

ENGINEERING

PHYSICS
2023(4)



TRADE MARK

LIONTM

Teacher's Lesson Note

ENG. PHYSICS (2023-24)

Branch - CIVIL ENG (1st Sem)

B. S. I. T. POLYTECHNIC.

1st Sem

Name - *Pritha Mondal*

TEACHERS

Date	Period	Class	Subject	Topic (Concept)	Sub-Topic (Sub-Concept)	Learning Activities to be taken up	TLM to be used
1	2	3	4	5	6	7	8
	21		Eng. Physics	Units and Measurement	units and Measurement	Need of Measurement and unit. Types of measurement Definition of unit. Requirements of standard unit.	
	22			Systems of units	Systems of units	classification of physical quantity and units. Fundamental Quantities and its units.	
	23					Drawbacks (Limitation) of dimensional analysis.	

LESSON NOTE

Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
9	10	11	12	13	14
What is meant by a unit. ?	Definition of unit. Derived quantities. Derived units.		<i>[Signature]</i> 4/10/23	<i>[Signature]</i> 04/10/23	
Write down the fundamental quantities and its unit.	Fundamental units Systems of units (1) C.G.S. (2) F.P.S. (3) M.K.S. system (4) S.I system.		<i>[Signature]</i> 5/10/23	<i>[Signature]</i> 5/10/23	
	limitations of Dimensional Analysis.		<i>[Signature]</i> 6/10/23	<i>[Signature]</i> 6/10/23	

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	04		Physics	Unit & Measurement	Dimensions	Dimensions	
					Dimensional formula	Dimensional formula.	
	05		"	"	Dimensional Equation	Dimensional Equation uses of dimensional analysis.	
	06		"	"		checking the dimensional correctness of physical relation.	

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9	10	11	12	13	14
What is the definition of Dimension?	Definition of Dimensions with examples. Definition of Dimensional formula with example. Volume = length $\times$ breadth $\times$ depth.		<i>[Signature]</i> 07/10/23	<i>[Signature]</i> 07/10/23	
What is the definition of Dimensional Equation?	Definition of Dimensional Equation with examples.		<i>[Signature]</i> 07/11/23	<i>[Signature]</i> 07/11/23	
	To check the correctness of given relation. $S = ut + \frac{1}{2}at^2$		<i>[Signature]</i> 07/11/23	<i>[Signature]</i> 07/11/23	

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1	2	3	4	5	6	7	8
	01		Physics	Scalar and vector Quantities	Scalar and vector Quantities	Scalar quantities Vector quantities Representation of a vector Some Terms Connected with vectors	
	02			Scalar and vector Quantities	Scalar and vector Quantities	Scalar multiplication of vectors Addition of vectors or Composition of vectors Triangle's law of vector	
	03			Scalar and vector Quantities	Scalar and vector Quantities	Parallelogram's law of vector Resolution of vectors in a plane	

LESSON NOTE

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9	10	11	12	13	14
1) What is the scalar and vector quantities	Details explanation of scalar & vector quantities. Representation of a vector. Types of vector		<i>[Signature]</i> 21/11/23	<i>[Signature]</i> 07/11/23	
	Triangle law of vector addition Addition of vector. - vector multiplication.		<i>[Signature]</i> 21/11/23	<i>[Signature]</i> 07/11/23	
Formula of Resultant vector. is $R = \sqrt{A^2 + B^2 + 2AB \cos \theta}$ $\theta = \tan^{-1} \left(\frac{B \sin \theta}{A + B \cos \theta} \right)$	Details explanation of parallelogram's law of vector. $R = \sqrt{A^2 + B^2 + 2AB \cos \theta}$ Details explanation of Resolution of vector in a plane. $\vec{R} = R \cos \theta + R \sin \theta$		<i>[Signature]</i> 21/11/23	<i>[Signature]</i> 10/11/23	

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	09			Scalar and Vector Quantities	Product of two vectors	Dot Product of Scalar Quantities and Cross Product - Vector Product	

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(1) Find the dot product between $\vec{A} = 3\hat{i} + 2\hat{j} + 5\hat{k}$ and $\vec{B} = \hat{i} + 3\hat{j} + 7\hat{k}$ (2) Find the cross product between $\vec{A} = 2\hat{i} + 5\hat{j} + 6\hat{k}$ and $\vec{B} = 3\hat{i} - 6\hat{j} + \hat{k}$	Details explanation of Dot Product of Scalar Quantities. Details explanation of cross product of vector quantities.		hadi 15/11/23	Osaka 15/11/23	

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Date	Period	Class	Subject	Topic (Concept)	Sub-Topic (Sub-Concept)	Learning Activities to be taken up	TLM to be used
1	2	3	4	5	6	7	8
	01			Curvilinear motion and Kinematics	Curvilinear motion	Introduction about Curvilinear motion Particle Rest and motion Displacement speed velocity	
	02				accelerated motion	Uniform acceleration Non-uniform acceleration and Problem Practices	
	03				motion under gravity	Equations of motion under gravity and Problem Practices	

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What is the rest & motion?	Definition of rest motion & Displacement, speed, velocity, acceleration & Force etc.		<i>[Signature]</i> 20/11/23	<i>[Signature]</i> 20/11/23	
A body starts from rest and acquires a velocity of 12ms ⁻¹ in 5 seconds calculate the acceleration and the distance travelled?	Definition of uniform acceleration Non-uniform acceleration and Problem Practices.		<i>[Signature]</i> 22/11/23	<i>[Signature]</i> 22/11/23	
Write down the Equation of $\uparrow$ following (1) velocity time relation (2) Displacement time relation (3) velocity displacement relation (4) Displacement with speed.	Details explanation of equation of motion under gravity (downward motion) and also upward motion explain.		<i>[Signature]</i> 20/11/23	<i>[Signature]</i> 20/11/23	

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	09				Projectile fired vertically upwards - motion under gravity	Projectile fired horizontally and Problem Practices	
	05				Projectile fired at an angle θ with the horizontal	Projectile fired at angle θ with the vertical	

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A body is thrown vertically upwards with velocity of 19.6 ms^{-1}. Calculate (i) Time of ascent (ii) Time of descent (iii) Speed on reaching the ground	Detailed explanation of vertically upward motion under gravity Equation of projectile motion $s = ut + \frac{1}{2}at^2$ $y = x \tan \theta - \frac{gx^2}{2u^2 \cos^2 \theta}$		21/12/23 21/12/23	21/12/23 21/12/23	
A ball thrown up by a player is caught by him 4s after the throw. (i) What was the speed when the ball was thrown? (ii) How high did it go? (iii) Where was the ball after (a) 2.5s (b) 3s after the start?	Maximum height (H) $v^2 - u^2 = 2as$ $H = \frac{u^2 \sin^2 \theta}{2g}$ Time of ascent (t) $v = u + at$ $t = \frac{u \sin \theta}{g}$ Total time of flight (T) $T = \frac{u \sin \theta}{g} + \frac{u \sin \theta}{g}$ $\Rightarrow T = \frac{2u \sin \theta}{g}$ Horizontal Range (R) $R = \frac{u^2 \sin 2\theta}{g}$				

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	01			Friction	Friction	Type of Friction	
	02				Friction	Laws of limiting friction Angle of Friction Angle of repose	
	03				Friction	Methods of Reducing Friction and Problem Practices	

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What is friction?	dette explanation of types of friction		<i>[Signature]</i> 5/12/23	<i>[Signature]</i> 5/12/23	
	dette explanation of laws of limiting friction.		<i>[Signature]</i> 5/12/23	<i>[Signature]</i> 5/12/23	
	dette explanation of methods of Reducing Friction		<i>[Signature]</i> 5/12/23	<i>[Signature]</i> 5/12/23	

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27/12/23	01			Optics	Refraction	Introduction about refraction	
11/12/23	02				Refraction	Laws of Refraction Refractive Index and Problem Practices	
13/12/23	03				Refraction	Critical angle and Total internal reflection. Condition for total internal reflection. Relation b/w critical angle and refractive index.	

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	Introduction learning about		<i>[Signature]</i> 27/12/23	<i>[Signature]</i> 27/12/23	
A ray of light travelling in water is incident at an angle of 30° on a water glass interface. Calculate the angle of refraction in glass, if refractive index of water is $\frac{3}{2}$.	Detail explanation of Critical angle and total internal reflection.		<i>[Signature]</i> 11/12/23	<i>[Signature]</i> 11/12/23	
	Detail explanation of Condition for total internal reflection.		<i>[Signature]</i> 13/12/23	<i>[Signature]</i> 13/12/23	