DEPARTMENT OF MATHEMATICS AND SCIENCE
ORISSA SCHOOL OF MINING ENGINEERING, KEONJHAR
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LESSON PLAN

Subject: ENGINEERING PHYSICS			
Discipline:ELECTRICAL, DRILLING, MINING		**Name of the Faculty: Lambodar Mahanta**	
CourseCode:	**Th-2(a)**	Semester:	**1st Winter 2021**
TotalPeriods:	**60**	Semester form date:	**25.10.2021**
No Of Days /Week class Allotted:	**4/week**	No. of weeks	**15**

WEEK	CLASS DAY	THEORY TOPICS TO BE COVERED	REMARKS
1st	1st	Physical quantities - (Definition). Definition of fundamental and derived units, systemsof units (FPS, CGS, MKS and SI units)	
	2nd	Definition of dimension and Dimensional formulae ofphysical quantities. Dimensional equations and Principle of homogeneity. Checking the dimensional correctness of Physicalrelations.	
	3rd	**Revision & Doubt clearing class of –chapter-1**	
	4th	Scalar and Vector quantities (definition and concept), Representation of a Vector - examples, types of vectors. Triangle and Parallelogram law of vector Addition (Statement only). Simple Numericals	
Ist	1st	Resolution of Vectors - Simple Numericals onHorizontal and Vertical components. 2.4 Vector multiplication (scalar product and vectorproduct of vectors).	
	2nd	**Revision & Doubt clearing class of –chapter-2**	
	3rd	Concept of Rest and Motion. Displacement, Speed, Velocity, Acceleration & FORCE (Definition, formula, dimension & SI units).	
	4th	Equations of Motion under Gravity (upward anddownward motion) - no derivation. Circular motion: Angular displacement, Angular velocity and Angular acceleration (definition, formula& SI units).	
2nd	1st	Relation between -(i) Linear & Angular velocity, (ii) Linear & Angular acceleration).	

		Define Projectile, Examples of Projectile.	
	2nd	Expression for Equation of Trajectory, Time of Flight,Maximum Height and Horizontal Range for a projectile fired at an angle, Condition formaximum Horizontal Range.	
	3rd	**Revision & Doubt clearing class of –chapter-3** **Class test**	
	4th	Work - Definition, Formula & SI units. Friction – Definition & Concept.	
3rd	1st	Types of friction (static, dynamic), Limiting Friction(Definition with Concept). Laws of Limiting Friction (Only statement, No Experimental Verification).	
	2nd	Coefficient of Friction – Definition & Formula, SimpleNumericals.	
	3rd	Methods to reduce friction.	
	4th	**Revision & Doubt clearing of chapter-4** **Class Test**	
4th	1st	Newton"s Laws of Gravitation - Statement andExplanation. Universal Gravitational Constant (G)- Definition, Unit andDimension.	
	2nd	Acceleration due to gravity (g)- Definition andConcept. Definition of mass and weight.	
	3rd	Relation between g and G. Variation of g with altitude and depth (No derivation –Only Explanation).	
	4th	Kepler"s Laws of Planetary Motion (Statement only).	
1st	1st	**Revision & Doubt clearing of chapter-5** **Class Test**	
	2nd	Internal	
	3rd	Simple Harmonic Motion (SHM) - Definition &Examples. Expression (Formula/Equation) for displacement, velocity,acceleration of a body/ particle in SHM.	
	4th	Wave motion - Definition & Concept. Transverse and Longitudinal wave motion – Definition,Examples & Comparison.	
2nd	1st	Definition of different wave parameters (Amplitude, Wavelength, Frequency, Time Period.	
	2nd	Derivation of Relation between Velocity, Frequency and Wavelength of a wave	
	3rd	Ultrasonics – Definition, Properties & Applications.	
	4th	**Revision & Doubt Clearing of Chapter-6**	
3rd	1st	Heat and Temperature - Definition & Difference Units of Heat (FPS, CGS, MKS & SI).	
	2nd	Specific Heat (concept, definition, unit, dimension andsimple numerical) Change of state (concept), Latent Heat (concept, definition, unit, dimension and simple numerical)	
	3rd	Thermal Expansion - Definition & ConceptExpansion of Solids (Concept) Coefficient of linear, superficial and cubical expansions of	

		Solids – Definition & Units.	
	4th	Relation between α, β & Υ Work and Heat - Concept & Relation.	
4th	1st	Joule"s Mechanical Equivalent of Heat (Definition,Unit) First Law of Thermodynamics (Statement and conceptonly)	
	2nd	**Revision & Doubt Clearing –chapter-7** **Class Test**	
	3rd	Reflection & Refraction - Definition. Laws of reflection and refraction (Statement only)	
1st	1st	Decision Control and Looping Statements (If, If-else,If-else-if, Switch, While, Do-while, For, Break, Continue & Goto)	
	2nd	Refractive index - Definition, Formula &Simplenumerical. Critical Angle and Total internal reflection – Concept,Definition & Explanation	
	3rd	Refraction through Prism (Ray Diagram & Formulaonly – NO derivation).. Fiber Optics - Definition, Properties & Applications.	
2nd	1st	**Revision & Doubt Clearing –chapter-8** **Class Test**	
	2nd	Electrostatics - Definition & Concept. Statement & Explanation of Coulombs laws, Definition ofUnit charge.	
	3rd	Absolute & Relative Permittivity (ε) - Definition, Relation & Unit. Electric potential and Electric Potential difference(Definition, Formula & SI Units).	
	4th	Electric field, Electric field intensity (E) - Definition,Formula & Unit. Capacitance - Definition, Formula & Unit.	
3rd	1st	Series and Parallel combination of Capacitors (Noderivation, Formula for effective/Combined/total capacitance & Simple numericals). Magnet, Properties of a magnet.	
	2nd	Coulomb"s Laws in Magnetism - Statement &Explanation, Unit Pole (Definition). Magnetic field, Magnetic Field intensity (H) -(Definition, Formula & SI Unit).	
	3rd	Magnetic lines of force (Definition and Properties) Magnetic Flux (Φ) & Magnetic Flux Density (B) –Definition, Formula & Unit.	
	4th	**Revision & Doubt Clearing Class-chapter-9** **Class Test**	
4th	1st	Electric Current - Definition, Formula & SI Units. Ohm"s law and its applications.	
	2nd	Series and Parallel combination of resistors (No derivation, Formula for effective/ Combined/ totalresistance & Simple numericals). Kirchhoff"s laws (Statement & Explanation withdiagram).	

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	3rd	Application of Kirchhoff"s laws to Wheatstone bridge - Balanced condition of Wheatstone"s Bridge -Condition of Balance (Equation).	
	4th	**Revision & Doubt Clearing Class-chapter-10** **Class Test**	
5th	1st	Faraday"s Laws of Electromagnetic Induction(Statement only) Lenz"s Law (Statement)	
	2nd	Fleming"s Right Hand Rule Comparison between Fleming"s Right Hand Rule andFleming"s Left Hand Rule.	
	3rd	**Revision & Doubt Clearing Class-chapter-11** **Class Test**	
	4th	LASER & laser beam (Concept and Definition) Principle of LASER (Population Inversion & OpticalPumping)	
	EXTRA CLASS	Properties & Applications of LASER Wireless Transmission - Ground Waves, Sky Waves, Space Waves (Concept & Definition)	
	EXTRA CLASS	**Revision & Doubt Clearing Class-chapter-12** **Class Test**	
	EXTRA CLASS	**Previous year questions discussion**	
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