COPRA) 2.7.4 Consumer Redressal Forum

3. Food Safety	3.1 Introduction 3.2 Selection of food 3.3 Storage of foods 3.5 Food Hygiene 3.5.1 Contamination of Food 3.6 Food borne Diseases 3.6.1 Classification of food borne illnesses 3.7 HACCP – Method to prevent food borne illness
4. Fundamentals of Textiles	4.1 Introduction 4.1.1 Definition and classification 4.3 Simple test for fiber Identification 4.5 Weaving 4.5.1 Classification of woven fabrics 4.6 Fabric finishes 4.7 Dyeing 4.7.1 Types of dyeing 4.7.2 Dyeing methods 4.8 Printing 4.8.1 Resist printing 4.8.2 Direct printing 4.10 Care and maintenance of fabric 4.11 Stain removal
5.Housing and Interior Decoration	5.1 Introduction 5.1.1 Importance of Housing 5.1.2 Classification of residential building 5.1.3 Factors affecting choice of house 5.1.4 Owing or Renting a house 5.4 Interior Decoration 5.5 Elements of Art 5.5.1 Line 5.5.2 Shapes and forms 5.5.3 Space 5.5.4 Texture 5.5.5 Colour 5.6 Principles of Design 5.6.1 Balance 5.6.2 Proportion and scale 5.6.3 Rhythm 5.6.4 Emphasis 5.6.5 Harmony or unity 5.8 Flower arrangement 5.8.1 Materials used in flower arrangement 5.8.2 Styles in flower arrangement

	5.8.3 Types of flower arrangement 5.9 Floor Decorations
6.Pre-school Organisation	6.1 Introduction 6.4 Types of School 6.5 Setting up a crèche/day care centre 6.7 Safety precautions in Indoor and Outdoor 6.8 Handling Emergencies 6.9 Pre-school lesson plan 6.10 Records and Registers
7.Entrepreneurship	7.1 Introduction 7.3 Scope of Entrepreneurship 7.3.1 Importance of Entrepreneurship 7.3.2 Functions of Entrepreneurs 7.3.3 Characteristics of Entrepreneurs
	7.3.4 Types of Enterprises 7.4 Steps for starting a small Industry 7.4.1 Preliminary Stage 7.4.2 Implementation stage 7.4.3 Environmental factors affecting entrepreneurship 7.4.4 Important Role that Entrepreneurship plays in the economic development
8. Community Development	8.1 Introduction 8.2 Rain water harvesting 8.2.1 Benefits of RWH 8.2.2 Methods of Rainwater harvesting 8.3 Water safety 8.3.1 Importance of safe drinking water 8.3.2 Water purification methods 8.4 Waste disposal , Recovery and Recycling 8.5 Organic food and Organic farming 8.6 Kitchen/ Terrace gardening 8.8 Income generating schemes 8.9 Rights of a girl child

PRACTICAL

STANDARD :12 SUBJECT: HOME SCIENCE

Sl.No	Topic
1	Diet for a person suffering from peptic ulcer
2	Plan a day's menu for a diabetic person, prepare and serve any one item by using millets
3	Pickle preparation- Draw a food label with all the specifications
4	Tie-dye Process
5	Prang colour chart-Understand colour harmonies in Rangoli
6	Preparation of food items using medicinal plants to treat cold

SYLLABUS 2021–2022

CLASS: 12 SUBJECT: COMPUTER SCIENCE

UNIT	CONTENT
1 Function	1.1 Introduction 1.2 Function with respect to Programming language
2 Data Abstraction	2.1 Data Abstraction – Introduction 2.2 Abstract Data Types 2.3 Constructors and Selectors
3 Scoping	3.1 Introduction 3.2 Variable Scope 3.3 LEGB rule 3.4 Types of Variable Scope
4 Algorithmic Strategies	4.1 Introduction to Algorithmic strategies 4.4 Algorithm for Searching Techniques 4.5 Sorting Techniques
5 Python - Variables and Operators	5.1 Introduction 5.2 Key features of Python 5.3 Programming in Python 5.4 Input and Output functions 5.5 Comments in Python 5.6 Indentation 5.7 Tokens
6 Control Structures	6.1 Introduction 6.2 Control structures
7 Python Functions	7.1 Introduction - Types of functions 7.2 Defining functions 7.3 Calling a function 7.4 Passing Parameters 7.6 Anonymous functions 7.7 Return Statement 7.8 Scope of Variables

15 Data Manipulation through SQL	15.1	Introduction
	15.2	SQLite
	15.3	Creating a Database using SQLite
	15.4	SQL Query Using Python
	15.6	Querying A Date Column
	15.7	Aggregate Functions
	15.8	Updating A Record
	15.9	Deletion Operation
16 Data Visualization using Pyplot	16.1	Data Visualization Definition
	16.2	Getting Started
	16.3	Special Plot Types

PRACTICALS	
CLASS: 12	**SUBJECT: COMPUTER SCIENCE**
Sl.No	**Topic**
1	PY1(a) Calculate Factorial PY1(b) Sum of Series
2	PY2(a) Odd or Even PY2(b)Reverse the String
3	PY3 Generate values and remove odd numbers
4	PY4 Generate Prime numbers and Set Operations
5	PY5 Display a String elements – Using Class

SYLLABUS 2021–2022

CLASS: 12 SUBJECT: COMMERCE

UNIT	CONTENT
UNIT-I **1. Principles of Management**	Entire Chapter
2. Functions of Management	Entire Chapter
UNIT-II **4. Financial Market**	Entire Chapter
5. Capital Market	5.01 Meaning and Definition of capital Market 5.02 Characteristics of Capital Market 5.03 Kinds of Capital Market
6. Money Market	Entire Chapter
UNIT-III **7. Stock Exchange**	7.01 Origin, Meaning, Definition of Stock Exchange 7.02 Function of stock exchange 7.03 Features of Stock Exchange 7.04 Benefits & Limitations 7.05 Stock Exchange in India 7.06 Types of Speculators
UNIT-IV **9. Fundamentals of HRM**	Entire Chapter
10. Recruitment Methods	Entire Chapter
11. Employees Selection Process	11.01 Meaning & Definition of Employee selection process 11.02 Steps in Employee selection process 11.03 Factors influencing selection process, importance 11.04 Importance of Selection Process

UNIT- V **13. Elements of Marketing**	13.01 Meaning and Definition of Market 13.02 Need for Market 13.03 Classification of Markets 13.04 Meaning and Definition of Marketer 13.05 What can be marketed?
14. Marketing and Marketing Mix	14.01 Introduction to Marketing 14.02 Evaluation of Marketing 14.03 Marketing Concept 14.04 Definition of Marketing 14.05 Objectives of Marketing 14.06 Importance of Marketing 14.7 Functions of Marketing
15. Recent Trends in Marketing	15.01 Recent Trends in Marketing 15.02 E-Marketing (i) (ii) (iii) (iv) 15.09 Niche Marketing 15.10 Viral Marketing 15.11 Ambush Marketing 15.12 Guerrilla Marketing
UNIT- VI **16. Consumerism**	Entire Chapter
17. Rights, Duties, & Responsibles of Consumers	Entire Chapter
18. Grievance Redressal Mechanism	18.01 Grievance and Need for Redressal Mechanism 18.02 Consumer Councils 18.03 Three Tier Courts or Quasi Judiciary
UNIT- VII **20. Liberalization, Privatization and Globalization**	Entire Chapter
UNIT- VIII **21. The Sale of Goods Act 1930**	Entire Chapter
22. The Negotiable Instrument Act 1881	22.01 Negotiable Instrument- Meaning, Characteristics, Assumption 22.02 Negotiability and Assignability

UNIT- IX **23. Elements of Entrepreneurship**	Entire Chapter
25. Government Schemes for Entrepreneurial Development	Entire Chapter
UNIT- X **26. Companies Act 2013**	Entire Chapter
27. Company Management	27.01 Meaning and Definition of Directors 27.02 Key - Managerial Personnel of a Company 27.03 Board of Directors 27.04 Types of Directors as per Companies Act 2013 27.05 Number of Directors 27.06 Legal position of Director 27.12 Powers of Director 27.13 Right of Directors 27.14 Duties of Director 27.15 Liabilities of Director
28. Company Secretary	28.01 Company Secretary 28.02 Qualifications of Company Secretary 28.02.01 Statutory Qualifications 28.02.02 Other Qualification 28.07 Company Meetings 28.08 Kinds of Company Meeting 28.08.01 Share holders Meeting 28.08.02 Meeting of the directors 28.08.03 Special Meeting 28.09 Resolution 28.09.01 Kinds of Resolution 28.10 Voting 28.11 Procedures of voting

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CLASS: 12 SUBJECT: ACCOUNTANCY

UNIT	CONTENT
1. Accounts from Incomplete Records	1.1 Introduction 1.2 Meaning of incomplete records 1.3 Features of incomplete records 1.4 Limitations of incomplete Records 1.5 Difference between double entry system and incomplete records 1.7 Ascertaining profit or loss from incomplete records through statement of affairs 1.7.1 Calculation of Profit or loss through statement of affairs 1.7.2 Steps to be followed to fine out the profit or loss by preparing statement of affairs 1.7.3 Statement of affairs 1.7.4 Format of statement of affairs 1.7.5 Difference between statement of affairs and balance sheet 1.8 Preparation of final accounts from incomplete records 1.8.1 Steps to be followed to prepare final accounts from incomplete records 1.8.1 (i)Format of total debtors account (ii) Format of Bills Receivables account (iii) Format of total creditors account (iv) Format of Bill Payable account
2. Accounts of Not - For - Profit Organisation	2.1 Introduction 2.2 Features of not for profit organisation 2.3 Receipts and Payments Accounts 2.3.1 Steps in preparation of receipts and payment account 2.4 Items peculiar to not for proftit organisation 2.5 Income and expenditure account 2.5.1 Steps in preparation of income and expendoture Account 2.5.2 Format of income and expenditure account 2.5.3 Difference betweeen receipts and payments account and income and expenditure account 2.5.4 Treatment of Revenue Receipts

3. Accounts of Partnership Firms - Fundamentals	3.1 Introduction 3.2 Meaning, definition and features of partnership 3.2.1 Meaning and Definition of partnership
	3.2.2. Features of partnership 3.3 Partnership Deed 3.3.1 Contents of Partnership Deed 3.4 Application of the Provision of the Indian PartnershipAct 1932 in the absence of Partnership Deed 3.6.3 Difference between Fixed Capital Method and Fluctuating Capital Method 3.7. Interest on Capital and Interest on Drawings of parterners 3.7.1. Interest on Capital 3.7.2. Calculation Interest on Capital 3.7.3. Interest on Drawings 3.7.4. Calculation Interest on Drawings 3.8. Salary and Commission to Partnership
4. Good Will in Partnership Accounts	4.1 Introduction 4.2 Nature of Goodwill 4.3 Factors determining the value of the good will of the partnership firm 4.4 Need for valuation of Goodwill of partnership firms 4.5 Classification of Goodwill 4.6 Method of valuation of Goodwill 4.6.1. Average profit method 4.6.2. Super profit method

5. Admission of a Partner	5.1 Introduction 5.2 Adjustments required at the time of admission of a partner 5.3 Distribution of accumulated profits, reserves and losses 5.4 Revaluation of assets and liabilities 5.4.1 When revised value of assets and liabilities are shown in the books 5.5 New profit sharing ratio and sacrificing ratio 5.5.1. New profit sharing ratio 5.5.2. Sacrificing ratio 5.7 Adjustment of capital on the basis of new profit sharing ratio all comprehensive problem except treatment of good will
6. Retirement And Death of a Partner	6.1 Introduction 6.2 Adjustments required on retirement of a partner 6.3 Distribution of accumulated profits, reserves and losses 6.4 Revaluation of assets and liabilities 6.5 Determination of new profit sharing ratio and gaining ratio 6.5.1 New profit sharing ratio 6.5.2 Gaining ratio 6.5.3 Difference between sacrificing ratio and gaining ratio
7. Company Accounts	7.1 Introduction 7.2 Meaning and definition of company 7.3 Characteristics of a Company 7.4 Meaning and types of shares 7.5 Division of share capital 7.6 Issue of equity shares 7.7 Process of issue of equity shares 7.8 Issue of shares for cash in instalments 7.8.1 Under subscription 7.8.2 Over subscription

	7.8.7 Shares issued at premium 7.9 Issues of shares for cash in lumpsum 7.10 Issues of shares for consideration other than cash
8. Financial Statement Analysis	8.1 Introduction 8.3 Financial Statements companies 8.4 Financial Statement analysis 8.4.1. Meaning of financial statement analysis 8.4.2. Objectives of financial statement analysis 8.4.3. Limitations of financial statement analysis 8.5 Tools of financial statement analysis 8.6 Preparation of comparative statements 8.7 Preparation of common size statements
9. Ratio Analysis	9.1 Introduction 9.2 Meaning of accounting ratios 9.6 Computation of ratios 9.6.1 Liquidity ratios 9.6.2 Long term solvency ratios 9.6.4 Profitability ratios
10. Computerised Accounting Systems-Tally	10.1 Introduction 10.2 Application of Computerised Accounting System 10.3 Automated Accounting System 10.4 Designing the accounting reports 10.5 Data Exchange with other information system 10.7 Practical application of accounting software Tally. ERP 9

SYLLABUS- 2021-2022

CLASS: 12 SUBJECT: ECONOMICS

UNIT	CONTENT
1. Introduction to Macro Economics	1.1 Introduction to Macro Economics 1.2 Meaning of macro economics 1.3 Importance of macro economics 1.7 Economic Systems 1.7.1 Capitalist economy 1.7.2 Socialistic Economy (Socialism) 1.7.3 Mixed Economy 1.9 Circular flow of income 1.9.1 Circular Flow of Income in a Two-Sector Economy: 1.9.2 Circular Flow of Income in a Three-Sector Economy: 1.9.3 Circular flow of income in a four sector economy
2. National Income	2.1 National Income –Introduction 2.2 Meaning of National Income 2.4.1 Gross Domestic Product (GDP) 2.4.2 Gross National Product (GNP) 2.4.7 Per capita Income 2.4.8 Real Income 2.4.9 GDP deflator 2.5 Methods of Measuring National Income 2.5.1 Product Method (Value Added) 2.5.2 Income Method 2.5.3 Expenditure Method
3.Theories of Employment and Income	3.1 Theories of Employment and Income-Introduction 3.2 Meaning of Full Employment 3.3 Unemployment and its types 3.4.1 Say's Law of Market 3.6 Effective demand 3.6.1 Aggregate Demand Function (ADF) 3.6.2 Aggregate Supply Function (ASF)
4. Consumption and investment functions	4.1 Introduction 4.2 Consumption Function 4.2.1 Meaning of Consumption function 4.2.2 Technical Attributes of the Consumption function

	4.3 Investment Function 4.3.1 Meaning of investment 4.3.2 Types of investment 4.3.3 Determinants of Investment Function 4.3.4 Relationship between the rate of Interest and investment 4.3.5 Marginal Efficiency of Capital. 4.3.6 Marginal Efficiency of Investment(MEI) 4.4 Multiplier 4.4.1 Assumptions of Multiplier 4.4.2 Marginal propensity to consume and multiplier. 4.4.4 Classification of Multiplier 4.4.6 Uses of multiplier 4.5 The Accelerator Principle 4.5.1 Meaning 4.5.2 Definition 4.5.3 Assumptions 4.5.4 Operation of the Acceleration Principle 4.5.5 Limitations
5. Monetary Economics	5.1 Introduction 5.2 Money 5.2.1 Meaning 5.2.4 Functions of money 5.3 Supply of money 5.4 Quantity theories of money 5.5 Inflation 5.5.1 Meaning of inflation 5.5.2 Types of inflation 5.5.3 Causes of inflation 5.7 Trade cycle 5.7.1 Meaning of trade cycle 5.7.2 Phases of trade cycle
6. Banking	6.1 Introduction 6.3 Commercial banks 6.3.1 Functions of Commercial Banks 6.3.3 Role of commercial banks in Economic development of a country. 6.5 Central Bank 6.5.1 Functions of RBI 6.5.2 Credit control measures 6.5.4 Reserve Bank of India and Rural Credit

	6.5.5 Role of RBI in Agricultural credit 6.5.6 Functions of Agriculture Credit Department 6.8 NABARD and its role in Agricultural credit 6.8.1 Functions of NABARD 6.9 Reserve bank of India and Industrial Finance 6.9.1 Institutional Set-up: 6.9.2 All-India Level Institutions: 6.9.3 State Level Institutions 6.10 Monetary policy 6.10.2 Objectives of Monetary Policy 6.11 Recent advancements in banking sector 6.11.1 E- Banking 6.11.2 RTGS and NEFT 6.11.3 ATM (Automated Teller Machine) 6.11.4 Paytm 6.11.5 Debit card and Credit Card 6.11.7 Merger of Banks 6.12 Money Market 6.13 Capital Market 6.14 Demonetisation 6.14.1 Objectives of Demonetisation
7. International Economics	7.1 International economics -Introduction 7.2 Meaning of International Economics 7.3 Subject matter of International Economics 7.4 Meaning of Trade 7.4.1 Internal Trade 7.4.2 International Trade 7.4.3 Difference between Internal and International Trade 7.6 Gains from International Trade 7.7 Terms of Trade 7.7.1 Meaning 7.8 Balance of Trade vs. Balance of payments 7.8.1 Balance of Trade (BOT) 7.8.2 Balance of Payments (BOP) 7.8.3 Components of BOPs 7.9 Exchange Rate 7.9.1 Meaning of Foreign Exchange (FOREX) 7.9.2 Definition of FOREX 7.9.3 Rate of Exchange

	7.9.4 Definition of Equilibrium Exchange Rate 7.9.5 Determination of Equilibrium Exchange Rate 7.9.6 Types of Exchange Rate Systems 7.9.7 Types of Exchange Rates 7.9.8 Determinants of Exchange Rate 7.10 Foreign Direct Investment and Trade 7.10.1 Meaning of FDI 7.10.3 Advantages of FDI 7.10.5 FDI in India
8. International Economic Organization	8.1 Introduction 8.2 International monetary fund 8.2.1 Objectives of IMF 8.2.2 Functions of IMF 8.2.3 Facilities offered by IMF 8.2.4 Achievements of IMF 8.2.5 India and IMF 8.3 International Bank for Reconstruction and Development of Bank or World Bank 8.3.2 Functions of IBRD 8.3.4 India and World Bank 8.4 World Trade Organization 8.4.2 Functions of WTO 8.4.4 WTO and India 8.6 South Asian Association for Regional Co-operation (SAARC) 8.6.2 Functions of SAARC 8.7 Association of South East Asian Nations (ASEAN) 8.7.2 Functions of ASEAN 8.8 BRICS 8.8.2 Functions of BRICS
9. Fiscal Economics	9.1 Introduction 9.2 Meaning of public finance 9.3 Definitions 9.4 Subject matter 9.6 Functions of Modern State 9.7 Public expenditure

	9.7.1 Definition / meaning 9.7.2 Definition 9.8 Public Revenue 9.8.1 Meaning 9.8.2 Classification of public revenue 9.9 Tax Revenue 9.9.1 Meaning 9.9.3 Characteristics of tax 9.9.4 Non-tax revenue 9.9.5 Canons of taxation 9.9.6 Direct and indirect tax 9.9.12 Comparison chart 9.9.13 GST 9.10 Public debt 9.10.1 Definition 9.10.2 Types of public debt 9.11 Budget 9.11.1 Definition 9.11.2 Union and State budget 9.11.3 Types of budget 9.12 Federal finance 9.12.1 Principles of Federal finance 9.13 History of finance commission 9.13.1 Functions of finance commission of India 9.14 Local finance 9.15 Fiscal policy 9.15.1 Meaning of Fiscal Policy 9.15.3 Fiscal instruments 9.15.4 Objectives of fiscal policy
10. Environmental economics	10.3 Eco-system 10.7 Pollution 10.7.1 Air pollution 10.7.2 Water Pollution 10.7.3 Noise Pollution 10.7.4 Land Pollution 10.8 Global warming 10.9 Climate Change 10.10 Acid rain 10.11 E-waste 10.12 Sustainable Development 10.12.1 Sustainable development goals

11. Economics of Development and Planning	11.6 Vicious circle of poverty 11.6.1 Breaking the vicious circle of poverty 11.7 Planning 11.7.1 Economic Planning in India 11.7.2 Case for planning 11.7.3 Case against planning 11.8 Types of planning 11.9 NITI Aayog 11.9.1 Functions of NITI Aayog
12. Introduction to Statistical Methods and Econometrics	12.1 Etymology and milestone of statistics in global level 12.2 Evolution of Statistics in India 12.3 Definitions of Statistics 12.4 Characteristics and Functions of Statistics 12.10 Arithmetic mean / median 12.11 Standard Deviation (σ)

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CLASS: 12 SUBJECT: HISTORY

UNIT	CONTENT
1. Rise of Nationalism in India	Entire Unit
2. Rise of Extremism and Swadeshi Movement	Entire Unit
3. Impact of World War-I on Indian Freedom Movement	Entire Unit
4. Advent of Gandhi and Mass Mobilisation	Entire Unit
5. Period of Radicalism in Anti-imperialist Struggles	Entire Unit
6. Introduction to Communalism in Nationalist Politics	Entire Unit
7. Last Phase of Indian National Movement	Introduction 7.1 Cripps Mission 7.2 Quit India Movement 7.3 Netaji Subhas Chandra Bose and the INA 7.5 Rajaji Proposals and the Wavell Plan 7.6 Cabinet Mission and Mountbatten Plan
8. Reconstruction of Post-colonial India	Introduction 8.1 Consequences of Partition 8.2 Making of the Constitution 8.3 Merger of Princely States 8.4 Linguistic Reorganization of States
9. Envisioning a New Socio-Economic Order	Introduction 9.1 Land Reforms and Rural Reconstruction 9.2 Development of Agriculture 9.4 Five Year Plans

11. The Age of Revolutions	Introduction 11.1 The American War of Independence 11.2 The French Revolution 11.4 Industrial Revolution
13. Imperialism and its On slaught	Introduction 13.1 Rise of Imperialism 13.3 World War I
14. Introduction to Outbreak of World War II and its Impact in Colonies	Introduction 14.1 Second World War: Causes
15. The World after World War II	Introduction 15.4 UNO and Global Disputes

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CLASS: 12 SUBJECT: POLITICAL SCIENCE

UNIT	CONTENT
1. Constitution of India	Entire unit
2. Legislature	Entire unit
3. Executive	Entire unit
4. Indian Judiciary	Entire unit
5. Federalism in India	Entire unit
6. Administrative Machinery in India	6.1 Framework of Indian Administration 6.2 Ministry, Department, Boards and Commissions 6.3 Personnel Administration 6.3.1 Civil services: Meaning and Features 6.3.2 All India Aervices, Central Services and State Service 6.3.3 UPSC – Organization, Powers, Functions and Role 6.3.4 State Public Service Commission 6.3.5 Staff Selection Commission 6.4 Election Commission 6.5 Comptroller and Auditor General of India 6.6.1 Enactment and Execution of Budget 6.6.2 Tax Structure in India
7. Challenges of Nation building	7.1 Integration of Princely States 7.2 Linguistic Reorganization of the state 7.4 Social, Economic and Political challenges of Nation building 7.5 Formation of Tamil Nadu state
8. Planning and development politics	8.1 Planning: Meaning, Evolution and objectives 8.2 Planning Commission of India 8.3 Land Reforms in India 8.4 Green Revolution and White Revolution

9. India and the World	9.1	Evolution of India's foreign policy (1947–1954)
	9.8	India and Regional organisations
	9.9	Indian Diaspora
10. India and its Neighbours	10.10	Recent Innovations in Foreign policy
11. International Organisation	11.1	Introduction
	11.3	The United Nations
	11.3.1	Structure of the United Nations
	11.4	The World Bank
	11.5	The International Monetary Fund
12. Environmental concerns and globalization	12.1	Protection of Global Environment
	12.3	India's Stand on Environmental Issues
	12.4	Indigenous people and their rights

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CLASS: 12 SUBJECT: GEOGRAPHY

UNIT	CONTENT
1. Population Geography	1.1 Introduction 1.3 Density of Population 1.4 Growth of world population 1.5 Composition of Population
2. Human Settlements	2.1 Introduction 2.2 Origin and development of Settlement 2.3 Site and Situation 2.4 Pattern of Rural Settlement 2.6 Urban Settlement 2.7 The concentric zone theory 2.9 Issues of Urbanization
3. Resources	3.3 Mineral resources 3.4 The world distribution of minerals 3.5 Energy Resources
4. Economic Activities	4.1 Introduction 4.2 Primary activities 4.3 Secondary activities 4.5 Division of the world on the basis of Economic Activities
5. Cultural & Political Geography	5.1 Introduction 5.2 Cultural Realms of the World 5.3 Races 5.4 Tribal Distribution of the World
6. Geoinformatics	6.1 Introduction 6.2 Remote sensing 6.3 Geographic Information System (GIS)
7. Sustainable Development	7.1 Introduction 7.2 Concept and Goals of Sustainable development 7.3 Climate Change and Sustainability 7.4 Watershed management and its importance 7.5 Environmental Impact Assessment

8. Man – Made Disasters: Public Awareness for Disaster Risk Reduction	8.1 Introduction 8.2 Community based Disaster Risk Reduction 8.3 Man - made disasters 8.3.1 Stampede 8.3.2 Drowning
PRACTICAL	
9. Surveying	9.1 Introduction 9.2 Clinometers 9.3 Prismatic Compass
12. Representation of Geographical data	12.1 Introduction 12.2 Classification of statistical diagrams 12.2.1 Line Diagram 12.2.2 Bar Diagram 12.2.3 Pie Diagram

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CLASS: 12 SUBJECT: STATISTICS

UNIT	CONTENT
1. Test of Significance - Basic Concepts and Large Sample Tests	1.1. Parameter and Statistic 1.2. Sampling Distribution 1.3. Standard Error 1.4. Null Hypothesis and Alternative Hypothesis 1.5. Errors in Statistical Hypothesis Testing 1.6. Level of Significance, Critical Region and Critical value(s) 1.7. One -Tailed and Two-Tailed tests 1.8. General Procedure for Test of Hypothesis 1.9. Test of Hypothesis for Population mean (Population variances are known) 1.10. Test of Hypothesis for Population mean (Population variances are Unknown) 1.13. Test of Hypothesis for Population proportion
2. Tests Based on Sampling Distribution-I	Introduction 2.1 Students t-distribution and its Application 2.1.1. Students t-distribution 2.1.2. Properties of the Students t-distribution 2.1.3. Application of t-distribution 2.1.4. Test of Hypothesis for normal population mean (Population variance unknown) 2.1.6 Paired t-test 2.2. Chi-Square Distribution & Its Application 2.2.1. Chi-Square Distribution 2.2.2. Properties of Chi-Square Distribution 2.2.3. Applications of Chi-Square Distribution 2.2.4. Test of Hypothesis for Population varience of the normal population (Population mean is assumed to be unknown) Chi-Square Distribution 2.2.5 Independence of attributes

3. Tests Based on Sampling Distribution-II	Introduction 3.1 F-Distribution and its Applications 3.3 ANOVA 3.3.1 One way ANOVA 3.3.2 Test Procedure 3.3.3 Merits and Demerits of one way ANOVA
4. Correlation Analysis	Introduction 4.1 Definition of Correlation 4.2 Types of Correlation 4.4 Karl Pearson's Correlation Coefficient 4.4.1. Karl Pearson's Correlation Coefficient 4.4.2. Properties 4.5 Spearman's Rank Correlation Coefficient 4.5.1 Repeated Ranks 4.6 Yules coefficient
5. Regression Analysis	Introduction 5.1 Definition & types of regression 5.1.1. Simple linear regression 5.1.2. Multiple linear regression 5.1.3. Non- linear regression 5.5. Properties of regression coefficient 5.6 Difference between correlation & regression
6. Index Number	Introduction 6.1 Definition & Uses of Index Numbers 6.2 Types of Index Numbers 6.3 Methods of Constructing Index numbers 6.3.1 Unweighted Index Numbers 6.4 Weighted Index Numbers. 6.4.1 Weighted aggregate index numbers 6.4.2 Weighted average of price relatives 6.4.3 Quantity Index Numbers 6.4.4 Tests for Index Numbers 6.5 Consumer Price Index

7. Time Series and Forecasting	Introduction 7.1 Definition 7.2 Components of time series 7.3 Measurement of components 7.3.1 Graphical method 7.3.2 Semi Averages Method 7.3.3 Moving Averages Method 7.3.4 Method of Least Squares 7.3.5 Simple Averages Method
8. Vital Statistics and Official Statistics	Introduction 8.1 Vital Statistics 8.1.1. Importance of Vital Statistics 8.1.2 Collection of Vital Statistics 8.1.3 Mortality and its Measurements 8.1.5 Fertility and its measurements 8.1.6 Measurement of Population grounds 8.2 Official Statistics 8.2.1. Early History of Statistical System in India 8.2.2. Post-IndependentIndianOfficial Statistical system 8.2.2.1 Central Statistics Office 8.2.2.2 National Sample Survey Office 8.2.3. Present Statistical system in India
9. Project Work	Introduction 9.1 Designing a Project 9.2 Project work plan 9.4 Features of a Project Report

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STANDARD- 12 SUBJECT: BUSINESS MATHEMATICS & STATISTICS

UNIT	CONTENTS
1. Applications of Matrices and Determinants	1.1 Rank of a Matrix 1.1.1 Concept 1.1.2 Elementary Transformations and Equivalent matrices 1.1.3 Echelon form and finding the rank of the matrix (up to the order of 3×4) 1.1.4 Testing the consistency of non - homogeneous linear equations (two and three variables) by rank method. 1.3 Transition Probability Matrices 1.3.1 Forecasting the succeeding state when the initial market share is given
2. Integral Calculus – I	2.1 Indefinite Integrals 2.1.1 Concept of Indefinite Integral 2.1.2 Two important properties of Integral Calculus 2.1.3 Integration by decomposition 2.1.4 Integration by parts 2.2 Definite integrals 2.2.1 The fundamental theorems of Integral Calculus 2.2.2 Properties of definite integrals
3. Integral Calculus – II	3.1 The area of the region bounded by the curves 3.1.1 Geometrical Interpretation of Definite Integral as Area under a curve 3.2 Application of Integration in Economics and Commerce. 3.2.1 Cost functions from marginal cost functions and demand functions 3.2.2 Revenue functions from Marginal revenue functions 3.2.3 The demand functions from elasticity of demand 3.2.4 Consumer's surplus 3.2.5 Producer surplus
4. Differential Equations	4.1 Formation of ordinary differential Equations

	4.1.1 Definition of ordinary differential equation 4.1.2 Order and degree of a differential equation 4.1.3 Formation of ordinary differential equation: 4.2 First order and first degree differential equations 4.2.1 General solution and particular solution 4.2.2 Differential Equation in which variables are separable 4.2.3 Homogeneous Differential Equations
5. Numerical Methods	5.1 Finite Differences 5.1.1 Forward Difference Operator, Backward Difference Operator and Shifting Operator 5.1.2 Finding the missing terms 5.2 Interpolation 5.2.1 Methods of interpolation 5.2.2 Graphical method 5.2.3 Algebraic method
6. Random Variable and Mathematical Expectation	6.1. Random variable 6.1.1 Definition of a random variable 6.1.2 Discrete random variable 6.1.3 Continuous random variable 6.2. Mathematical Expectation 6.2.1 Expected value and Variance 6.2.2 Properties of Mathematical expectation
7. Probability Distributions	7.1 Distribution 7.1.1 Binomial distribution 7.1.2 Poisson Distribution
8. Sampling Techniques and Statistical Inference	8.1 Sampling 8.1.1 Basic concepts of sampling 8.1.2 Sampling and Non-Sampling Errors: 8.1.3 Sampling distribution 8.1.4 Computing standard error in simple cases 8.2 Estimation: 8.2.1 Point and Interval Estimation
9. Applied Statistics	9.1 Time Series Analysis 9.1.1 Meaning, Uses and Basic Components 9.1.2 Measurements of Trends 9.1.3 Method of Moving Averages 9.1.4 Method of Least Squares 9.1.5 Methods of measuring Seasonal Variations By Simple Averages

	9.2 Index Number 9.2.1 Meaning, Classifications and Uses 9.2.2 Weighted Index Number 9.2.3 Test of adequacy for an Index Number 9.2.4 Construction of Cost of Living Index Number
10. Operations Research	10.1 Transportation Problem 10.1.1 Definition and formulation 10.1.2 Methods of finding initial Basic Feasible Solutions 10. 3 Decision Theory 10.3.1 Meaning 10.3.2 Situations- Certainty and uncertainty 10.3.3 Maximin and Minimax Strategy

பாடத்திட்டம் – 2021–2022

வகுப்பு :12 **பாடம் : சிறப்புத்தமிழ்**

இயல்	பாடப்பொருள்
1. கவிதையியல்	கவிதையியல் செவ்வியல் இலக்கியங்கள் அறவியல் இலக்கியங்கள் காப்பியங்கள் சமய இலக்கியங்கள்
2. கதையியல்	புனை கதை இலக்கியம் – ஓர் அறிமுகம் புதினம் எழுதும் கலை புதினம் (பகுதி) – சாயாவனம் உலக மொழிப் புதினம் –தாய்
3. அரங்கவியல்	நவீன நாடக வரலாறு இலக்கியமும் திரைப்படமும் நாட்டார் அரங்கக் கலைகள்
4. இலக்கணவியல்	தமிழ், ஆங்கிலம்– தொடரமைப்பு ஒப்பீடு வேர்ச்சொல் ஆய்வு– ஓர் அறிமுகம்
5.ஊடகவியல்	மின்னணு ஊடகங்கள் ஊடகவியல் சட்டங்கள்
6.கணித்தமிழியல்	தொழில்நுட்பக்களம் செல்பேசியும் செயலிகளும் மொழிநுட்பக்களம் மொழித் தொழில் நுட்பக்கருவிகள்

SYLLABUS 2021–2022

CLASS: 12 SUBJECT: COMMUNICATIVE ENGLISH

UNIT	CONTENT
1. In Harmony with the World	Positive Thinking (**Prose**) Be A Friend (**Poem**) Question Tags Debate Letter to the Editor **Topics For Practical** : **Speaking Skill** : Debate
2. Improve Your Connectivity	Frankness matters (**Prose**) The Builders (**Poem**) Language Study (Specialists/ Foreign Words/ Legal Terms/ Field of Education) Role Play Job Application **Topics For Practical** : **Speaking Skill** : Role Play/ Interview **Writing Skill** : Sample Job Application
3. Have Another Day	Whose Fault (**Prose**) Somebody's Mother (**Poem**) Idioms Paper Presentation **Topics For the Practical** : **Speaking Skill** : Drafting a Speech **Writing Skill** : Designing a Pamphlet

4. Celebrations of Expressions	As you like it (English Play) The Bird Sanctuary (**Poem**) Language Study (Genres of Literature, Literary Devices) Reported Speech Advertisement and Poster Making **Topics For the Practical** : **Writing Skill** : Drafting an Advertisement
5. Better Together	Great Initiatives - Food Bank and Beach Cleaning (**Prose**) A River (**Poem**) Language Study (Replacing Words) Grammar - Normalization Subject - verb Agreement Process of Voting **Topics For the Practical** : **Writing Skill** : Letter of Complaint
6. Mission Possible	Mission Impossible - (**Prose**) Hard is the journey (**Poem**) Language Study (Alternative Pairs) Integrated Grammar - Welcome Speech / Vote of Thanks Formal/ Informal Letter **Topics For Practical** : **Speaking Skill** : Welcome Address/ Vote of Thanks

பாடத்திட்டம் 2021–2022

வகுப்பு :12 **பாடம் : அறவியலும் இந்தியப் பண்பாடும்**

அலகு	பாடப்பொருள்
1. இந்தியப் பண்பாட்டின் இயல்புகள்	நுழைவு வாயில் பண்பாடு – சொல் விளக்கம் பண்பாடு பற்றிய அறிஞர்களின் வரையறை இந்தியப் பண்பாட்டை அறிய உதவும் தொன்மைச் சான்றுகள் இலக்கியச் சான்றுகள் புராணங்கள் இந்தியப் பண்பாட்டின் இயல்புகள் இந்தியப் பண்பாட்டின் சிறப்புக்கூறுகள் அழிவில்லா மதிப்பீடுகளின் நிலை பண்பாடும் நாகரிகமும் வேற்றுமையில் ஒற்றுமை பண்பாட்டுக் கல்வியின் பயன்கள் நிறைவுரை
2. வேற்றுமையில் ஒற்றுமை	நுழைவு வாயில் வேற்றுமையில் ஒற்றுமை – வரையறை வேற்றுமைக் கூறுகள் ஒற்றுமைக் கூறுகள் இலக்கியம் பண்பாட்டில் ஒற்றுமை பழக்க வழக்கங்கள் மற்றும் பாரம்பரியம் மொழி ஒற்றுமை திராவிட மொழிக் குடும்பம் இலக்கிய ஒற்றுமை உடல் அமைப்பில் ஒற்றுமை சமுதாய அமைப்பில் ஒற்றுமை இந்தியப் பண்பாட்டு ஒற்றுமையை வளர்க்க துணைபுரியும் காரணிகள் பண்பாட்டு ஒற்றுமையைப் பேணிக்காத்தல் தேசிய சின்னங்கள் தேசிய திருவிழாக்கள் நிறைவுரை
3. வேதகாலப் பண்பாடு	பாடம் முழுவதும்
4. இந்தியப் பண்பாடும் சமயங்களும்	பாடம் முழுவதும்

5. இந்தியப் பண்பாட்டிற்குப் பேரரசுகளின் கொடை	நுழைவு வாயில் மௌரியர் காலப் பண்பாடு பல்லவர் காலப் பண்பாடு சோழர்காலப் பண்பாடு பாண்டியர் காலப் பண்பாடு முகலாயர் காலப் பண்பாடு நிறைவுரை
6. பக்தி இயக்கம்	நுழைவு வாயில் பக்தியின் வகைகள் நாயன்மார்கள் நாயன்மார்களின் சமயத்தொண்டு ஆழ்வார்கள் தமிழகப் பண்பாட்டிற்கு ஆழ்வார்களின் கொடை இடைக்கால இந்தியாவில் பக்தி இயக்கம் பக்தி இயக்கத்தின் விளைவுகள் நிறைவுரை
7. சமூக – சமய சீர்திருத்த இயக்கங்கள்	பாடம் முழுவதும்
8. யோகம் உணர்த்தும் வாழ்வியல் நெறிகள்	பாடம் முழுவதும்
9. இந்தியப் பண்பாடும் சுற்றுச்சூழலும்	இந்தியாவின் சுற்றுச்சூழல் தமிழர் பண்பாடும் சுற்றுச்சூழலும் இயற்கையோடு இயைந்த வாழ்வு மரபு வாழ்க்கையும் இயற்கையும் இயற்கை வளங்களைப் பாதுகாக்க அரசு எடுக்கும் நடவடிக்கைகள் நிறைவுரை
10. உலகிற்கு இந்தியப் பண்பாட்டின் கொடை	நுழைவு வாயில் இந்தியப் பண்பாட்டின் மேன்மைகள் அறக் கோட்பாடுகள் நான்கு புருஷார்த்தங்கள் தொல்காப்பியரின் அறக்கோட்பாடு இதிகாசங்களில் அறக்கோட்பாடு சமண அறக்கோட்பாடுகள் பௌத்த அறக்கோட்பாடுகள் ஔவையாரின் அறக்கோட்பாடுகள் திருக்குறள் அறக்கோட்பாடுகள் ஆன்மிகம், யோகா, பஞ்சசீலக் கொள்கை இந்திய வானவியல் இந்திய மருத்துவம் இந்திய கணிதம்

SYLLABUS- 2021 – 2022

STANDARD: 12 SUBJECT: COMPUTER APPLICATIONS (THEORY)

UNIT	CONTENT
1. Multimedia and Desktop Publishing	1.1 Introduction to Multimedia 1.4 File format of Multimedia 1.5 Multimedia production 1.8 Libraries, Information Centers, Archives
2. An Introduction to adobe Pagemaker	2.2 Introduction to Adobe Pagemaker 2.7 Text Block 2.8 Understanding Story 2.9 Threading text block 2.10 Placing text in a frame 2.16 Magnifing and Reducing with the Zoom tool 2.17 Formatting a document 2.18 Drawing 2.19 Working with pages 2.20 Master Pages 2.21 Print a Documet
3. Introduction to Database Management System	3.1 Introduction to DBMS 3.3 RDBMS 3.4 RDBMS jargons 3.5 ER model 3.6 ER Diagram 3.7 Introduction to MYSQL
4. Introduction to Hypertext Pre-Processor	4.1 Introduction to PHP 4.3 Client server Architecture 4.6 Web development concept
5. PHP Function and Array	5.1 Parameterized function 5.2 Array in PHP
6. PHP Conditional Statements	If else statement in PHP If elseif else statement in PHP Switch case
7. Looping Structure	Looping structure introduction For Each loop
8. Forms and Files	8.1 HTML forms
9. Connecting PHP and MYSQL	9.1 MYSQL function in PHP

10. Introduction to Computer Networks	10.1 Introduction 10.3 Uses of the computer networks
11 . Network Examples and Protocols	11.1 Introduction
12: DNS (Domain Name System)	12.1 Introduction 12.2 Overview of DNS 12.4 Uniform Resource Locator(URL) 12.5 DNS Components
13: Network Cabling	13.1 Introduction 13.2 Types of network cables
14: Open Source Concepts	14.1 Introduction
15: E-Commerce	15.1 Introduction to E-commerce 15.2 The Evolution of Electronic commerce 15.3 The Development and growth of Electronic commerce 15.5 E-Commerce Revenue models
16: Electronic Payments Systems	16.1 Introduction to Electronic payment systems 16.2 Classification of Electronic payment methods 16.3 Card based payment systems 16.4 Electronic Account Transfer
17 : E - Commerce Security Systems	17.3 Dimensions of E-Commerce security 17.4 Security Technologies
18 : Electronic Data Interchange (EDI)	18.3 Advantages of EDI 18.4 EDI Layers 18.5 EDI Components 18.6 EDI Standards 18.7 UN / EDIFACT
Practical	CA2. Page Maker - Creating Notice CA4. Page Maker - Creating Notice Board CA5. MYSQL - Usage of commands in DB CA6. PHP - Basic Programming CA7. PHP - Create Execute Variables CA9. Stirng Functions

SYLLABUS 2021 - 2022

CLASS: 12 SUBJECT: BASIC MECHANICAL ENGINEERING

UNIT	CONTENT
1 Lathe	1.1 Introduction 1.2 Turning 1.3 Structure of the Lathe 1.4 Main parts of the Lathe 1.6 Tumbler gear 1.7 Apron 1.8 Spindle mechanism 1.9 Stepped cone pulley mechanism 1.10 Back gear mechanism 1.11 Gear box mechanism 1.12 Types of lathe 1.16 Cutting speed, feed and depth of cut in lathe
2 Drilling Machine	2.1 Introduction 2.3 Construction of a Drilling machine 2.6 Sensitive drilling machine 2.7 Upright drilling machine 2.8 Radial drilling machine and its special features 2.13 Drill spindle Assembly 2.14 Work holding devices 2.17 Tool holding devices 2.18 Drilling machine operations
3 Shaping Machine	3.1 Introduction 3.3 Main parts of the shaping machine 3.4 Types of shaping machine 3.5 Quick return mechanism 3.6 The size of a shaper 3.9 prowl& Ratchet mechanism 3.15 Special operations 3.17 Coolant
4 Grinding Machine	4.1 Introduction 4.2 Types of Grinding Machine 4.3 Non-precision grinding machine 4.4 Precision grinding machine 4.5 Centre less grinding 4.8 Wet and dry grinding 4.9 Grinding wheel 4.10 Abrasive

	4.11 Grinding wheel specification 4.12 Mounting the grinding wheel 4.16 Precision Operations
5 Milling machine	5.1 Introduction 5.2 Horizontal milling machine 5.3 Vertical Milling machine 5.5 Differences between a plain milling machine and a universal milling machine 5.9. Cutter holding devices 5.10 Milling machine attachments 5.15 Milling machine attachments 5.18 Construction of Indexing head 5.19 Indexing methods
6 Machine Tool Maintenance	6.1 Introduction 6.2 Purpose of Maintenance 6.3 Tear and Wear 6.4 Backlash 6.5 Lubrication 6.7 Purpose of lubrication 6.8 Types of lubricants 6.9 Types of lubrication 6.10 Central Maintenance Department 6.15 Preventive maintenance 6.18 Planned maintenance programme
7 Welding	7.1 Introduction 7.2 Types of Welding 7.3 Classification of welding process 7.4 Arc Welding 7.10 Carbon Arc Welding 7.11 Gas Welding 7.16 Difference between Arc welding and gas welding 7.17 Resistance Welding 7.18 Welding related process
8 Hydraulic Equipments	8.1 Introduction 8.2 Hydraulic Pumps 8.3 Properties of positive displacement pump 8.4 Properties of Non – positive displacement pump 8.5 Types of centrifugal pump 8.6 Types of reciprocating pump 8.7 Types of rotary pump

	8.9 Reciprocating pump 8.10 Rotary pump 8.12 Hydraulic Motor 8.15 Hydraulic circuit for shaping machine
9 CNC Machines	9.1 Introduction 9.2 Numerical Control 9.3 Computer Numerical Control 9.4 Elements of CNC machine 9.5 Software 9.6 Input Media 9.7 Machine Control Unit 9.10 Classification of CNC machine tools
10 Automation and Robotics	10.1 Introduction of Automation 10.2 Types of Automation 10.3 Need for industrial automation 10.4 The Advantages of Automation 10.7 Introduction of Robotics 10.8 Definition of robotics 10.11 Three main components of robots 10.12 Asimov Laws of robotics 10.14 Types of Robots 10.15 Applications of Robotics 10. 17 Materials used for Robots

PRACTICAL

CLASS: 12 SUBJECT: BASIC MECHANICAL ENGINEERING

S.No	Unit No	Topic
1	1	Facing
2	2	Facing and Plain Turning
3	3	Step Turning
4	4	Step Turning and Chamfer
5	5	Taper Turning

SYLLABUS 2021–2022

STANDARD: 12 **SUBJECT: BASIC ELECTRICAL ENGINEERING (THEORY)**

UNIT	CONTENT
1. Power transmission and distribution	1.1 Introduction 1.7 Effects of transmission 1.8 Types of overhead lines 1.9 Line insulators 1.11 Underground cables
2. Illumination	2.1 Introduction 2.2 Important terms in illumination 2.3 Laws of illumination 2.6 Sodium vapour lamp and Mercury vapour lamp 2.7 Fluorescent lamp and compact fluorescent lamp 2.10 Lighting schemes
3. Electric heating appliances	3.1 Introduction 3.2 Electric Iron Box 3.6 Geyser
4. Motor appliances	4.2 Electric fan 4.3 Electric washing machine
5. Electric drives and its controls	5.2 Types of Electric drives 5.5 Electric vehicles 5.6 Electric traction
6. Electrical measuring instruments	6.1 Introduction 6.4 Types of electrical measuring instruments based on principle of operation 6.8 Megger 6.9 Tong tester
7. Transducers	7.1 Introduction 7.2 Principle of operation of transducer 7.3 Classification of transducer 7.5 Resistivity, Inductivity and capacitivity of transducer 7.6 Piezo electric transducer 7.7 Thermocouples

8. Starters and controlling equipments	8.2 DC Motor starters 8.3 AC Motor starters 8.8 ELCB
9. DC and AC windings	9.1 Introduction 9.4 Details about coils 9.5 DC windings 9.6 AC windings
10. Maintenance and repairs of electrical machines	10.1 Introduction 10.2 Electrical machines maintenance 10.3 Fault in a power system 10.5 Testing of new machines 10.6 Precautionary measures to be taken before using electrical machines 10.7 Testing of windings

PRACTICAL

STANDARD: 12 **SUBJECT: BASIC ELECTRICAL ENGINEERING**

S.No	Unit No	Topic
1	4	Table fan
2	5	Ceiling fan
3	6	Water pump
4	7	Measurement of energy of the given electrical equipment
5	8	Determination of winding resistance by Ammeter – Voltmeter method
6	9	Determination of insulation resistance value of motor winding
7	10	Dismantling, Testing and Assembling of AC 3 phase squirrel cage induction motor

SYLLABUS 2021 – 2022

CLASS: 12 SUBJECT: BASIC ELECTRONICS ENGINEERING (THEORY)

UNIT	CONTENT
1 Digital Circuit Application	Introduction 1.1 Application of Basic Gates 1.2 Combinational Gates 1.3 Boolean Algebra 1.4 Classification of logic circuit 1.6 Decoders 1.7 Encoder 1.9 Flip – Flops
2 Transmission and Reception	2.1 Introduction 2.2 Principles of Transmission and Reception 2.3 Modulation 2.4 Types of Modulation 2.5 Analog Modulation 2.7 Demodulation 2.8 Modem
3 Transmitters and Receivers	Introduction 3.1 Transmitter 3.2 Sideband 3.3 A.M. Radio Transmitter 3.4 F.M. Radio Transmitter 3.5 A.M. radio Receiver 3.7 Servicing of F.M. Radio Receiver 3.8 T.V. Transmission and Reception 3.11 TV Receivers 3.13 LED TV
4 Communication Devices and their Technologies	Introduction 4.1 Transmission Modes 4.2 Half Duplex 4.3 Full Duplex 4.4 Cell phone 4.5 Working Principles of a Cell phone 4.9 Benefits of Hexagons used in call coverage of cellular Network 4.12 Uses of Mobile Phones
5 Communication Techniques	5.1 Introduction 5.2 OFC Technology 5.3 Construction of an optical Fiber

	5.4 Difference between OFC and Co- axial cable 5.5 Advantages and disadvantages of OFC 5.6 Application of OFC 5.7 Satellite Communication 5.8 Microwave Communication 5.9 RADAR Systems
6 Digital Image Processing	6.1 Introduction 6.2 Image Processing 6.3 Image Sensors 6.5 CCTV
7 Sound Engineering	7.1 Introduction 7.2 Characteristics of Sound Waves 7.3 Microphones 7.4 Head Phones 7.5 Loud Speakers 7.6 Acoustic Engineering 7.7 Acoustic in Auditorium and Theater 7.10 Public Address System 7.11 Theater Sound Systems – DTS and DOLBY 7.13 Home Theater System 7.14 Noise Pollution
8 Power Electronics	Introduction 8.1 Converter Classifications 8.3 DC to AC Inverters 8.4 Uninterrupted Power Supply 8.5 DC to DC Converters 8.8 SMPS
9 Computer Hardware Techniques	Introduction 9.1 Mother Board 9.2 Memory Unit 9.3 Basic I/O system 9.4 Secondary Memory 9.5 CMOS Battery 9.6 CPU Clock 9.7 Switches and Jumpers 9.8 Microprocessor 9.10 Printers 9.11 Computer Networking 9.12 Embedded system 9.13 Arduino Board

10 Introduction to Biomedical Instruments	10.1 Introduction 10.2 Electrocardiography 10.3 Electroencephalograph 10.4 Blood Pressure Monitor 10.5 Pulse Oxi-meter 10.7 Glucometer 10.8 Biomedical Imaging Instruments 10.11 Magnetic Resonance Imaging (MRI) 10.12 Positron Emission Tomography

PRACTICAL

CLASS: 12 SUBJECT: BASIC ELECTRONICS ENGINEERING

S.No	Unit No	Topic
1	1	Encoder and Decoder
2	2	Install, Point and Testing of Dish Antenna
3	3	Constructions of FM receiver
4	4	Construction of an Audio Power Amplifier using TDA 2003
5	5	Rectification of faults in FM receiver
6	6	LED TV fault
7	7	Cell Phone service
8	8	Smart phone faults and Rectification Techniques

SYLLABUS 2021 - 2022

CLASS: 12 SUBJECT: BASIC CIVIL ENGINEERING

UNIT	CONTENT
1 Planning of House	1.1 Introduction 1.2 Importance of House 1.3 Orientation 1.4 Site selection 1.6 House plan 1.7 Housing
2 Special Building Materials	2.1 Introduction 2.2 Cement Concrete Composites 2.3 Glass 2.4 Rubber 2.6 Aluminium 2.7 Steel
3 Surveying	3.1 Introduction 3.3 Levelling
4 Water Supply Engineering	4.1 Introduction 4.2 Sources of water 4.5 Disinfection of water 4.6 Water softening
5 Sanitary Engineering	5.1 Introduction 5.2 Collection and conveyance of refuse 5.3 Quantity of sewerage 5.7 Septic tank 5.10 Pollution control
6 Highway Engineering	6.1 Introduction 6.2 High way Development and planning 6.4 High way Materials 6.5 High way construction 6.7 Road signals 6.8 Road signs 6.9 Road Accidents 6.10 Road side Developments
7 Hydraulics	7.1 Introduction 7.3 Flow of Fluids 7.5 Flow through pipes 7.6 Pumps

8 Disaster Management	8.1 Introduction 8.2 Types of Disaster 8.3 Earth quake 8.4 Cyclone 8.5 Floods 8.8 Nuclear Disaster

PRACTICAL

CLASS: 12 SUBJECT: BASIC CIVIL ENGINEERING

S.No	Unit No	Topic
1	I	Building Drawing -Manual 1. A Single Room Building 2. A Residential Building 3. A School Building
2	III	Quantity Surveying -Detailed Estimate 7. For a Compound Wall 8. For a Single Room Building
3	IV	Surveying - Fly Levelling 9. Closed Traverse 10. Open Traverse

SYLLABUS 2021 - 2022

STANDARD- 12 SUBJECT: BASIC AUTOMOBILE ENGINEERING

UNIT	CONTENT
1 Transmission system	1.0 Introduction 1.1 Transmission system 1.2 Needs of Transmission system 1.3 Types of Transmission system 1.4 Air Resistance 1.5 Rolling Resistance 1.6 Gradient Resistance 1.7 Tractive Effort
2 Clutch unit	2.0 Introduction 2.1 Function of clutch 2.2 Principle of clutch 2.5 Type of clutch
3 Gear Box	3.0 Introduction 3.1 Gear Box Location 3.2 Gears 3.4 Gear box operating principle 3.5 Gear box Types 3.7 Gear Ratio 3.8 Over drive 3.11 Transfer case
4 Propeller shaft and Rear Axle	4.0 Introduction 4.1 Material for the propeller shaft 4.3 Types of the Propeller shaft Drives 4.5 Universal Joint 4.6 Slip Joint 4.7 Function of universal Joint 4.9 Differential unit 4.11 Differential Housing 4.12 Rear Axle
5 Wheels and Tyres	5.0 Introduction 5.1 Requirement of wheel 5.2 The Properties of the wheel 5.4 Wheel Dimension 5.5 Tyre 5.8 Tyre Construction 5.9 Thread Type 5.10 Ply Rating 5.11 Types of carcass

	5.12 Load Rating 5.18 Tube 5.23 Tyre Rotation 5.24 Wheel Balancing
6 Braking System	6.0 Introduction 6.1 Function of Braking System 6.3 Types of Brake 6.4 Types of power Brake 6.9 Brake Adjustment 6.10 Brake Pedal Free Play 6.11 Brake Efficiency 6.12 Stopping Distance 6.13 Brake Testing
7 Suspension system	7.0 Introduction 7.1 Springs 7.3 Types of Suspension system 7.5 Shock Absorber
8 Steering system	8.0 Introduction 8.1 Functions of the Steering system 8.2 Parts of steering system 8.3 Steering Gear Box 8.4 Power Steering 8.6 Steering Play 8.7 Steering Ratio 8.8. Turning Radius 8.9 Wheel “Alignment” 8.11 Front Axle 8.12 Sub Axle
9 Chasses and Body	9.0 Introduction 9.3 Important Dimension of the vehicle 9.4 Body 9.5 Tinkering and Paintory
10 Electrical System	10.0 Introduction 10.1 Batten 10.2 Ignition System 103. Ignition Coil 10.6 Distributor 10.7 Ignition Advance Mechanism 10.8 Engine starting system 10.9 Charging system 10.10 Lighting system 10.12 Air Conditioning system

PRACTICAL

STANDARD- 12 SUBJECT: BASIC AUTOMOBILE ENGINEERING

S.No	Unit No	Topic
1	2	Gear Box
2	5	Master Cylinder
3	7	Shock Absorber
4	8	Self-starter Motor
5	9	Dynamo
6	10	Battery

பாடத்திட்டம் 2021–2022

வகுப்பு :12 **பாட ம்: நெசவியல் தொழில் நுட்பம்– கருத்தியல்**

அலகு	பாடப்பொருள்
1.பின்னல் கலை தொழில்நுட்பம்	1.1 பின்னல் கலை – அறிமுகம் 1.1.1 பின்னல் கலை வரையறை 1.1.2 பின்னல் நூலின் பண்புகள் 1.1.6 பின்னல் துணி – நெசவுத் துணி வேறுபாடுகள் 1.2 பின்னல் கருவிகள் 1.2.1 ஊடைப் பின்னல் கருவிகள் 1.2.2 கோர்ஸ் 1.2.3 வேல்ஸ் 1.2.4 தையல் நீளம் (அ)வளைய நீளம் 1.2.5 மெஷின் கேஜ் 1.2.6 முகப்பு வளையம் 1.2.7 பின் வளையம் 1.3 பின்னல் ஊசிகள் மற்றும் இயங்கு நிலைகள் 1.3.1 லாட்ச் ஊசி இயங்கு நிலைகள் 1.3.2 பியர்டெட் ஊசி இயங்கு நிலைகள் 1.3.3 லாட்ச் ஊசி – பியர்டெட் ஊசி இடையே வேறுபாடுகள் 1.3.4 காம்பவுண்ட் ஊசி இயங்கு நிலைகள் 1.4.2 ஒற்றை ஜெர்சி வட்ட ஊடைப் பின்னல் இயந்திரம் 1.4.3 ஊடைப் பின்னல் – பாவுப் பின்னல் வேறுபாடுகள் 1.5 பின்னல் மற்றும் தையல்கள் 1.5.1 பின்னல் வகைகள் 1.5.6 ஊடைப்பின்னல் தையல் வகைகள் 1.6 பின்னல் ஆடைகள் 1.6.1 பின்னல் ஆடைகள் வகைகள் 1.6.2 வெளி ஆடைகள் 1.6.3 உள்ளாடைகள் 1.6.4 மற்ற ஆடைகள்
2.துணி தயாரித்தல்	2.1.4 விழுது, பன்னை கோர்த்தல்/அச்சு புனைத்தல் 2.1.4 விழுது, பன்னை கோர்த்தல்/அச்சு புனைத்தல் 2.2.1 விசைத்தறியின் பாகங்கள் 2.2.2 விசைத்தறியின் பாகங்களின் செயல்கள் 2.3.2 விசைத்தறியின் இயக்கங்கள் 2.3.3 முதன்மை இயக்கங்கள் 2.3.4 இணை இயக்கங்கள்

	2.3.5 சார்பு இயக்கங்கள் 2.4 முதன்மை இயக்கங்கள் 2.4.1 டேப்பெட் புணி திறக்கும் இயக்கம் 2.4.2 ஊடை செலுத்துதல் இயக்கம் (அ) கூம்பின் மேல் ஊடையைச் செலுத்துதல் மட்டும் 2.4.3 ஊடை அடித்துச் சேர்த்தல் இயக்கம் 2.5.1 ஏழு சக்கரத் துணி உள்ளிழுத்தல் இயக்கம் 2.5.2 செயின் லீவர் எடை–பாவு தளர்த்தல் இயக்கம் 2.6 சார்பு இயக்கங்கள் 2.6.1 பாவு காப்பு இயக்கங்கள் (a) தளர் பன்னை இயக்கம் மட்டும் 2.6.2 பக்கவாட்டு ஊடை அறிமுள் இயக்கம் 2.9.2 நெசவு டிசைன்கள் 2.9.1 டுவில் நெசவின் வகைகள் 2.9.2 குறுக்கு வேவி டுவில் 2.9.3 நெடுக்கு வேவி டுவில் 2.9.4 டைமண்ட் 2.9.5 புரரோக்கன் டுவில் 2.9.6 ஹக் எ–பேக் நெசவு 2.9.7 மாக்லினோ நெசவு 2.9.8 ஹனி கோம்ப் நெசவு 2.10 டெர்ரி நெசவு 2.10.1 டெர்ரி நெசவின் அமைப்பு 2.10.2 டெர்ரி பைல்கள் உருவாக்கும் விதம் நிபந்தனைகள் 2.11 நெசவுத்துணி குறைபாடுகளும், நிவர்த்தி செய்தலும் 2.11.1 குறைபாடுகள் 2.12.2 துணியின் எடை கணக்கீடு 2.13.1 நாடாத்தறி – நாடா இல்லாத தறி ஒப்பீடு 2.13.2 நாடா இல்லாத தறிகளின் வகைகள்
3. சாயமிடுதல்	3.1 வேட் சாயங்கள் 3.1.1 வேட் சாயமிடல் – அடிப்படை 3.1.2 வேட் சாயத்தின் பண்புகள் 3.1.3 வேட் சாயத்தின் வகைகள் ii)சாயமிடும் முறையை பொறுத்துவேட் சாயமிடும் முறைகள் 3.1.4 பருத்தி நூலிற்குத் தொட்டி முறையில் வேட் சாயமிடுதல் 3.1.5 துணிக்கு வேட் சாயமிட பயன்படும் இயந்திர முறைகள் 3.1.5 (3) ஸ்டேண்ட் பாஸ்ட் மோல்ட்டன் மெட்டல் முறை மட்டும் 3.2 ரியாக்டிவ் சாயங்கள் 3.2.1 ரியாக்டிவ் சாயங்களின் பண்புகள் 3.2.4 ரியாக்டிவ் சாயத்தை குளிர் முறையில் சாயமிடுதல். 3.2.5 ரியாக்டிவ் சாயத்தை வெப்ப முறையில் சாயமிடுதல்

	3.3 அனிலின் கருப்பு 3.3.1 அனிலின் கருப்புச் சாயத்தின் பண்புகள் 3.3.2 அனிலின் கருப்புச் சாயமிடும் முறைகள் (a)ஒற்றை தொட்டி அனிலின் கருப்பு முழுவதும் 3.4 டிஸ்பர்ஸ் சாயங்கள் 3.4.1 டிஸ்பர்ஸ் சாயத்தின் பண்புகள் 3.4.2 டிஸ்பர்ஸ் சாயமிடும் முறைகள் (3 பிரிவுகள் மட்டும்) சாயமிடத் தேவையான பொருட்கள் சாயக்கரைசல் தயாரித்தல்) (b) HT&HP முறையில் சாயமிடுதல் 3.5.1 நிறக்கோட்பாட்டின் வகைகள் 3.5.2 ஒளிக் கோட்பாடு 3.5.3 நிறமிக் கோட்பாடு 3.5.4 நிறங்களின் பல்வேறு வகைகள் 3.6 சாயத்தொழிலில் நீர் மாசுபாடு 3.6.1 சாயக் கழிவு நீரால் ஏற்படும் மாசுபாடுகள்
4. அச்சிடுதல்	4.1 அச்சிடுதல் அறிமுகம் 4.1.1 சாயமிடுதல், அச்சிடுதல் – ஒப்பீடு 4.1. 3 அச்சிடும் முறைகள் 4.2 கைக்கட்டை அச்சு முறை 4.2.1 கைக்கட்டை அச்சுமுறை–செயல்முறைகள் 4.2.2 டிசைன் உருவாக்குதல் 4.2.3 கைக்கட்டை தயார் செய்தல் 4.2.4 அச்சு மேசை தயார் செய்தல் 4.2.5 அச்சு பசை மெத்தை தயாரித்தல் 4.2.6 அச்சு பசை தயாரித்த ல் 4.2.7 அச்சிடுதல் 4.2.8 கைக்கட்டை அச்சு முறையின் பயன்கள் 4.3 ஸ்டென்சில் அச்சு முறை 4.3.1 ஸ்டென்சில் தயாரிக்கப் பயன்படும் பொருட்க ள் மற்றும் கருவிகள் 4.3.2 ஸ்டென் சில் அச்சிடும் முறை– செ யல்முறைகள் 4.3.3 டிசைன் தேர்வு செ ய்தல் 4.3.4 தகடு அல்லது அட்டையின் மேல் டிசைனை ஏற்ப டுத்துதல் 4.3.5 தாமிர ஸ்டென்சில் தயாரித்தல் 4.3.6 அட்டை ஸ்டென்சில் தயாரித்தல் 4.3.7 அச்சுப்பசை தயார் செய்தல் 4.3.8 அச்சிடுதல்

	4.3.9 ஸ்டென்சில் அச்சு முறை – நிறை, குறைகள் 4.4 ஸ்கிரீன் அச்சுமுறை 4.4.2 ஸ்கிரீன் அச்சுமுறை – செ யல்முறைகள் (d) அச்சுப்பசை தயார் செ ய்தல் தவிர 4.4.3 உருளை ஸ்கிரீன் அச்சு இயந்திரம் 4.5 உருளை அச்சிடும் இயந்திரம் 4.5.1 ஒற்றை உருளை அச்சிடும் இயந்திரம் 4.5.3 உருளை அச்சு இயந்திரத்தின் நிறை, குறைகள் 4.6 பதிக் அச்சுமுறை 4.6.1 பதிக் அச்சிடும் முறை 4.7 அச்சிடும் பாணிகள் 4.7.1 நேரடி (அ) நீராவி பாணி 4.7.2 நிறம் நீக்கும் பாணி 4.7.3 தடை செய்யும் பாணி 4.7.4 முடிச்சிட்டு சாயமிடுதல் (அ) கட்டி வைத்து சாயமிடுதல்

செய்முறை

வகுப்பு :12 **பாடம்: நெசவியல் தொழில் நுட்பம்**

பகுதி	வ.எண்	செய்முறை பயிற்சி எண்	தலைப்பு
பகுதி – I	1	1	10 x 10 மாக்லினோ நெசவு
	2	2	10 x 10 ஹக்–எ பேக்நெசவு
	3	3	10 x 6 குறுக்கு வேவி டுவில் நெசவு
	4	6	10 x 10 ஹனிகோம்நெசவு
பகுதி–ll	1	2	குளிர் முறை ரியாக்டிவ் சாயமிடுதல்
	2	3	வெப்ப முறை ரியாக்டிவ் சாயமிடுதல்
	3	5	ஸ்டென்சில் அச்சு முறை
	4	6	ஸ்கிரீன் அச்சு முறை
	5	7	MS– Paint ல் டிசைன் வரைதல்

SYLLABUS 2021-2022

STANDARD: 12 SUBJECT: TEXTILES AND DRESS DESIGNING (THEORY)

UNIT	CONTENT
1. Finishing	1.1 Introduction 1.2 Classification of finishes 1.3 Types of finishes
2. Dyeing	2.1 Introduction 2.2 Classification of dyes
3. Printing	3.1 Introduction 3.2 Printing paste
4. Family Clothing Budget and Wardrobe Planning	4.1 Introduction 4.2 Importance of Family clothing 4.3 Classification of clothing 4.4 Types of family clothing
5. Selection of Clothing and Clothing Care	5.1 Introduction 5.2 Clothing for family members 5.3 Clothing care
6. Designing of Clothing	6.1 Introduction 6.2 Design 6.3 Classification of design 6.4 Types of Decorative design
7. Identification of Fabrics and Preliminary Stitches Garments Construction	7.1 Introduction 7.2 Identification of fabric by feel 7.4 Grain 7.5 Identification of Right and wrong side
8. Laying the Pattern Marking and Cutting	8.1 Introduction 8.2 Brief on basic pattern

9. Fashion Accessory and Ornamentation – Belts, Bows, Smocking and Traditional Embroidery	9.1 Introduction 9.2 Belts
10. Selection of Fabric for Construction of Garments	10.1 Introduction 10.2 Common fabrics used for Garment construction
11. Homemade, Tailor made and Readymade Garments	11.1 Introduction 11.2 Home made garments 11.3 Tailor made or custom made garments 11.4 Readymade garments
12. Apparel Merchandising	12.1 Introduction 12.2 Merchandising in apparel Industry 12.3 Merchandiser 12.4 Process Flow in a garment factory
13. Entrepreneurship Development	13.1 Introduction 13.2 Entrepreneur Definition 13.4 Project 13.5 Accounting and Book keeping
14. Advertisement	14.1 Introduction 14.2 Need of Advertisement 14.4 Classification of advertisement
15. Role of Computer in Garment Industry	15.1 Introduction 15.2 Types of CAD system

PRACTICAL

STANDARD: XII SUBJECT : TEXTILES AND DRESS DESIGNING

S.No	Unit No	Topic
1	1	**Finishing** Gathered frock with puff sleeve
2	4	**Family Clothing Budget and Wardrobe Planning** T.shirt
3	5	**Selection of Clothing and Clothing Care** Salwar
4	6	**Designing of Clothing** Kameez
5	7	**Identification of Fabrics and Preliminary Stitches Garments Construction** Pyjama

SYLLABUS 2021 - 2022

CLASS: 12 SUBJECT: AUDITING PRACTICAL

UNIT	CONTENT
1 Internal Check	1.1. Introduction 1.2. Meaning of Internal Check 1.3. Definition 1.4. Principles (or) Features of Good Internal Check System 1.8. Duties of an auditor with Regards to Internal Check System 1.11. Internal Check -Trading Transactions 1.11.1. Internal check-purchases 1.11.2. Internal check purchase returns 1.11.3. Internal check- sales 1.11.4. Internal check- sales returns
2 Internal Control	2.1. Introduction 2.2. Meaning 2.3. Definition 2.7. Principles of Good Internal Control System 2.8. Kinds of Internal Control 2.9. Methods of Evaluating Internal Control System 2.10. Auditor's Duty in Evaluating the System of Internal Control
3 Internal Audit	3.1. Introduction 3.2. Meaning 3.3. Definition 3.5. Scope (or) Functions of Internal Auditor
4 Verification and Valuation of Fixed Assets	4.1. Verification 4.1.1. Meaning 4.1.2. Definition 4.1.3. Objectives 4.1.4. Auditor's Duty regarding Verification 4.2. Valuation 4.2.1. Meaning 4.2.2. Definition 4.2.3. Objectives of Valuation 4.2.4. Methods of Valuation 4.2.5. Auditor's Duty as regards to Valuation

	4.2.6. Importance of Verification and Valuation of Assets 4.4 Verification and valuation of fixed assets 4.4.1. Land and Buildings 4.4.2. Plant and machinery 4.4.3. Furniture, fixtures and fittings 4.5 Verification and valuation of investments 4.5.1. Quoted investments 4.5.2. Unquoted investments 4.6 Verification and valuation of other fixed assets 4.6.1 Wasting Asset 4.6.2 Fictitious Asset
5 Verification and Valuation of Current and Intangible Assets	5.1. Introduction 5.2.3. Verification and Valuation of Individual Current Assets 5.3.3. Verification and Valuation of Individual Intangible Assets
6 Verification of Liabilities	6.1. Introduction 6.2.2. verification of capital in a company 6.3.3. Auditor's duty in verification of debentures 6.5. verification of current liabilities 6.5.1. Sundry creditors 6.5.2. Bills payable 6.5.3. Bank overdraft 6.5.4. Outstanding expenses
7 Depreciation	7.1. Depreciation-Meaning 7.4. Objectives of Providing Depreciation 7.5. Factors (or) Basis of Providing Depreciation 7.6. Different Methods of Charging Depreciation 7.6.1. Straight line (or) fixed instalment method 7.6.2. Diminishing or written down value method 7.6.3. Annuity method 7.6.4. Depreciation fund method 7.6.5. Insurance policy method 7.6.6. Revaluation method 7.6.7 Depletion method 7.6.8 Machine hour rate method 7.7. Auditor's Duties with regards to Depreciation

8 Reserves and Provisions	8.1. Reserves 8.1.1. Meaning 8.1.2. Definition 8.1.3. Classification of Reserves 8.2. Provision 8.2.1. Meaning 8.2.2. Definition 8.2.3. Classification of Provisions 8.2.4. Auditor's Duties
9 Qualification, Rights and Duties of Auditor	9.1. Introduction 9.4. Appointment of Auditor 9.4.1 Appointment of Auditor in Government company 9.4.2. Appointment of Auditor in Non government company 9.7. Duties of an Auditor 9.7.1 Statutory duties 9.7.2 Duties under common law 9.7.3 other duties 9.8. Liabilities of an Auditor 9.8.1 Civil liability 9.8.2 Liabilities under companies act 9.8.3 Criminal liability under Indian penal code 9.8.4 Liability under Income tax act 9.8.5 Liability for Professional Misconduct 9.8.6 Liability towards Third Parties
10 Company Audit	10.1. Audit Report 10.1.1 Meaning of Audit Report 10.1.2 Definition of Audit Report 10.1.3 Form of Audit Report 10.1.4 Contents of Audit Report 10.1.5 Types of Audit Report 10.3 Audit of Share Capital of a New Company (or) Fresh Issues of Shares 10.3.1. Meaning of Fresh Issue of Shares 10.3.2. Auditors Duties 10.5 Audit of Shares issued for consideration other than cash 10.5.1. Meaning 10.5.2. Auditors Duties

SYLLABUS 2021–2022

CLASS: 12 SUBJECT: OFFICE MANAGEMENT AND SECRETARYSHIP

UNIT	CONTENT
1. Introduction to Management	1.1 Introduction 1.2 Meaning of Management 1.3 Definition of Management 1.4 Characteristics of Management 1.5 Importance of Management 1.6 Levels of Management 1.7 Distinction between Administration and Management 1.8 Functions of Management
2. Planning	2.1 Introduction 2.2 Meaning 2.3 Definition 2.5 Importance of Planning 2.6 Limitations of Planning 2.8 Process / steps in Planning 2.9 Types of Planning 2.10 Methods of Planning
3. Organising Function	3.1 Introduction 3.2 Meaning 3.3 Definition 3.5 Advantages of Organisation 3.6 Steps in Organization Process 3.7 Formal and Informal Organisation 3.8 Line Organisation 3.9 Line and Staff Organisation 3.10 Functional Organisation 3.11 Organisational Chart

4. Decision – Making	4.1 Introduction 4.2 Meaning 4.3 Definition of Decision Making 4.4 Characteristics of Decision - Making 4.7 Process (or) steps in Decision - Making 4.8 Types of Managerial Decision
5. Co-ordination and Direction	5.1 Introduction 5.2 Meaning 5.3 Definition 5.4 Principles of Co-ordination 5.6 Importance of Co-ordination 5.8 Problems in Co-ordination 5.10 Meaning of Direction 5.13 Importance of Direction 5.15 Meaning of Delegation Definition of Delegation 5.17 Meaning and Definition of Supervision 5.19 Qualities of a Supervisor
6. Delegation of Authority	6.1 Introduction 6.2 Meaning 6.3 Definition 6.5 Characteristics of Delegation of Authority 6.7 Meaning of Centralization and Decentralization 6.8 Meaning of Departmentation 6.9 Types of Departmentation
7. Leadership and Communication	7.1 Introduction 7.2 Meaning 7.3 Definition 7.6 Importance of a leader 7.7 Functions of a leader 7.8 Kinds of leadership styles 7.10 Introduction to Business Communication 7.12 Definition of Communication 7.13 Characteristics of Communication 7.15 Principles of Communication 7.16 Process of Communication 7.18 Types of Communication 7.20 Forms of Communication

8. Motivation	8.1 Introduction 8.2 Meaning 8.3 Definition 8.4 Characteristics of Motivation 8.5 Steps in motivation 8.7 Types of Motivation 8.9 Maslow's Hierarchy Theory of motivation 8.10 Mc Gregor's Theory of Motivation
9. Controlling	9.1 Introduction 9.2 Meaning & Definition 9.3 Objectives of Controlling 9.5 Process of Controlling 9.7 Merits & Demerits of Controlling 9.8 Techniques of Controlling
10. Secretary	10.1 Introduction 10.2 Meaning of Office Secretary (or) Personal Secretary 10.5 Definition of Company Secretary 10.7 Process for appointment of Company Secretary 10.11 Liabilities of Company Secretary

PRACTICAL

CLASS: 12 SUBJECT: TYPOGRAPHY AND COMPUTER APPLICATION

S.No	Unit No	Topic
1	1	**Typing Practice** Model Keyboard Typing Practice – I Balance sheet Receipts and payments Account Invitation Typing practice – II
2	2	**Abbreviation and symbols** Standard Abbreviation
3	3	**Page Maker** Page Formatting
4	5	**Page Maker** Creating Visiting Card
5	7	**MYSQL: Usage of Commands in Data Base** Usage of Commands in Data Base
6	8	**PHP** Basic Programming

SYLLABUS 2021–2022

CLASS: 12 SUBJECT: FOOD SERVICE MANAGEMENT

UNIT	CONTENT
1. Organization and Tool of Management	1.1 Organisation chart 1.3 Organisation in Departments 1.4 Tools of Management Review
2. Quantity Food Production	2.2 Standardization of Recipes 2.4 Food costing Review
3. Service Production	3.1 Definition of cover and Table Setting Requirements 3.2 Table Setting/Laying the cover 3.3 Types of Cover for different menus 3.4 Services in a Restaurant
4. Cakes, Beverages and Salads	4.1.3 Cake making ingredients 4.2 Beverages – classification 4.3 Salad – Importance Review
5. Food Safety and Quantity	5.1 Factors affecting Safety of food 5.3 FSSAI 5.4 HACCP Review
6. Management	6.1 Principles and functions of management 6.2 Time, Money and Energy Management Review
7. Human Resource Management	7.2 Training and Motivation 7.3 Leadership qualities 7.4 Performance, Appraisal and wages Review
8. Marketing	8.2 Marketing Mix 8.4 Product Life cycle 8.5 Marketing environment Review
9. Entrepreneurship skills	9.1 Entrepreneur skills and qualities of entrepreneur 9.3 Various acts Governing Food Establishment

PRACTICAL

CLASS: 12 SUBJECT: FOOD SERVICE MANAGEMENT

S.No	Unit No	Topic
1.	1	**Organization and Tool of Management** 1.1 Layout of the Departments in Food Service Operation
2.	2	**Quantity Food Production** 2.1 Standardization of Recipe 2.2 Enlargement of Regional Recipes Review
3.	3	**Service Production** 3.1 Table setting Review
4.	4	**Cakes, Beverages and Salads** 4.1 Preparation of cakes Review
5.	5	**Food Safety and Quantity** 5.1 Preparation of a label with food standards Review
6.	6	**Management** 6.1 Analyze method of consuming time, money and energy Review
7.	7	**Human Resource Management** 7.1 Planning an Advertisement for a job title in food service operation Review
8.	8	**Marketing** 8.1 Sales promotion technique Review

SYLLABUS 2021–2022

CLASS: 12 SUBJECT: NURSING THEORY - VOCATIONAL

UNIT	CONTENT
1. Home Nursing	1.1 Introduction 1.2 Definition 1.3 Concept 1.4 Purposes 1.5 Principles 1.6 Home Health Care Services 1.10 Home Management 1.11 Extended Role of home nurse Review of the Unit Health Education on home management
2. Communicable Disease	2.1 Introduction 2.1.1 Terminologies 2.1.2 Communicable disease is classified based on the agents 2.2 Waterborne diseases 2.2.1 Cholera 2.2.2 Diarrhoea 2.2.3 Typhoid 2.2.4 Hepatitis A 2.1.1 Terminologies 2.1.2 Communicable disease is classified based on the agents 2.3 Diseases transmitted through air 2.3.1 Influenza 2.3.2 Chicken Pox 2.3.3 Pneumonia 2.3.4 Tuberculosis 2.4 Diseases transmitted through parasites 2.4.1 Protozoa infection 2.4.2 Filariasis 2.5 Diseases transmitted through arthropod 2.5.1 Dengue 2.5.2 Encephalitis

	2.6 Diseases transmitted through animals 2.6.1 Anthrax 2.6.2 Tetanus 2.7 Diseases transmitted through contact Common control measures of communicable disease 2.7.1 HIV and AIDS 2.7.2 Gonorrhoea Common Control measures of communicable disease
3. Non-Communicable Disease	3.1 Introduction 3.2 Gastro intestinal disorders 3.2.1 Hernia 3.2.2 Cholecystitis 3.2.3 Appendicitis 3.3 Cardio vascular disorders 3.3.1 Hypertension 3.3.2 Acute Myocardial Infarction 3.3.3 Anaemia 3.4 Respiratory disorders 3.4.1 Asthma 3.4.2 COPD 3.5 Renal disorders 3.5.1 Renal Calculi 3.5.2 Acute Renal Failure 3.6 Neurological disorders 3.6.1 Epilepsy 3.6.2 Unconscious Status 3.7 Musculo skeletal disorders 3.7.1 Osteoarthritis 3.7.2 Osteoporosis 3.8 Endocrine disorders 3.8.1 Diabetes Mellitus 3.8.2 Poly Cystic Ovarian Syndrome/Disease 3.8.3 Hyperthyroidism: 3.8.4 Hypothyroidism 3.9 Cancer 3.9.1 Oral cancer 3.9.2 Breast Cancer

4. Nutrition	4.1 Introduction 4.2 Nutrition and health 4.3 Difference between balanced Diet and malnutrition 4.7 Balanced Diet
5. Maternal Health Nursing	5.4 Process of fertilization and implantation 5.5 Placenta and membranes 5.6 Umbilical cord 5.7 Amniotic fluid 5.8 Fetal circulation
6. Child Health Nursing	6.1 Introduction 6.2 Growth and Development 6.2.1 Factors influencing Growth and development 6.2.2 Growth periods 6.3 New born characteristics 6.4 Nursing care of neonates 6.4.1 Nursing care of healthy new born baby includes 6.4.2 Harmful Traditional Practices 6.4.3 Identification of Risk Infants 6.7 Immunization 6.7.1 Vaccine preventable Diseases 6.7.2 Immunization Schedule 6.7.3 The Cold Chain 6.8 Disorders of newborn 6.8.1 Minor Disorders of the Newborn 6.8.2 Major New born Disorders 6.8.2.1 Congenital Anomalies 6.8.2.2 Acquired Disorders 6.9 Major childhood problems 6.9.1 Behavioural problems 6.9.2 Childhood Accidents
7. Geriatric Care	7.1 Introduction 7.2 Definition 7.3 Ageing process 7.3.1 The Ageing Process Starts in Human Organ 7.3.2 Common Signs and Symptoms of Ageing 7.3.3 Mechanism of Ageing 7.3.4 Biological Process of Ageing

	7.4 Evolutionary basis of ageing 7.4.1 Ageing theories which mainly has been categories into two main categories 7.4.2 Biological Aging Theories 7.9 Common disorders 7.9.1 Immobility and Rehabilitation 7.9.2 Frequent Falls 7.9.3 Urinary Incontinence 7.9.4 Stroke 7.9.5 Arthritis and Osteoporosis 7.9.6 Benign Prostatic Hypertrophy 7.9.7 Diabetes in Older Adults 7.9.8 Hypertension in the Elder 7.9.9 Pressure Ulcer/Bed Sores 7.9.10 Eye Diseases 7.9.11 Glaucoma 7.9.12 Cancer 7.9.13 Drug Reactions
8. Disaster Management	8.3 Disaster Nursing 8.3.1 Basic Principles in Planning for Disaster Nursing 8.3.2 START- Simple Triage Rabid treatment 8.3.3 Epidemiologic Surveillance and disease control 8.3.4 Role in disaster preparedness 8.4 Core emergency preparedness 8.5 Rehabilitation 8.6 Legal implication 8.6.1 Acts and Laws 8.6.2 National Policy on Disaster Management (NPDM), 2009 8.6.3 Disaster Emergency Kit
9. Administration of Medicine	9.1 Introduction 9.2 Definitions 9.3 Basic knowledge regarding drug 9.4 Sources of drugs 9.5 Pictorial presentations of absorption of drugs 9.6 Drug forms 9.7 Prescription of medication 9.7.1 parts of a prescription

	9.8 Classification of drugs based on their action 9.11 Routes of administration 9.11.1 Pros and cons of different routes of administration of drugs 9.12 Rights of drug administration
10. Communication Skills	10.1 Introduction 10.2 Definition 10.3 Communication process 10.3.1 Elements of communication 10.4 Importance of communication in nursing 10.4.1 The following are Simple Guidelines Nurses can follow to improve their Communications Skills 10.8 Effective communication 10.8.1 Methods of Effective Communication 10.8.2 Guidelines for Effective Communication 10.8.3 Some tips for Effective Communication
11. Guidance and Counseling	11.1 Guidance 11.1.1 Enlist the Functions of Guidance 11.1.2 Counseling 11.1.3 Roles of the Advisor in Guidance 11.2 Counseling 11.2.1 List the Principles for Counseling 11.2.2 Explain the Steps in the Counseling Process 11.2.3 Enlist the Counseling Skills 11.2.4 Enlist the Roles of a Counselor 11.2.5 Differentiate between Guidance and Counseling

PRACTICAL

CLASS: 12 SUBJECT: NURSING - VOCATIONAL

S.No	Unit No	Topic
1	1	Oxygen Administration
2	3	Hot application
3	4	Cold application
4	5	Minor wound dressing
5	6	Naso Gastric Tube Feeding

பாடத்திட்டம் 2021–2022

வகுப்பு –12 **பாடம் : வேளாண் அறிவியல் – கருத்தியல்**

அலகு	பாடப்பொருள்
1. பயிர் சாகுபடி முறைகள்– ஓர் அறிமுகம்	அறிமுகம்
2. வேளாண் பயிர்கள்– சாகுபடி குறிப்புகள்	2.1.1 நெல் சாகுபடி 2.2 பயறு வகைப்பயிர்கள் 2.3 எண்ணெய் வித்துப் பயிர்கள் 2.3.1 நிலக்கடலை 2.4 பணப்பயிர்கள் கரும்பு 2.4.2 பருத்தி சாகுபடி 2.4.3 மஞ்சள் சாகுபடி
3. தோட்டக்கலை பயிர்கள்– சாகுபடி பயிர்கள்	3.1 காய்கறிப் பயிர்கள்–தக்காளி 3.2 பழப்பயிர்கள்–மா 3.3 மலைத் தோட்டப்பயிர்கள்–முந்திரி 3.4 மூலிகைப் பயிர்கள்–கண்வலிக்கிழங்கு 3.5 மலர்ப்பயிர்கள்–மல்லிகை
4. ஒருங்கிணைந்த ஊட்டச்சத்து நிர்வாகம்	4.1 வரையறை 4.2 ஒருங்கிணைந்த ஊட்டச்சத்து நிர்வாகத்தின் அங்கங்கள் 4.3 ஊட்டச்சத்து பற்றாக்குறைக்கான காரணங்கள் 4.4 தழைச்சத்து விரயமாவதைத் தடுத்தல் 4.5 சத்துக்களைப் பிரித்து இடுதல் 4.6 கரும்பு ஒருங்கிணைந்த ஊட்டச்சத்து நிர்வாகம்
5. ஒருங்கிணைந்த பயிர் பாதுகாப்பு	5.1 பயிர் பாதுகாப்பின் அடிப்படை கொள்கைகள் 5.3 பயிர் பாதுகாப்பு இரசாயனங்களின் வடிவங்கள் 5.4 பயிர் பாதுகாப்பு இரசாயனங்கள் செயல்படும் முறைகள் 5.5 இரசாயன தன்மையைக் கொண்டு பூச்சிக் கொல்லிகளை வகைப்படுத்துதல் 5.6 பூசணக் கொல்லிகள் 5.7 பூச்சிக்கொல்லி சட்டம் 5.8 பூச்சிக்கொல்லிகளின் எஞ்சிய நச்சு 5.9 ஒருங்கிணைந்த பயிர் பாதுகாப்பு

6. ஒருங்கிணைந்த பண்ணை நிர்வாகம்	6.1 ஒருங்கிணைந்த பண்ணை நிர்வாகம்
7. விதை உற்பத்தி தொழில்நுட்பம்	7.1 அறிமுகம் 7.1 பயிர் இனப்பெருக்கத்தின் நோக்கம் 7.2 இனப்பெருக்க முறைகள் 7.3 பயிர் இரகங்கள் 7.4 கலப்பினங்கள் வீரிய ஒட்டு இரகங்கள் 7.6 விதை 7.8 விதை சான்றளிப்பு 7.9 விதை உற்பத்தி
8. நவீன வேளாண்மை	அறிமுகம் 8.1 துல்லிய பண்ணையம் 8.2 வளங்குன்றா வேளாண்மை 8.5 நானோ தொழில் நுட்பம்
9. இயற்கை வேளாண்மை	9.1 அறிமுகம் இயற்கை வேளாண்மையின் கோட்பாடுகள் 9.2 இயற்கை வேளாண்மையின் நன்மைகள் 9.4 அங்கக சான்றிதழ்
10. வணிக வேளாண்மை	அறிமுகம் 10.2 தேனீ வளர்ப்பு
11. வணிக தோட்டக்கலை	அறிமுகம் 11.1 கொய்மலர் சாகுபடி 11.3 வணிக நாற்றங்கால் 11.4 நில எழிலூட்டுதல் 11.4 பதப்படுத்துதல்
12. வேளாண் விற்பனை	அறிமுகம் 12.1 வேளாண் விற்பனையின் முக்கியத்துவம் 12.2 கலப்படம் 12.3 தரக்கட்டுப்பாடு 12.4 தர நிர்ணய அமைப்புகள் 12.6 வேளாண் விளை பொருள் விற்பனை மற்றும் வணிகத்துறை
13. கால்நடை மற்றும் மீன் பராமரிப்பு	13.1 அறிமுகம் நோய்களின் வகைப்பாடு 13.2 மாடுகளைத் தாக்கும் நோய்களும் தடுப்பு முறைகளும் 13.3 ஆடுகளைத் தாக்கும் நோய்களும், தடுப்பு முறைகளும் 13.6 கால்நடை நோய்களுக்கு வருமுன் பாதுகாப்பு 13.7 வளர்ப்பு மீன்களுக்கு ஏற்படும் நோய்களும், கட்டுப்பாட்டு முறைகளும்

14. வேளாண்மையில் கணினியின் பங்கு	அறிமுகம் 14.1 வேளாண்மையில் கணினியின் பங்கு 14.2 வேளாண்மையில் தரவுத் தளம் 14.5 புவியியல் தகவல் முறைமை

செய்முறை

வகுப்பு –12 **பாடம் : வேளாண் அறிவியல்**

வ எண்	அலகு	தலைப்பு
1	2	வேளாண் பயிர்களைத் தாக்கும் பூச்சி, நோய்கள்
2	4	விதைக்கரணை மற்றும் கிழங்கு நேர்த்தி செய்தல்
3	5	மஞ்சள் பதப்படுத்துதல்
4	6	பாலிலா இனப்பெருக்க முறைகள்
5	7	தோட்டக்கலை பயிர்களை தாக்கும் பூச்சி மற்றும் நோய்கள்
6	9	எருவாக்க முறைகள்
7	11	மதிப்பு கூடட்டப்பட்ட பொருட்கள் தயாரித்தல்
8	13	கால்நடை பராமரிப்பு முறைகள்

SYLLABUS 2021–2022

CLASS: 12 SUBJECT: COMPUTER TECHNOLOGY

UNIT	CONTENT
1. Adobe Page Maker	1.1 Desktop Publishing 1.2 Introduction to Adobe page maker 1.3 Opening page maker 1.4 Creating a new document 1.8 Understanding story 1.9 Threading text blocks 1.10 Placing text in a frame 1.20 Master pages
2. Adobe InDesign CC 2019	2.1 Introduction 2.2 Understanding pages layout software 2.3 Using InDesign, you can accomplish the following 2.4 Starting adobe indesign CC 2.5 Exploring the Indesign workspace 2.9 Using the tools panel 2.11 Navigating pages 2.16 Working with objects
3. Corel draw	About Coreldraw Understanding Vector graphics and bitmaps Vector graphics Bitmaps Coral draw terms Coral draw 2018 welcome window Coral draw 2018 Document window Exploring flyouts Creating polygons Creating Spiral Drawing Grids Drawing in Freehand mode Resizing shapes of objects Rotating objects Undoing and Redoing

	Existing coral draw Working with objects Working with Text Page Setup
4. Multimedia and Desktop Publishing	4.1 Introduction to Multimedia 4.4 File format for multimedia 4.5 Multimedia production
5. Adobe Flash Professional CS6	5.1 Introduction to Adobe Flash Professional CS6 5.2 Flash Users 5.3 Creations by flash 5.6 Flash workspace 5.7 Flash applications 5.10 Text tool 5.11 Selecting objects 5.14 Creating flash animations
6. Autocad	6.1 Introduction to Autocad 2016 6.2 Starting Autocad 2016 6.3 Autocad Initial screen 6.5 Function Keys 6.6 Working in the command Line interface 6.7 Starting drawing in AutoCAD 6.9 Printing (the drawing plotting)

PRACTICAL

CLASS: 12 **SUBJECT: COMPUTER TECHNOLOGY**

S.No	Exercise No	Topic
1	1	Pagemaker - Page formatting
2	3	Pagemaker - Creating visiting card
3	4	Pagemaker - Creating Label
4	5	Coral draw - Create a Text
5	7	AutoCAD - Draw a figure
6	8	AutoCAD - Draw a figure using relative rectangular coordinates
7	9	AutoCAD - Draw a figure using relative Polar coordinates