



DEPARTMENT: MATHEMATICS AND SCIENCE

**BHUBANANANDA ORISSA SCHOOL OF
ENGINEERING, CUTTACK**

LESSON PLAN

By

Miss Monalisa Parida

ACADEMIC SESSION:-2023-24

SEMESTER: -2nd SEMESTER, SUMMER (2023-24)

SUBJECT:-ENGINEERING PHYSICS (THEORY)

SECTION- I

Discipline: ETC and Applied	Semester: 2 ND SEMESTER	Name of the Teaching Faculty: Monalisa Parida
Subject: Engineering Physics	No. of Days/ per week class allotted: 04 periods/per week (Mon, Tue, Wed, Fri)	Semester From: -Date: 02 /02 /2024 to 14 /05 /2024 No of Weeks: - 16
Week	Class Dates	Theory Topics
1st	02.02.2024	Introduction, Syllabus discussion and previous years related study discussion.
		UNIT 1 :- UNIT AND DIMENSIONS 1.1 Physical quantities(Definition) 1.2 Definition of fundamental and derived units, system of units(FPS,CGS,MKS and SI units)
2nd	05.02.2024	1.3 Definition of dimensions and Dimensional Formulae of physical quantities.
	06.02.2024	1.4 Dimensional equations and principle of homogeneity
	07.02.2024	1.5 Checking the dimensional correctness of Physical relations.
	09.02.2024	UNIT 2 :- SCALARS AND VECTORS 2.1 Scalar and Vector quantities (definition and concept), Representation of a Vector – examples, types of vectors.
3rd	12.02.2024	2.2 Triangle and Parallelogram law of vector Addition (Statement only). Simple Numerical.
	13.02.2024	2.3 Resolution of Vectors – Simple Numerical on Horizontal and Vertical components.
	16.02.2024	2.4 Vector multiplication (scalar product and vector product of vectors)
	16.02.2024	CLASS TEST – 01
	16.02.2024	UNIT 3 :- KINEMATICS 3.1 Concept of rest and Motion 3.2 Displacement, Speed, Velocity, Acceleration and Force(Definition , formula, dimensions and SI units)
4th	19.02.2024	3.3 Equation of Motion under Gravity (upward and downward motion)
	20.02.2024	3.4 Circular motion: Angular displacement, Angular velocity and Angular acceleration (definition, formula and SI units)
	21.02.2024	3.5 Relation between - (i) Linear and Angular Velocity, (ii) Linear and Angular acceleration
	23.02.2024	3.6 Define Projectile , Examples of Projectile 3.7 Expression for Equation of Trajectory. Time of flight, Maximum Height and Horizontal Range for a projectile fired at an angle, condition for maximum Horizontal Range.
		CLASS TEST-02
		UNIT 4 :- WORK AND FRICTION 4.1 Work – Definition, Formula & SI units. 4.2 Friction – Definition & Concept.

5 th	26.02.2024	4.3 Types of friction (static, dynamic), Limiting Friction (Definition with Concept) 4.4 Laws of Limiting Friction (Only statement, No Experimental Verification).
	27.02.2024	4.5 Coefficient of Friction – Definition & Formula, Simple Numericals. 4.6 Methods to reduce friction
	28.02.2024	CLASS TEST – 03
	01.03.2024	UNIT 5:- GRAVITATION 5.1 Newton's Laws of Gravitation -statement and explanation 5.2 Universal Gravitation Constant (G)-Definition unit and Dimensions
6 th	04.03.2024	5.3 Acceleration due to gravity (g)- Definition and Concept 5.4 Definition of mass and weight 5.5 Relation between g and G
	06.03.2024	5.6 Variation of g with altitude and depth(No derivation - Only formula) 5.7 Keplers Laws of Planetary Motion(statement only)
7 th	11.03.2024	CLASS TEST-04
	12.03.2024	UNIT 6:- OSCILLATION AND WAVES 6.1 Simple Harmonic Motion (SHM)-Definition and Examples 6.2 Expression (Formula/Equation) for displacement, velocity, acceleration of a body /particle in SHM.
	13.03.2024	6.3 Wave motion- Definition and Concept 6.4 Transverse and Longitudinal wave motion - Definition, Examples and Comparison. 6.5 Definition of Different Wave Parameters (Amplitude, Wavelength, Frequency, Time Period)
	15.03.2024	6.6 Derivation of Relation between Velocity, Frequency and Wavelength of a Wave 6.7 Ultrasonic's- Definition , Properties , Application
	18.03.2024	CLASS TEST -05
8 th	19.03.2024	UNIT 7:- HEAT AND THERMODYNAMICS 7.1 Heat and Temperature -Definition and Difference 7.2 Units of Heat (FPS,CGS,MKS, and SI)
	20.03.2024	7.3 Specific Heat(Concept, definition, unit, dimensions and simple numerical) 7.4 Change of State (concept),Latent Heat(concept, definition, unit, dimension and simple numerical)
	22.03.2024	7.5 Thermal Expansion - Definition and Concept 7.6 Expansion of Solids(concept) 7.7 Coefficient of linear, superficial and cubical expansion of solids-Definition and Units
	27.03.2024	7.8 Relation between α , β & γ 7.9 Work and Heat- concept and relation
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10 th	02.04.2024	7.10 Joules Mechanical Equivalent of Heat(Definition, Unit) 7.11 First Law of Thermodynamics (statement and concept only)
	03.04.2024	CLASS TEST- 06
	05.04.2024	UNIT 8:-OPTICS 8.1 Reflection & Refraction – Definition. 8.2 Laws of reflection and refraction (Statement only)
11 th	08.04.2024	8.3 Refractive index – Definition, Formula & Simple numerical 8.4 Critical Angle and Total internal reflection -Concept, Definition & Explanation.
	09.04.2024	8.5 Refraction through Prism (Ray Diagram & Formula only – NO derivation).
	10.04.2024	8.6 Fiber Optics – Definition, Properties & Applications
	12.04.2024	CLASS TEST- 07
12 th	15.04.2024	UNIT9:- ELECTROSTATIC AND MAGNETOSTATIC 9.1 Electrostatics - Definition and Concept 9.2 Statement and Explanation of Coulombs law, Definition of unit charge.
	16.04.2024	9.3 Absolute and Relative Permittivity -Definition , Relation and Unit 9.4 Electric Potential and Electric Potential difference (Definition , formula and SI units) 9.5 Electric Field, Electric Field intensity (E)
		9.6 Capacitance -Definition, formula and Unit 9.7 Series and Parallel combination of Capacitors (No derivation, formula for effective/combined/total capacitance and Simple numerical)
	19.04.2024	9.8 Magnet, Properties of a magnet 9.9 Coulombs Laws in Magnetism -Statement and Explanation, Unit Pole(Definition) 9.10 Magnetic field, Magnetic Field intensity (H)- Definition, formula and SI units)
		9.11 Magnetic lines of Force(Definition and Properties) 9.12 Magnetic Flux and Magnetic Flux density(B)- (Definition formula and unit)
13 th	22.04.2024	
	23.04.2024	CLAS TEST- 08
	24.04.2024	UNIT 10:- CURRENT ELECTRICITY 10.1 Electric Current –Definition Formula and SI units 10.2 Ohms law and it's applications
	26.04.2024	10.3 Series and Parallel Combination of resistors (No derivation, Formula for effective/combined/total resistance and simple numericals)
14 th	29.04.2024	10.4 Kirchhoffs laws (statement and Explanation with diagram) 10.5 Application of Kirchhoffs law to Wheatstone bridge - Balanced condition of Wheatstone bridge.
	30.04.2024	CLASS TEST-09

	01.05.2024	UNIT 11:-ELECTROMAGNETISM & ELECTROMAGNETIC INDUCTION 11.1 Electromagnetism -Definition and Concept 11.2 Force acting on a current carrying conductor placed in a uniform magnetic field,Fleming's left hand rule
	03.05.2024	11.3 Faradays laws of Electromagnetic Induction (statement only) 11.4 Lenz's law(statement only)
	06.05.2024	11.5 Fleming's Right Hand Rule 11.6 Comparison between Fleming's Right Hand Rule and Fleming's left hand rule
	07.05.2024	CLASS TEST -10
15 th	08.05.2024	UNIT -12 MODERN PHYSICS 12.1 Laser and Laser beam (Concept and Definition) 12.2 Principle of LASER (Population Inversion and Optical Pumping)
	10.05.2024	12.3 Properties and Application of LASER 12.4 Wireless Transmission -Ground Waves ,Sky Waves, Space Waves(Concept and Definition)
		REVISION AND DOUBT CLEARING
16 th	13.05.2024	VST (For Semester Examination)
	14.05.2024	

REFERENCE BOOK:

1. CONCEPTS OF PHYSICS BY H.C. VERMA, VOL. I & II.
2. TEXT BOOK OF +2 PHYSICS (PART I, PART II) BY K.N SHARMA,N. BARIK,L.K DAS, KALYANI PUBLISHER
3. TEXT BOOK OF ENGINEERING PHYSICS BY K.N. SHARMA, Dr. BISWAMBHAR MOHANTY AND NEERAJ BANSAL, KALYANI PUBLISHER


01.02.24