PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, BARGARH



<u>LESSON PLAN</u> Session: 2023-24

1st Semester

Electrical/Comp. Sc./Metallurgical Engineering

Engineering Physics

Dr. Niranjan Panda Sr. Lect. in Physics Subject: Engineering Physics

No. of Days/per week class allotted : 04

Semester From Date :<u>16-08-2023</u> To Date :<u>11-12-2023</u>

No. of Weeks : <u>15</u>

Week	Class Day	Theory /Practical Topics
1st	1	Introduction to students in class and revising their 10th Science.
	2	Dimension and dimensional formula. Dimension of diff. physical quantities.
	3	Checking the correctness of physical equations.
	4	Units and system of units. Units of diff. quantities.
2nd	1	Scalar and Vector quantity. Types of vector and representation of a vector quantity.
	2	Triangle and parallelogram law of vector addition. Numerical of vector addition.
	3	Resolution of vectors and numerical problems.
	4	Products of vectors. Dot product and cross product.
3rd	1	Dot product and cross product in terms of rectangular components.
	2	Concept of Rest and Motion. Displacement velocity and acceleration.
	3	Gravity, Gravitation, Force and equation of motion under gravity.
	4	Circular Motion and terms related to circular motion.
4th	1	Relation between linear and angular velocity acceleration.
	2	Projectile Motion and example of projectile motion.
	3	Projectile fixed at an angle '0' with horizontal and equation related to it.
	4	Work, definition and formula and numerical related to this.
5th	1	Friction, types of friction.
	2	Sliding, rolling and limiting friction. Laws of limiting friction.
	3	Co-efficient of friction and numerical related to this.
	4	Methods to reduce friction.
6th	1	Gravitation and gravity. Newton's law gravitation.
	2	Universal law of gravitation and definition of 'G' unit and value of 'G'.
	3	Acceleration due to gravity.
	4	Mass and weight. Relation between g & G.

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-	Class Day	Theory /Practical Topics
7th	1	Kepler's law of planetary motion and numerical.
	2	Harmonic Motion and Simple Harmonic Motion.
	3	Expression for displacement, velocity, acceleration of a particle in SHM.
	4	Wave, motion and types of wave motion, relation between longitudinal and transverse.
8th	1	Different wave parameter and relation between them.
	2	Relation between velocity, frequency and wave length.
	3	Ultrasonic, properties and application.
	4	Concept of heat and temperature & difference.
9th	1	Heat and specific heat of a body and Cp & Cr.
	2	Change of state and latent heat of a body.
	3	Thermal expansions & co-efficient of thermal expansion α , β & γ
	4	Relation between α , $\beta \& \gamma$.
10th	1	Work and heat & relation between them. Joule's law.
	2	First law of thermodynamics and Numerical.
	3	Optics, Light, Reflection and Refraction.
	4	Laws of Reflection and Refraction.
11th	1	Refractive index, numerical. Critical angle. Total internal reflection.
	2	Refraction through a Prism.
	3	Concept of Fibre optics, properties and application.
	4	Electrostatics and Electromagnetism.
12th	1	Coulomb's law of electrostatics and unit charge.
	2	Electric potential and potential diff. permittivity concept.
	3	Electric field intensity, Electric capacitance. Resostance.
	4	Grouping of capacitors & magnetic properties of a magnet.

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Week	Class Day	Theory /Practical Topics
13th	1	Magnetic field intensity, magnetic field, magnetic field strength.
	2	Magnetic lines of force and magnetic flux.
	3	Electric current, concept & unit.
	4	Ohm's law & definition of resistance unit.
14th	1	Grouping of resistance, numerical.
	2	Kirchhoff's law of electric current.
	3	Application of Ohm's law & Kirchhoff's law. Numerical.
	4	Application to a balanced Wheatstone Bridge.
15th	1	Electromagnetism concept and definition.
	2	Force on a current carrying conductor placed in a uniform magnetic new
	3	Faraday's law of electromagnetic induction.
	4	Lenz's law & Fleming's Right Hand Rule.
16th	1	Fleming's Left Hand Rule and relation between Left & Right Hand Rule.
	2	LASER concept & definition.
	3	Principle of LASER, population inversion properties of LASER.
	4	Application of LASER & ground waves.

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