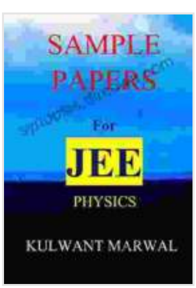
Unlock Exam Success with Sample Papers Physics for JEE: Your Ultimate Guide to Master the Subject

The Joint Entrance Examination (JEE) is undeniably one of the most competitive engineering entrance exams in the world, and Physics is a pivotal subject that demands a thorough understanding and rigorous practice. To excel in this challenging exam, students need access to high-quality study materials that provide comprehensive preparation and simulate the actual exam environment. Introducing "Sample Papers Physics for JEE," a comprehensive guide that empowers aspirants with the knowledge, skills, and confidence to ace the Physics portion of the JEE exam.

What Sets "Sample Papers Physics for JEE" Apart?

This exceptional book stands out as an indispensable resource for JEE aspirants due to its:



SAMPLE PAPERS PHYSICS: for JEE by KULWANT MARWAL

4.6 out of 5

Language	: English
File size	: 1582 KB
Text-to-Speech	: Enabled
Screen Reader	: Supported
Enhanced typesetting	: Enabled
Print length	: 112 pages
Lending	: Enabled

- **Precise and Comprehensive Coverage:** Each chapter meticulously covers all the vital concepts and topics tested in the JEE Physics syllabus, ensuring complete understanding and mastery of the subject.
- **Extensive and Exhaustive Practice:** The book presents an abundance of practice problems, including numericals, MCQs, and subjective questions, designed to test students' grasp of different concepts thoroughly.
- **Difficulty Level Matching Actual JEE:** The questions in this book are calibrated to match the difficulty level and format of the actual JEE exam, providing students with a realistic simulation of the exam experience.
- **Detailed Solutions and Explanations:** Every question is accompanied by detailed solutions and explanations, clarifying the concepts involved and enhancing students' problem-solving abilities.
- **Time-Bound Practice:** The book includes ample practice sets within a time frame, enabling students to develop time management skills crucial for success in the exam.

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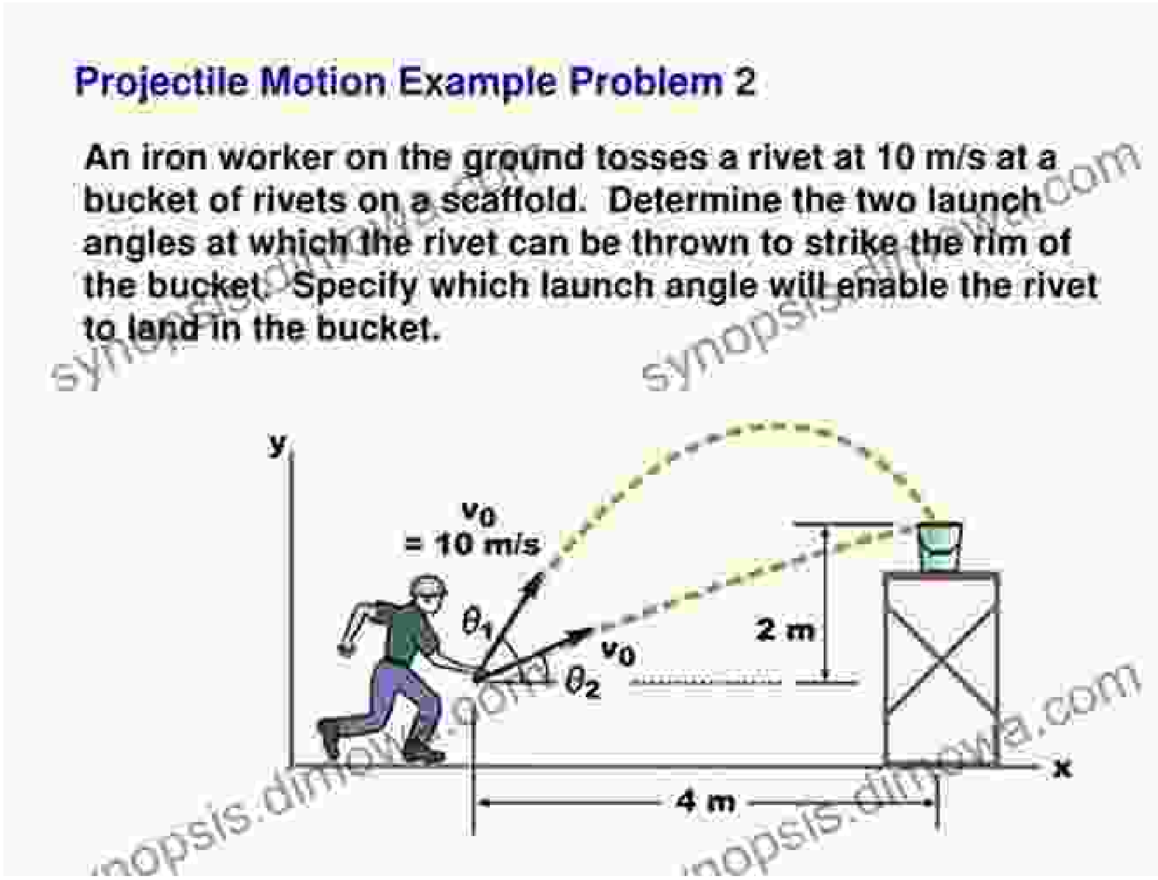
"Sample Papers Physics for JEE" encompasses all the essential chapters and topics covered in the JEE Physics syllabus. Each chapter is meticulously structured to provide a comprehensive overview of the concepts followed by practice problems and solutions.

10	In a Young's double slit experiment, the path difference at a certain point on the screen between two interfering waves is $\frac{1}{8}$th of the wavelength. The ratio of intensity at this point to that at the centre of a bright fringe is close to (i) 0.80 (ii) 0.74 (iii) 0.94 (iv) 0.85	1
11	The work function for a metal surface is 4.14 eV. The threshold wavelength for this metal surface is: (i) 4125 A (ii) 2062.5 A (iii) 3000 A (iv) 6000 A	1
12	The radius of the innermost electron orbit of a hydrogen atom is 5.3×10^{-11} m. The radius of the n =3 orbit is (i) $1.01\times10^{-[illegible]}$m (ii) 1.59×10^{-10}m (iii) $2.12 \times 10^{-[illegible]}$m (iv) 4.77×10^{-10}m	1
13	Which of the following statements about nuclear forces is not true? (i) The nuclear force between two nucleons falls rapidly to zero as their distance is more than a few femtometres. (ii) The nuclear force is much weaker than the Coulomb force. (iii) The force is attractive for distances larger than 0.8 fm and repulsive if they are separated by distances less than 0.8 fm. (iv) The nuclear force between neutron-neutron, proton-neutron and proton-proton is approximately the same.	1
14	If the reading of the voltmeter V_1 is 40 V, then the reading of voltmeter V_2 is	

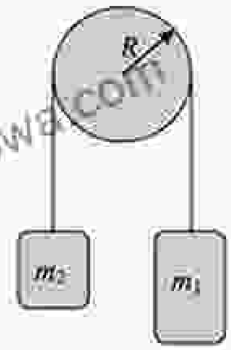
▪

2. **Chapter 2: Kinematics**

- 

3. **Chapter 3: Laws of Motion**

Question:



Two masses are hung are connected by a light cord and hung from a frictionless pulley of negligible mass as shown. Mass m_1 = 3.00kg, and mass m_2 = 2.00kg. When the two masses are released from rest, the resulting acceleration of the two masses is approximately:

a. 1 m/s^2
b. 2 m/s^2
c. 4 m/s^2
d. 6 m/s^2
e. 8 m/s^2

Answer:

The correct answer is *b*. This is a Newton's Second Law problem, using $F_{net} = ma$, where F_{net} = the net force acting on the pulley, and m refers to the total mass of the system.

$$F_{net} = ma$$

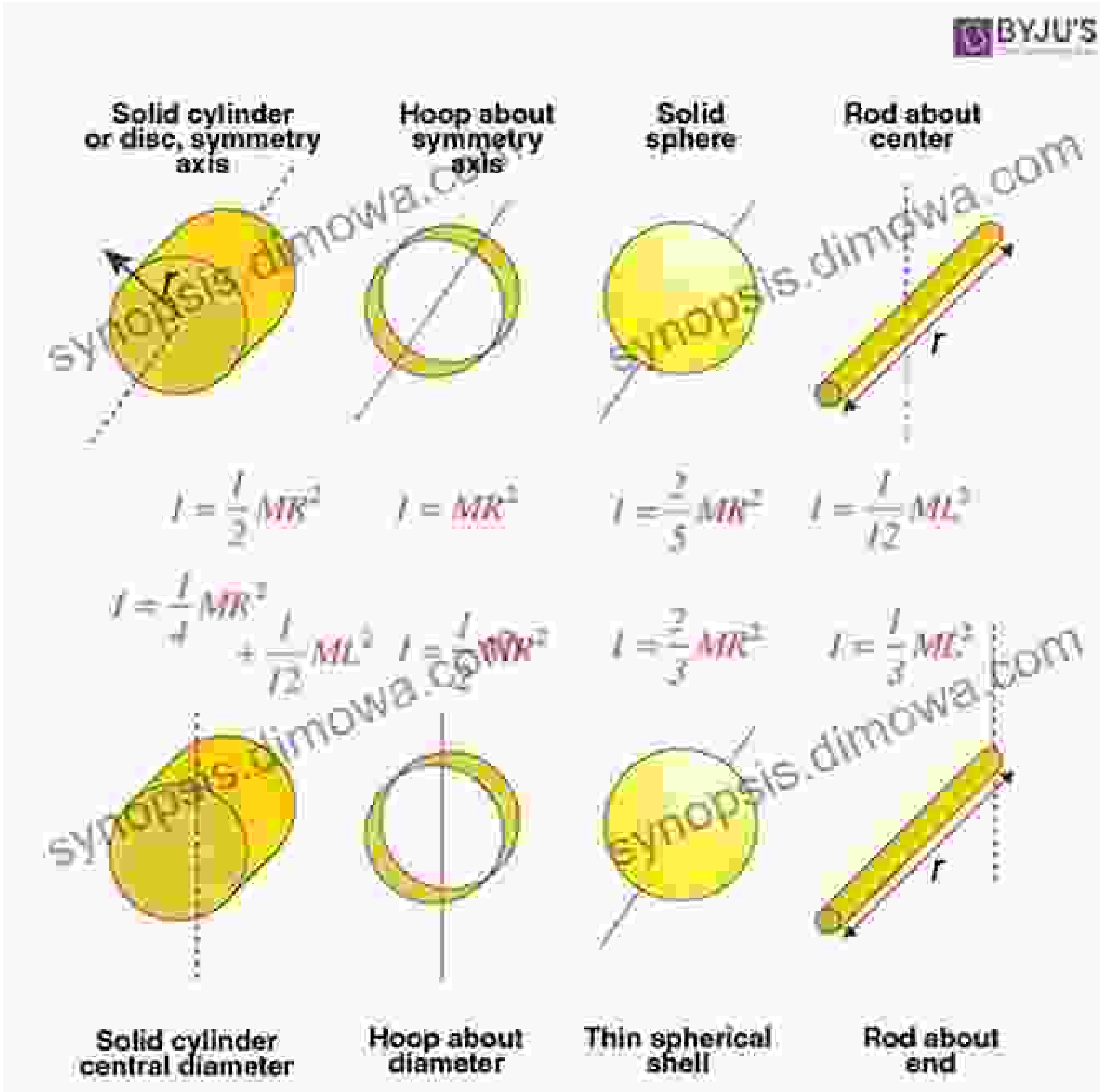
$$a = \frac{F_{net}}{m}$$

$$a = \frac{F_1 - F_2}{m}$$

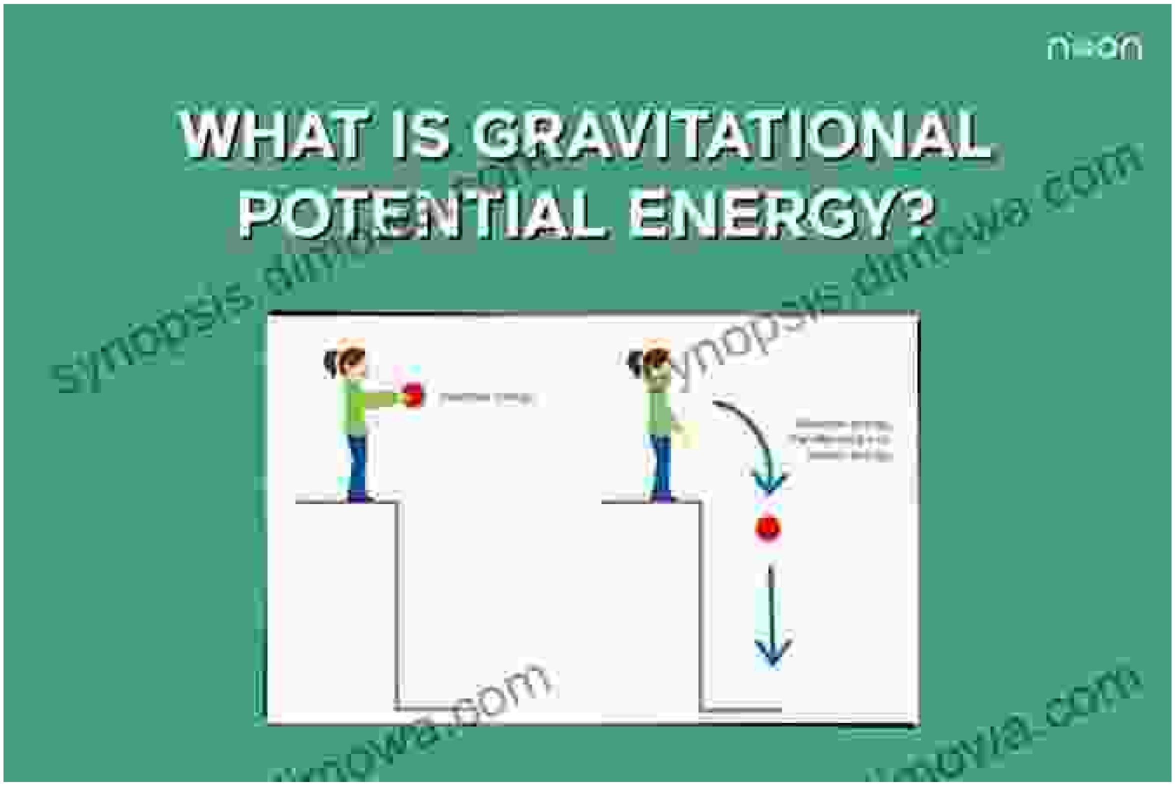
$$a = \frac{3kg(g) - 2kg(g)}{(2kg + 3kg)}$$

$$a = \frac{1}{5}g \approx 2m/s^2$$

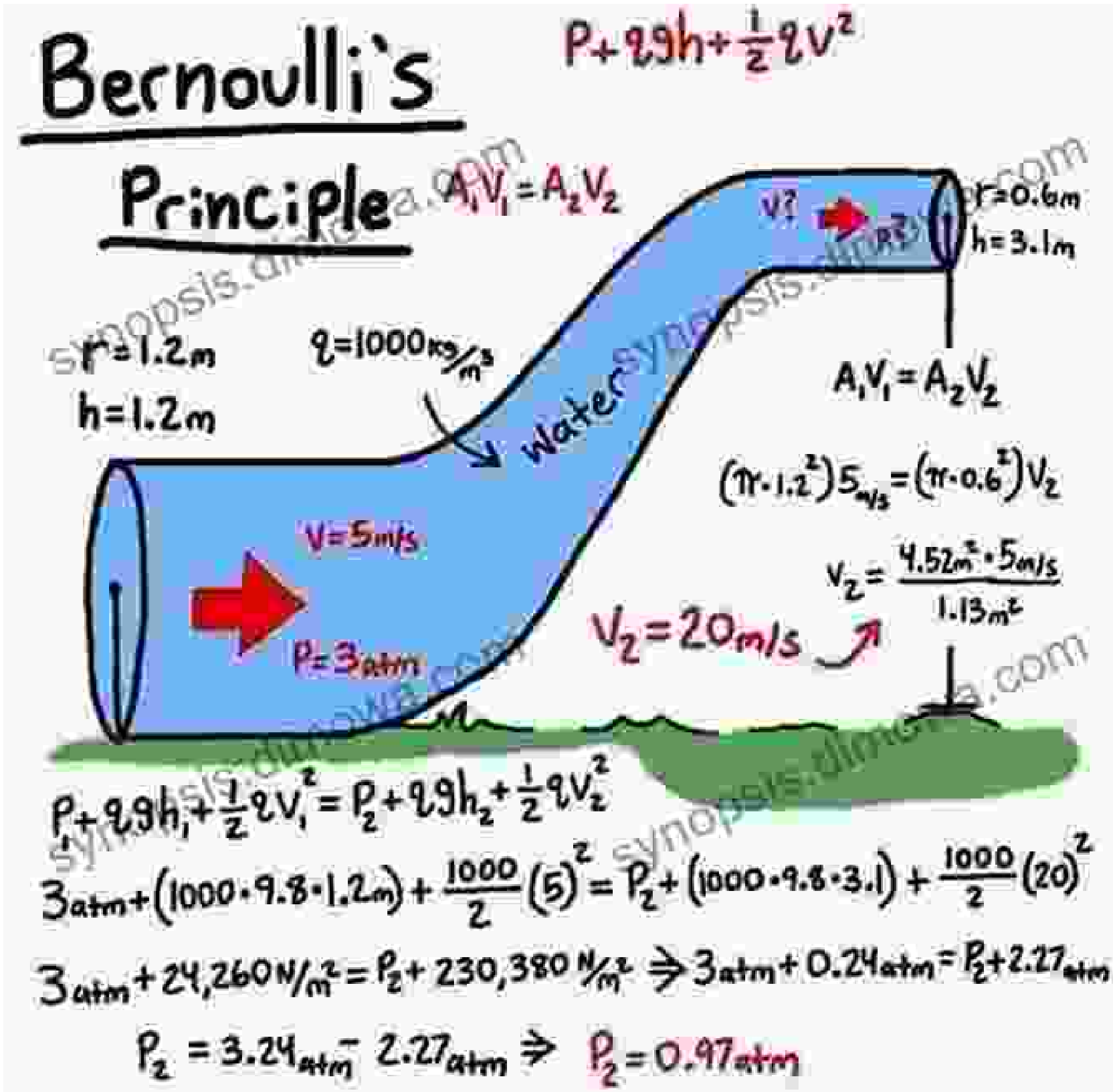
4. **Chapter 4: Rotational Motion**

- 

5. **Chapter 5: Gravitation**

- 

6. **Chapter 6: Fluid Mechanics**

- 

7. **Chapter 7: Simple Harmonic Motion**

SIMPLE HARMONIC MOTION

1. Periodic motion:
The motion of a particle which repeats itself along the same path in equal intervals of time is called periodic motion.
Ex: a. Rotation of earth around the sun.
b. Oscillations of simple pendulum.
c. Vibrations of prongs of a tuning fork.
d. Motion of hands in a watch.

2. Displacement of a particle in periodic motion can be mathematically expressed in terms of sine (or) cosine function so that periodic motion is also called harmonic motion.

3. Simple harmonic motion:
The to and fro motion of a particle along the straight line such that its acceleration is always directed towards a fixed point in its path and is directly proportional to its displacement from that fixed point, is called simple harmonic motion.

$$a \propto -y \Rightarrow a = -\omega^2 y \Rightarrow \frac{d^2 y}{dt^2} + \omega^2 y = 0$$

Simple harmonic motion is of two types:
i) Linear simple harmonic motion:
If the motion is along the straight line path it is called linear simple harmonic motion.
Ex: a. Vibrations of string
b. Oscillations of liquid in U, tube
c. Oscillations of loaded spring
d. Vibrations of the prongs of a tuning fork.
ii) Angular simple harmonic motion
If vibrations are angular then it is called angular simple harmonic motion.
Ex: a. Oscillations of a torsional pendulum
b. Oscillations of balance wheel in watches.

4. Characteristics of simple harmonic motions:
a. The motion is periodic.
b. It executes to and fro motion.
c. Acceleration is directed towards the mean position.
d. The acceleration is always directly proportional to its displacement and which is opposite in direction to the displacement $a \alpha - y$

5. Simple harmonic motion is a periodic motion but every periodic motion is need not be a simple harmonic motion.

6. Displacement:
The maximum distance of the particle from the equilibrium position at any instant is called displacement.

7. Amplitude:
The maximum displacement of the vibrating particle from mean position is called amplitude represented by 'A' (or) a.

8. Time period:
The time taken for one oscillation is called time period.
$T = \frac{2\pi}{\omega}$

9. Frequency:
The number of oscillations completed by a particle in one second is called frequency.
Frequency $f = \frac{1}{T}$ cycles/s.

10. Phase:
It represents the position and direction of vibrating particle at a particular instant.
at the instant of time t = 0 the phase of the particle is called initial phase i.e. 'ϕ' it is also called 'epoch'.

11. Displacement, velocity and acceleration of a particle executing simple harmonic motion.
a. Displacement of a particle executing simple harmonic motion is given by

$y = A \sin(\omega t \pm \phi)$
where $\phi \rightarrow$ is initial phase
$\omega \rightarrow$ angular frequency
$A \rightarrow$ amplitude

b. Velocity of the particle executing simple harmonic motion is given by

$V = \omega\sqrt{A^2 - y^2}$

Case (i) When particle at mean position
$y = 0$

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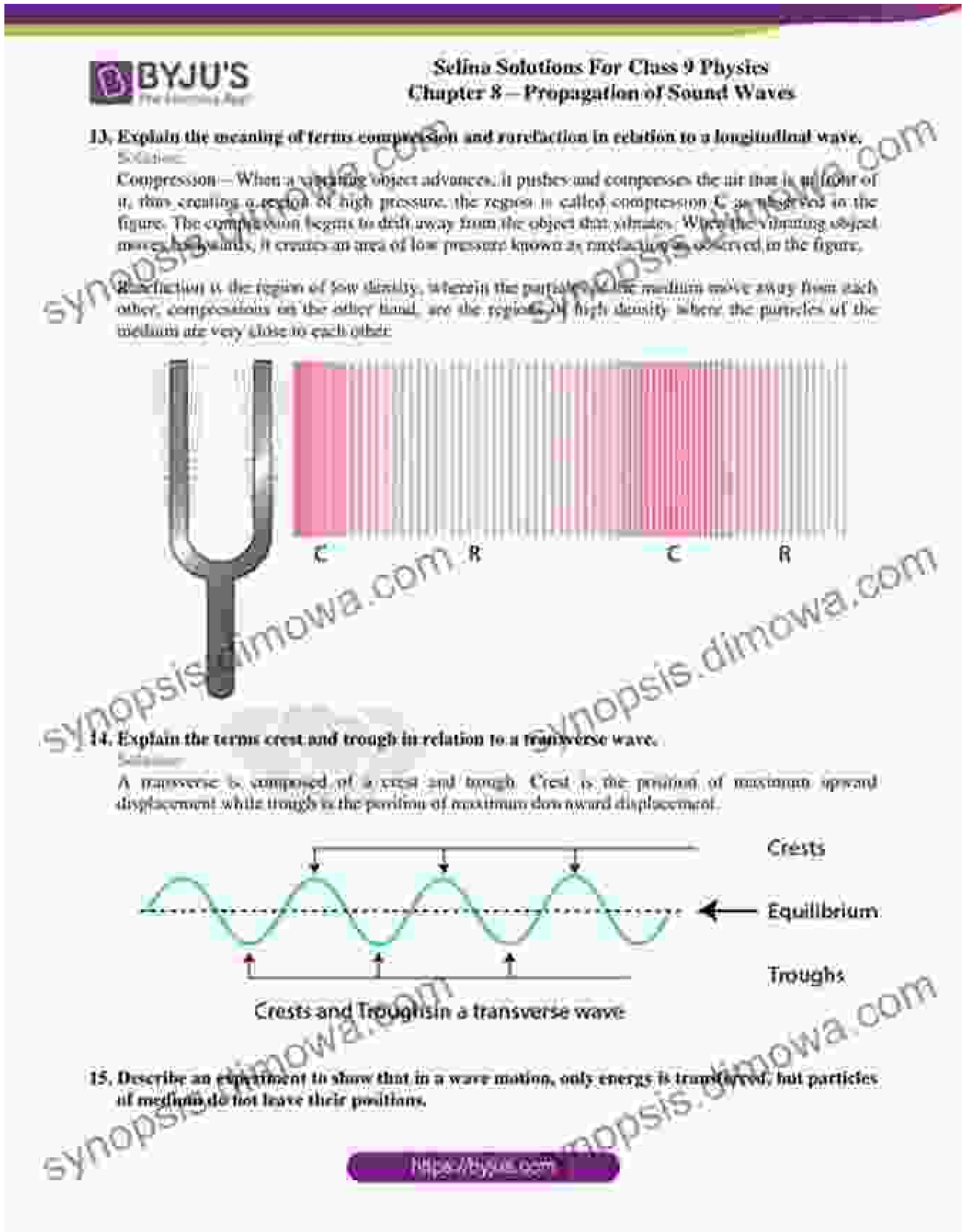
8. **Chapter 8: Waves**



Selina Solutions For Class 9 Physics
Chapter 8 – Propagation of Sound Waves

13. Explain the meaning of terms compression and rarefaction in relation to a longitudinal wave.

Solution:

Compression – When a vibrating object advances, it pushes and compresses the air that is in front of it, thus creating a region of high pressure, the region is called compression C as observed in the figure. The compression begins to drift away from the object that vibrates. When the vibrating object moves backwards, it creates an area of low pressure known as rarefaction as observed in the figure.

Rarefaction is the region of low density, wherein the particles of the medium move away from each other, compressions on the other hand, are the regions of high density where the particles of the medium are very close to each other.

14. Explain the terms crest and trough in relation to a transverse wave.

Solution:

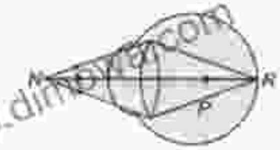
A transverse is composed of a crest and trough. Crest is the position of maximum upward displacement while trough is the position of maximum downward displacement.

Crests and Troughsin a transverse wave

15. Describe an experiment to show that in a wave motion, only energy is transferred, but particles of medium do not leave their positions.

9. **Chapter 9: Ray Optics**

(a)



Normal eye

(b)

Hypermetropic eye

(c)

Corrected eye

(iii) **Astigmatism** In this defect, a person cannot focus on horizontal and vertical lines at the same distance at the same time.

This defect can be removed by using suitable cylindrical lenses.

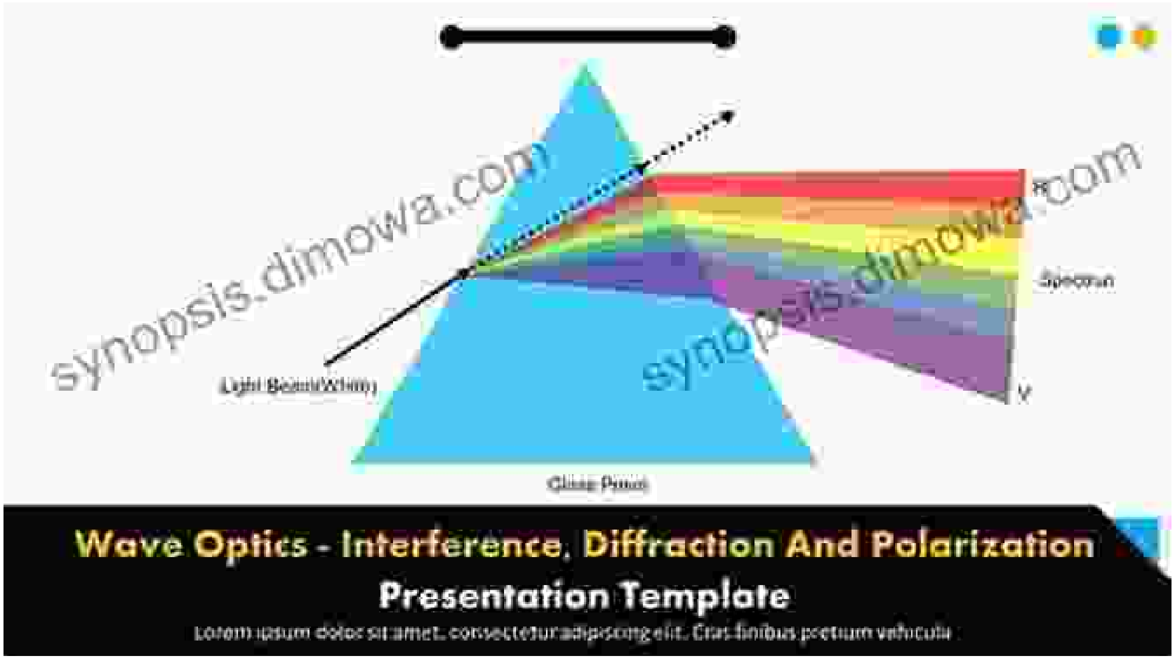
(iv) **Colour Blindness** In this defect, distinguish between few colours, a person is unable to The reason of this defect is the absence few colours, of cone cells sensitive for

This defect cannot be removed.

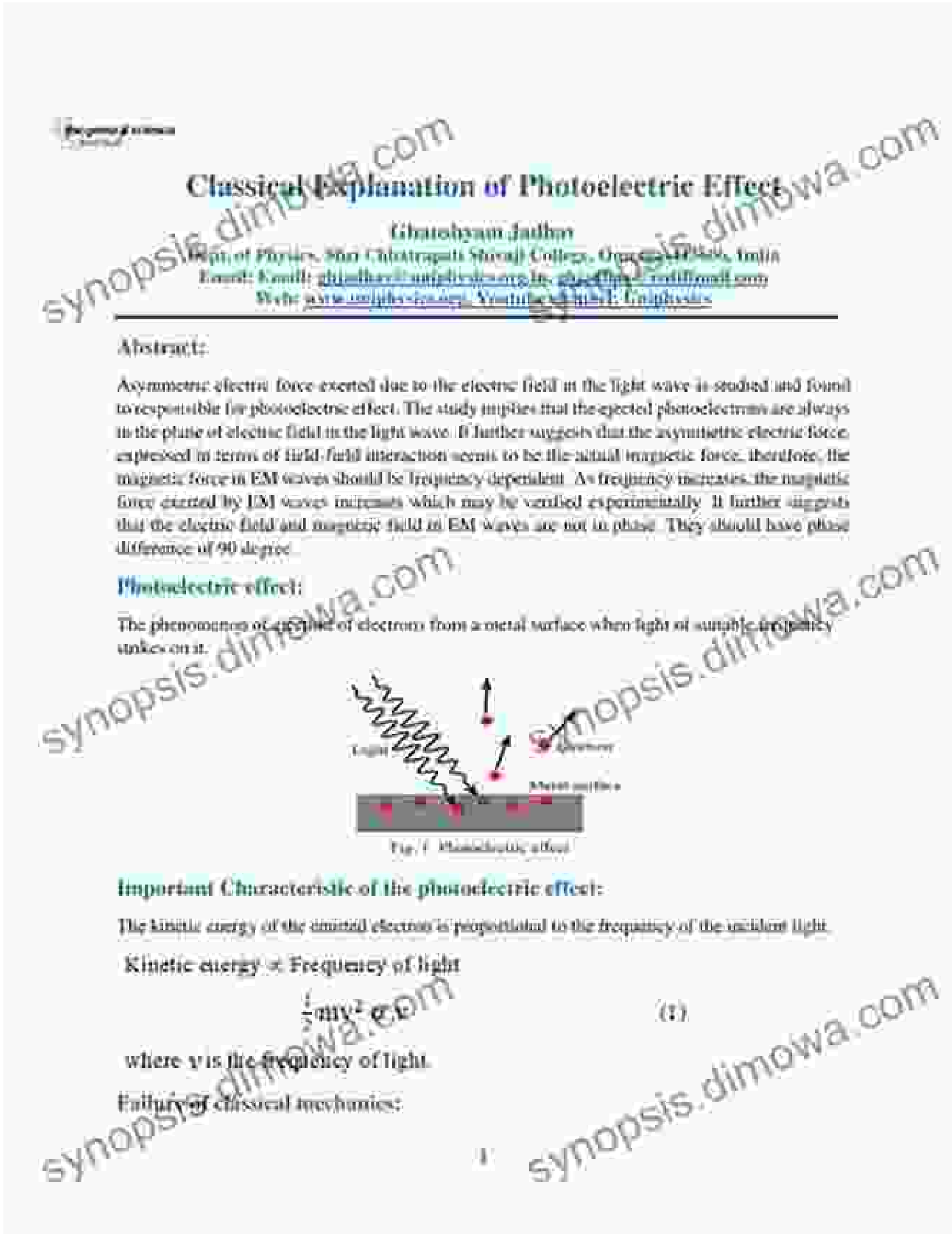
(v) Cataract In this defect, an opaque white membrane is developed on cornea due to which person lost power of vision partially on completely.

This defect can be removed by removing this membrane through surgery.

10. **Chapter 10: Wave Optics**

- 

11. **Chapter 11: Modern Physics**



Classical Explanation of Photoelectric Effect

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Abstract:

Asymmetric electric force exerted due to the electric field in the light wave is studied and found to responsible for photoelectric effect. The study implies that the ejected photoelectrons are always in the plane of electric field in the light wave. It further suggests that the asymmetric electric force, expressed in terms of field-field interaction seems to be the actual magnetic force, therefore, the magnetic force in EM waves should be frequency dependent. As frequency increases, the magnetic force exerted by EM waves increases which may be verified experimentally. It further suggests that the electric field and magnetic field in EM waves are not in phase. They should have phase difference of 90 degree.

Photoelectric effect:

The phenomenon of emission of electrons from a metal surface when light of suitable frequency strikes on it.

Fig. 1 Photoelectric effect

Important Characteristic of the photoelectric effect:

The kinetic energy of the emitted electron is proportional to the frequency of the incident light.

Kinetic energy ∝ Frequency of light

$$\frac{1}{2}mv^2 \propto \nu \qquad (1)$$

where ν is the frequency of light.

Failure of classical mechanics:

1

Benefits of Using "Sample Papers Physics for JEE"

By incorporating "Sample Papers Physics for JEE" into their preparation, students can reap numerous benefits that enhance their chances of success:

- **Enhanced Conceptual Understanding:** The book's comprehensive coverage of concepts ensures a deeper grasp of the subject, fostering a strong conceptual foundation.

- **Improved Problem-Solving Skills:** The abundance of practice problems and solved examples sharpen students' problem-solving abilities, equipping them to tackle even the most challenging questions.
- **Increased Confidence and Exam Readiness:** Practicing with sample papers that mimic the actual JEE exam builds confidence and reduces exam anxiety, preparing students for the rigors of the exam day.
- **Time Management Proficiency:** Time-bound practice sets help students develop time management skills, enabling them to allocate time efficiently during the exam.
- **Identification of Strengths and Weaknesses:** By analyzing their performance in the practice tests, students can identify areas that need improvement, allowing them to focus their studies effectively.

Testimonials

"Sample Papers Physics for JEE" has received glowing testimonials from students who have used it for their JEE preparation:

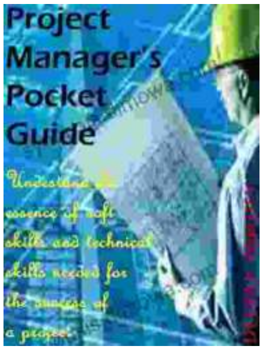
"This book was a game-changer for me. The practice problems and solutions were incredibly helpful in solidifying my understanding of the concepts. I highly recommend it to anyone preparing for JEE Physics." - **Aakash Sharma, JEE 2023 Rank Holder**

"I found the time-bound practice sets particularly valuable. They helped me immensely in improving my speed and accuracy, which proved crucial in the actual exam." - **Prerna Singh, JEE 2022 Rank Holder**

"Sample Papers Physics for JEE" is an indispensable tool for JEE aspirants who aspire to excel in the Physics portion of the exam. Its comprehensive coverage, high-quality practice problems, and detailed solutions provide a solid foundation, boost problem-solving abilities, and instill confidence in students. By incorporating this invaluable resource into their preparation, students can significantly enhance their chances of success and secure a top rank in the JEE Physics exam.

Call to Action

If you are determined to master Physics for the JEE exam, Free Download your copy of "Sample Papers Physics for JEE" today and embark on your journey to exam success!



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