St. Joseph College of Teacher Education for Women

Ernakulam

CRITERION II

2.4.5 Adequate skills are developed in students for effective use of ICT for teaching learning process

(Identifying and selecting/developing online learning resources)

Submitted to

National Assessment and Accreditation Council (NAAC)

3rd Cycle of Assessment

ST.JOSEPH COLLEGE OF TEACHER EDUCATION FOR WOMEN ERNAKULAM
KOCHI-682035, KERALA

2.4.5

Identifying and Selecting/ Developing Online Learning Resources

Report: Training on Simulated Experiments with PhET Interactive Simulations

Name of the Event	Training on Simulated Experiments with PhET Interactive Simulations
Objectives	1. Introduce the Concept 2. Highlight the Benefits 3. Demonstrate Tools 4. Explain Key Elements 5. Promote Collaboration 6. Encourage Creativity
Resource Person	Mrs. Reshmi R.K,Science Educator St.Joseph TTI Ernakulam
Date	Date: May 4, 2023
Time	4.00-4.30 pm
Venue	Multi Purpose Hall

Key Concepts Covered:

Throughout the workshop, participants were introduced to several key concepts related to simulated experiments and the use of PhET Interactive Simulations:

1. Simulated Experiments: The workshop emphasized the significance of simulated experiments as a valuable tool in education. Simulated experiments provide a virtual platform for students to conduct experiments, make observations, and analyze results.
2. PhET Interactive Simulations: Students were introduced to PhET Interactive Simulations, a resource that offers a wide range of free, research-based science and math simulations. PhET simulations are designed to make complex concepts accessible and engaging.
3. 3. Exploration and Creation: Participants learned how to explore existing simulations using the "EXPLORE OUR SIMS" option on the PhET platform. Additionally, they were

4. introduced to the concept of creating their own simulations for customized learning experiences.

Highlights of the Workshop:

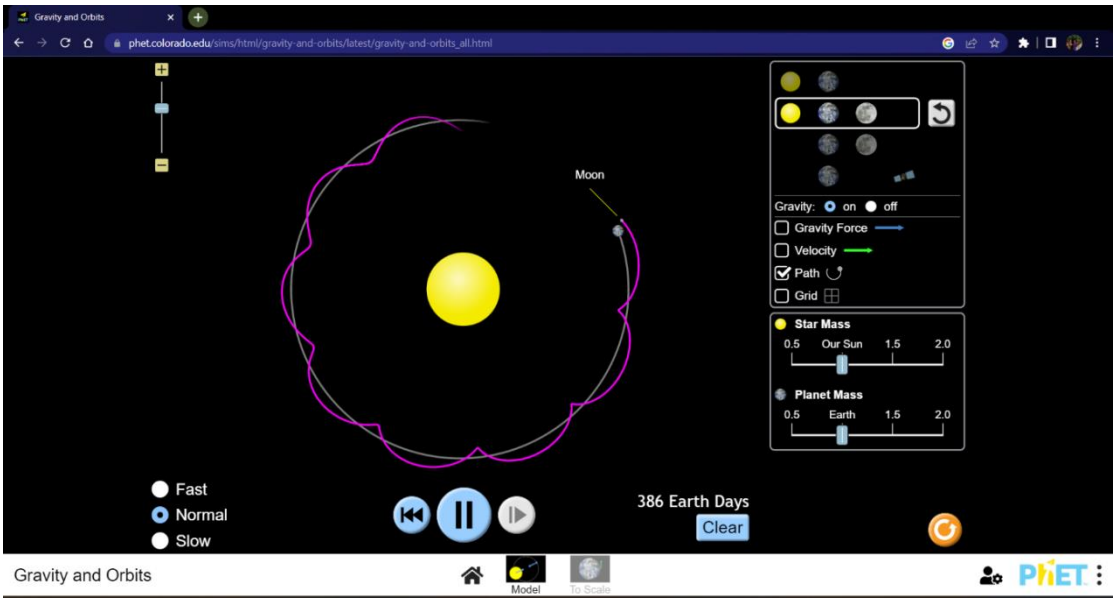
1. Hands-on Experience: The workshop provided students with a hands-on experience of using PhET Interactive Simulations. They had the opportunity to explore various simulations and engage in simulated experiments.
2. Guided Learning: Mrs. Reshmi R.K guided participants in using the simulations effectively, helping them understand scientific concepts through practical application.
3. Critical Thinking:Simulated experiments were shown to be a space for critical and evaluative thinking. Students were encouraged to analyze their observations and draw conclusions based on their simulated experiments.

Conclusion:

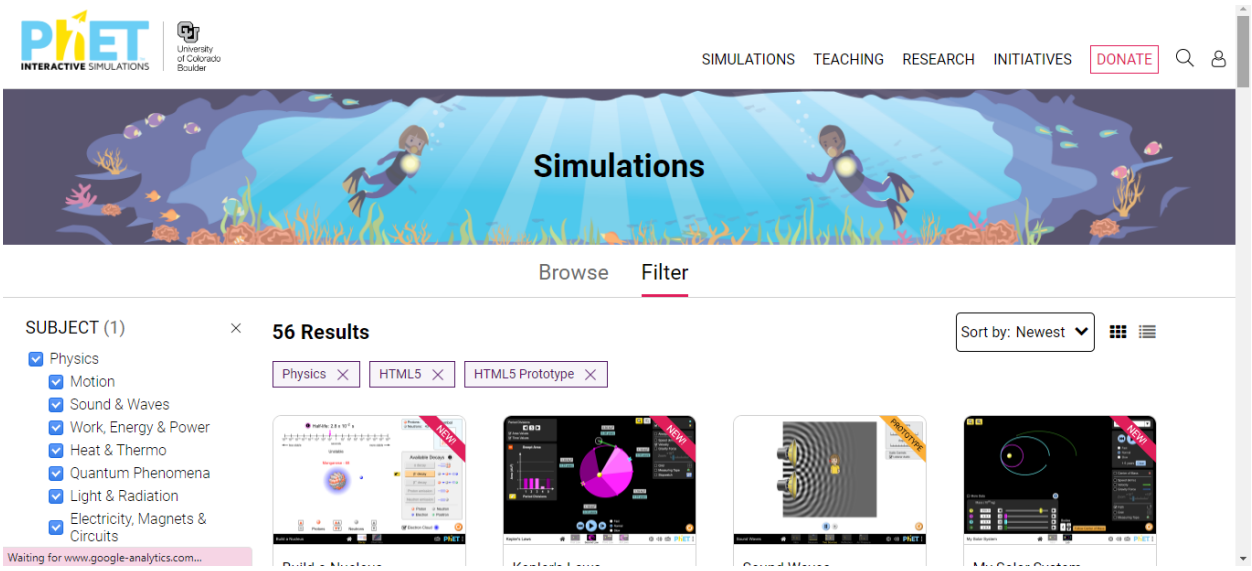
The workshop on simulated experiments conducted by Mrs. Reshmi R.K on May 4, 2023, was an enlightening and educational experience. Participants gained valuable insights into the world of simulated experiments and discovered the educational potential of PhET Interactive Simulations. These simulations provide an engaging platform for critical thinking and hands-on learning.

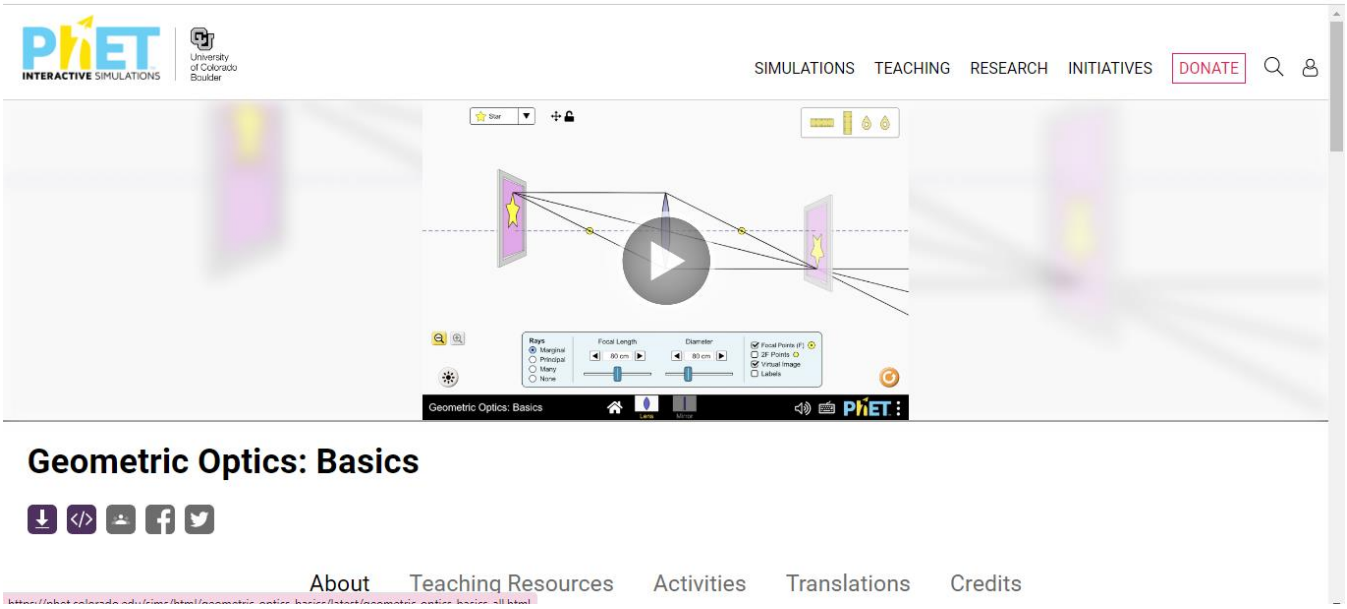
Acknowledgment:

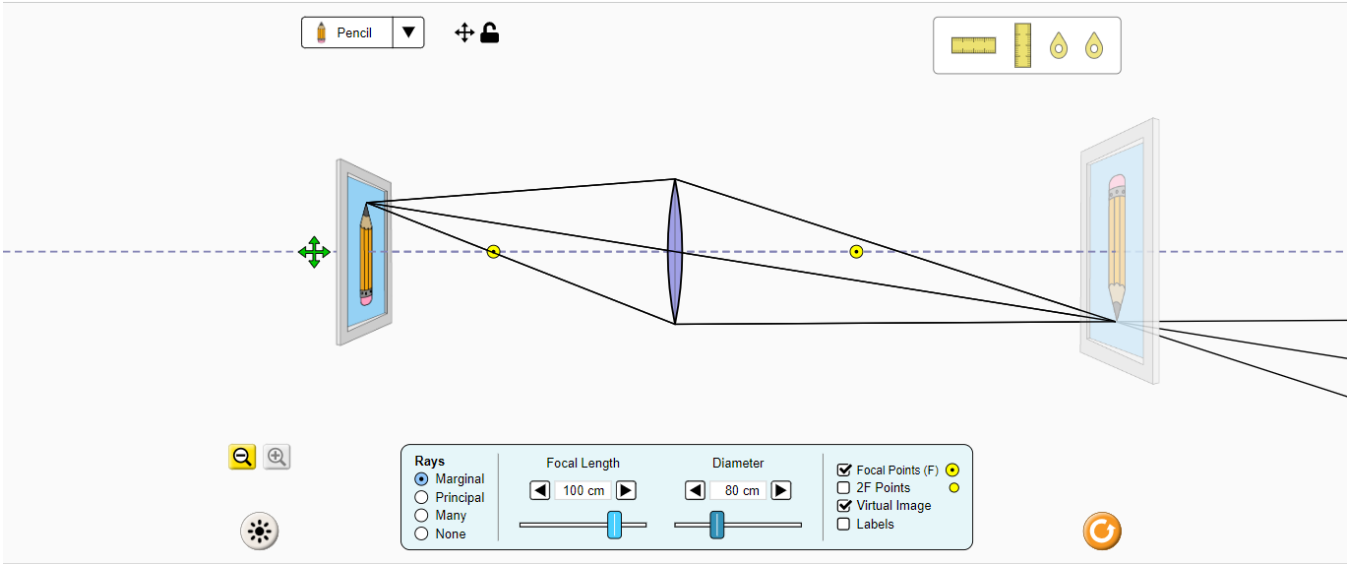
We extend our appreciation to Mrs. Reshmi R.K for her expertise and dedication in conducting this workshop. Her efforts in promoting innovative teaching and learning techniques are commendable.



Simulated Experiments







Report: Training on Simulated Classroom Environment Session(Graphics)

Name of the Event	Training on Simulated Classroom Environment Session-Graphics
Objectives	1. Immerse in Teaching Practice 2. Enhance Pedagogical Skills 3. Practice Classroom Management 4. Adapt to Diverse Learners 5. Receive Constructive Feedback 6. Address Inclusivity
Resource Person	Mrs. Reshmi R.K,Science Educator St.Joseph TTI Ernakulam
Date	November 15, 2022
Time	4.00-4.30 pm
Venue	Multi Purpose Hall

Key Concepts:

During the session, several key concepts were addressed:

1. Simulated Classroom Environment: The concept of a simulated classroom environment was introduced as a space where students can engage in experiential learning, critical thinking, and diverse educational experiences.
2. Benefits of Simulated Learning: Participants learned about the benefits of simulated learning, including its capacity to promote active learning, problem-solving, and skill development.
3. Methods for Creating Simulated Classrooms: Mrs. Reshmi R.K discussed various methods for creating simulated classroom environments, such as virtual reality, gamification, and interactive simulations.

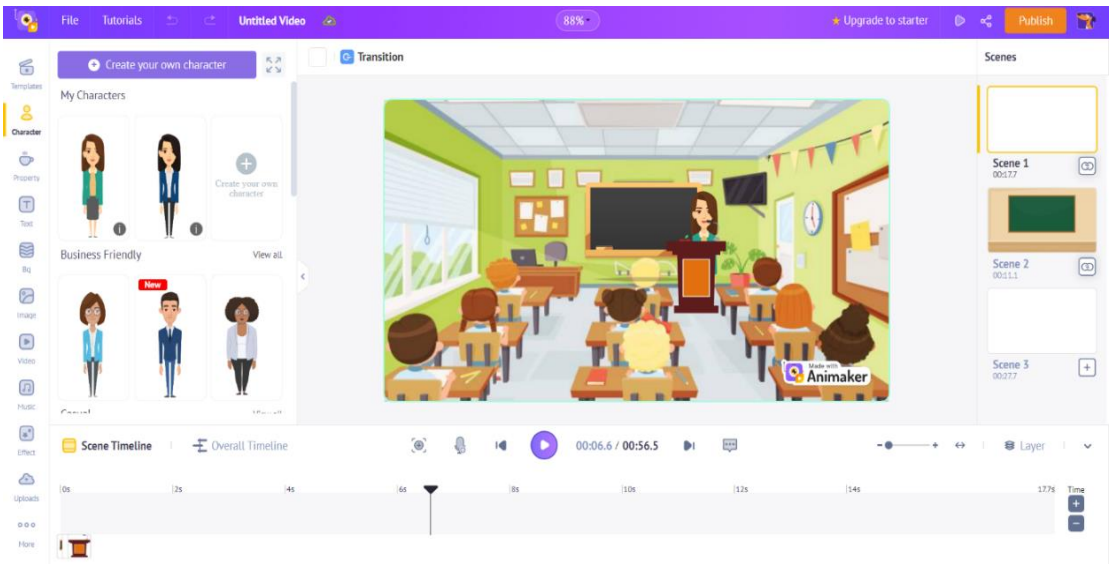
4. Introduction to Animaker App: A significant portion of the session was dedicated to introducing the Animaker app as a versatile tool for designing and developing simulated classroom experiences

Highlights of the Session:

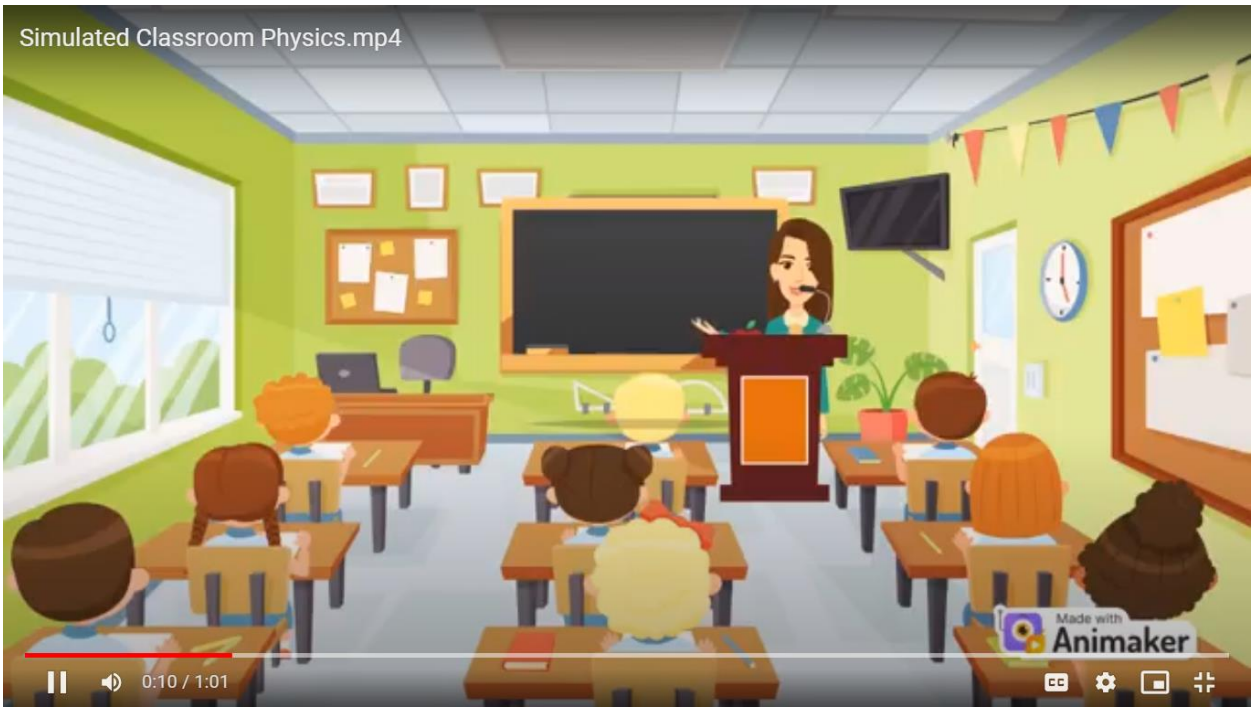
1. Exploring Simulation Techniques: Participants were encouraged to explore different simulation techniques and understand how they can be applied in educational settings.
2. Hands-on Experience:Mrs. Reshmi R.K provided a hands-on experience by demonstrating the use of the Animaker app to create a simulated classroom environment. This practical demonstration allowed participants to see the tool in action.
3. Interactive Q&A: The session included an interactive question-and-answer session where participants could seek clarifications and share their thoughts on simulated learning.

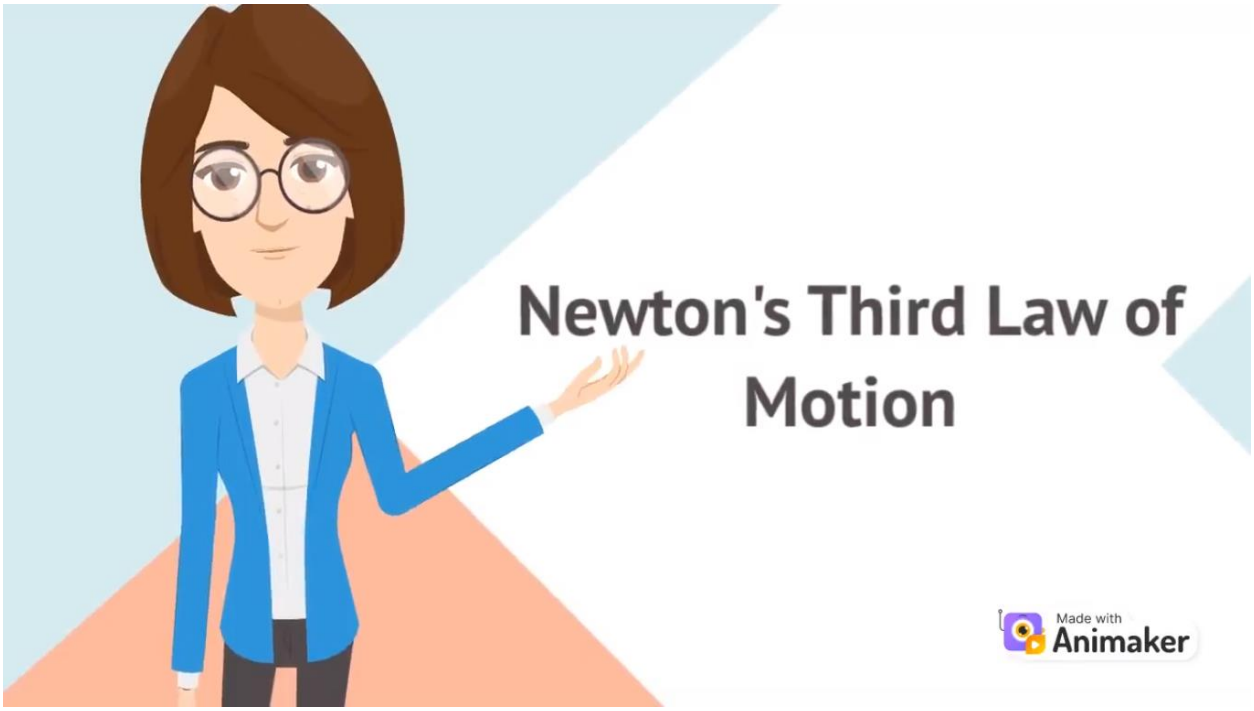
Conclusion:

The session on creating a simulated classroom environment by Mrs. Reshmi R.K on November 15, 2022, was informative and engaging. Participants gained valuable insights into the concept of simulated learning, its benefits, and various methods for implementation. The introduction to the Animaker app as a tool for designing simulated classroom experiences was particularly noteworthy.



Simulated Class room Creation





Report: Training on Digital Mind map Preparation

Name of the Event	Training on Digital Mind Map Preparation
Objectives	1. Introduce the Concept 2. Highlight the Benefits 3. Demonstrate Tools 4. Explain Key Elements 5. Promote Collaboration 6. Encourage Creativity
Resource Person	Mrs. Reshmi R.K,Science Educator St.Joseph TTI Ernakulam
Date	17-5-2023
Time	4.00-4.30 pm
Venue	Multi Purpose Hall

Key Concepts Covered:

Throughout the workshop, participants were introduced to several key concepts related to Mindmap creation:

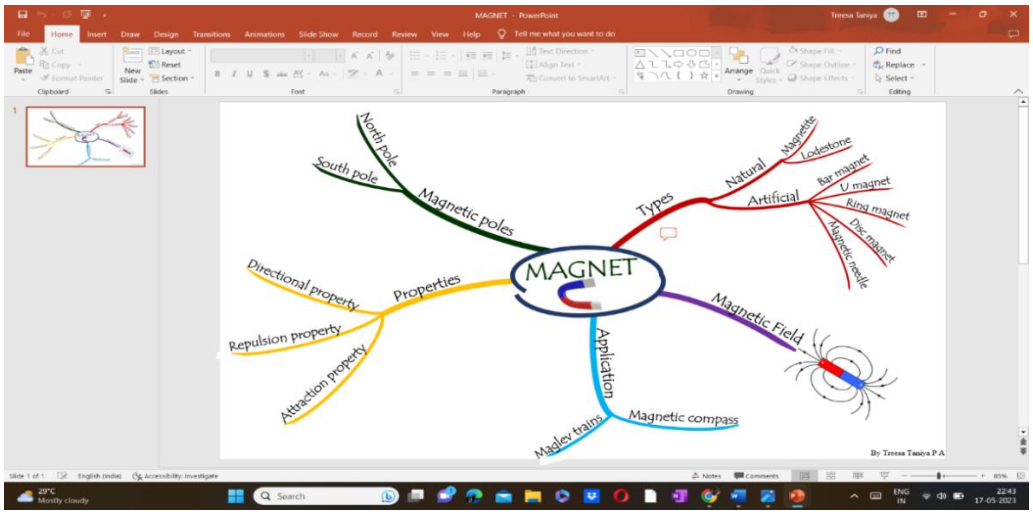
1. What is a Mindmap: Mrs. Reshmi R.K explained that a Mindmap is a visual representation of ideas and information centred around a central theme. It involves branching out with related ideas radiating from the central concept.
2. Key Elements: Students learned about the essential elements of a Mind map, including using child-friendly fonts, curved lines, and assigning a single color to each branch. These elements help in making the mind map visually engaging and easy to understand.
3. Information Retention: Participants were guided on how Mindmaps can help in better understanding and retaining information. The visual and structured nature of Mindmaps aids in memory retention and recall.

Highlights of the Workshop:

1. Hands-on Experience: The workshop provided participants with a hands-on experience of creating Mindmaps using various applications and online platforms.
2. Templates and Customization: Students explored different templates and customization options to create visually appealing and informative Mindmaps. They could add pictures, animations, different styles, and designs to enhance their creations.
3. Interactive Learning: The workshop encouraged interactive learning, allowing students to ask questions, seek guidance, and share their experiences while creating Mindmaps.

Conclusion:

The workshop on Mindmap creation conducted by Mrs. Reshmi R.K was an enriching and educational experience. Participants gained valuable insights into the art of creating Mindmaps, which are powerful tools for organizing and visualizing information. They also learned how to use various applications and templates to create engaging and informative Mindmaps.



MATTER

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heated

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Report: Training on Digital Concept Map Preparation

Name of the Event	Training on Digital Concept Map Preparation
Objectives	1. Emphasize Clarity 2. Teach Information Organization 3. Discuss Use Cases 4. Provide Practical Tips 5. Address Accessibility
Resource Person	Mrs. Reshmi R.K,Science Educator St.Joseph TTI Ernakulam
Date	October 3, 2022
Time	3.00-4.30 pm
Venue	Multi Purpose Hall

Key Concepts Covered:

During the orientation class, participants were introduced to several key concepts related to online concept map preparation

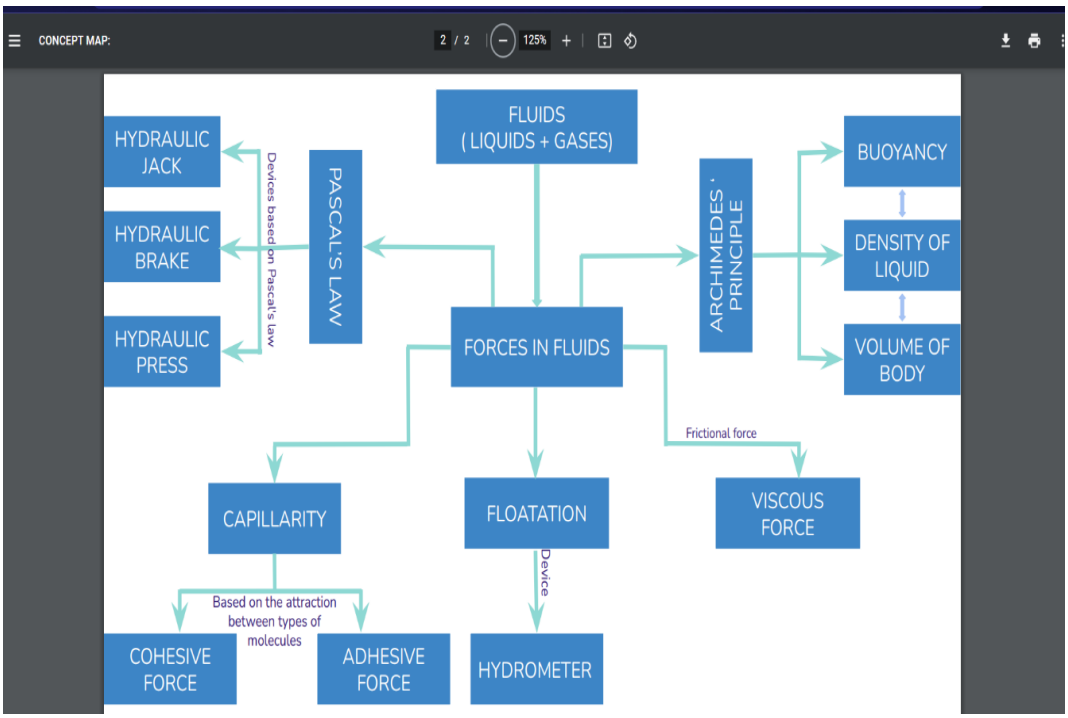
1. Importance of Concept Maps: The session emphasized the significance of concept maps as visual tools for organizing and representing information, making complex topics more understandable.
2. Online Tools for Concept Maps: Mrs. Reshmi R.K discussed various online software tools, such as MS Word and PowerPoint, that can be used to create concept maps digitally.
3. Canva Templates: Participants were informed about Canva, a popular online platform that offers a wide range of templates for concept maps, making the creation process more accessible and efficient.

Highlights of the Session:

1. Clear Instructions: Mrs. Reshmi R.K provided clear and detailed instructions on how to create concept maps using both MS Word, PowerPoint, and the Canva website. Participants learned about layout design, text formatting, and visual elements.
2. Practical Demonstration: The resource person conducted a practical demonstration, guiding participants through the step-by-step process of creating a concept map using one of the recommended tools. This hands-on experience allowed participants to grasp the concepts effectively.
3. Interactive Discussion: The session included an interactive discussion where participants had the opportunity to ask questions, seek clarifications, and share their experiences related to concept map creation.

Conclusion:

The orientation class on online concept map preparation conducted by Mrs. Reshmi R.K on October 3, 2022, was a valuable and informative session. Participants gained insights into the significance of concept maps and learned how to create them using various online tools.



ST JOSEPH COLLEGE OF TEACHER EDUCATION FOR WOMEN ERNAKULAM

Orientation on Digital Concept Map Preparation

RESOURCE PERSON

RESHMI R.K
SCIENCE EDUCATOR
ST.JOSEPH TTI
ERNAKULAM

October 3, 2022

MULTI PURPOSE HALL

3-4.30 PM

NB:BRING YOUR LAPTOP OR ANDROID PHONE

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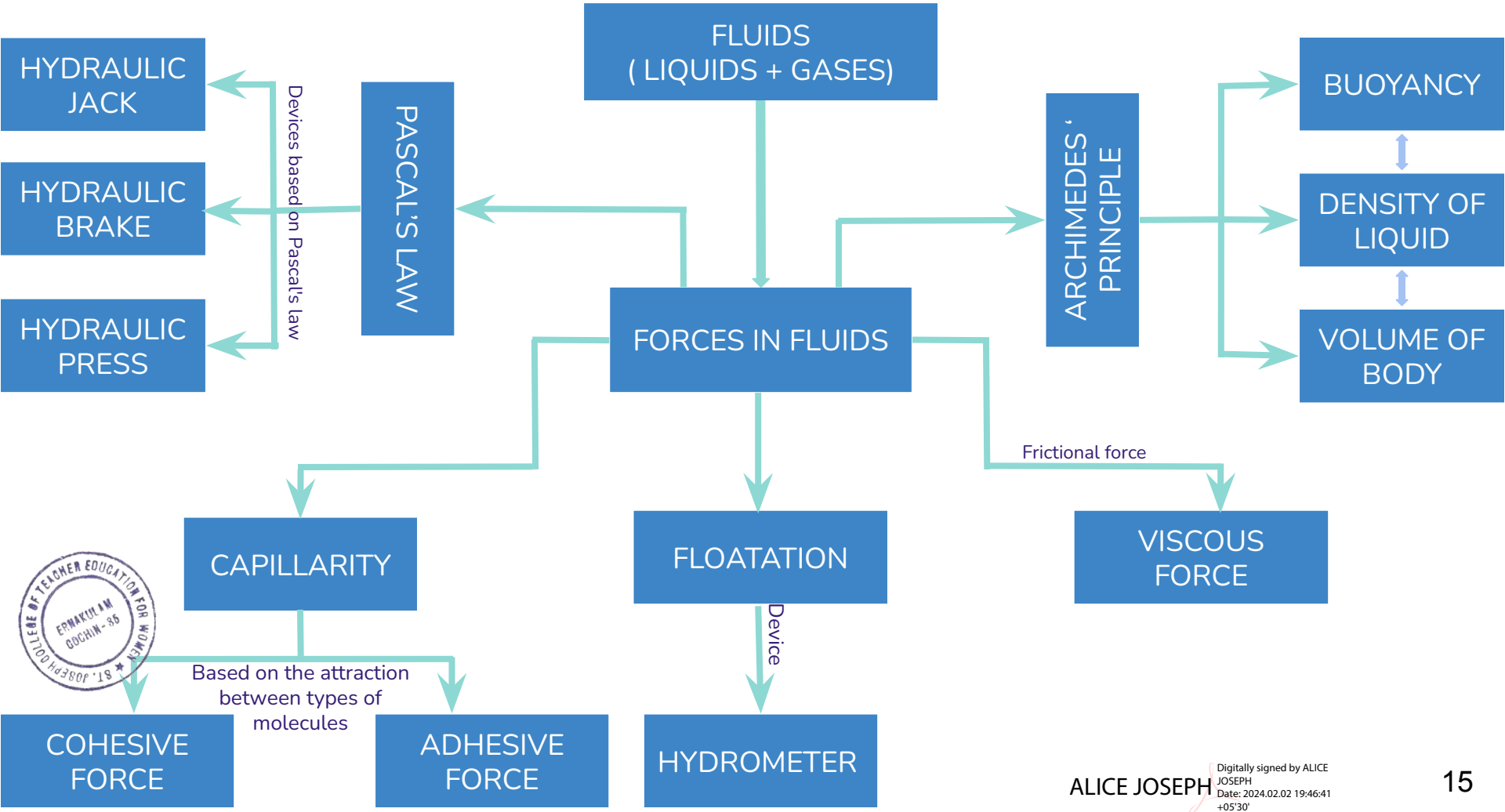
CONCEPT MAP:

FORCES IN FLUIDS

Submitted by

TREESA TANIYA P A
PHYSICAL SCIENCE



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Report: Workshop on Developing Online Learning Resources

Name of the Event	Orientation on Digital Mind Map Preparation
Objectives	**1.** Introduce the Concept **2.** Highlight the Benefits **3.** Demonstrate Tools **4.** Explain Key Elements **5.** Promote Collaboration **6.** Encourage Creativity
Resource Person	Mrs. Reshmi R.K,Science Educator St.Joseph TTI Ernakulam
Date	Date: January 1- 5, 2023
Time	1.30 -4.30 pm
Venue	Multi Purpose Hall

List of Learning Resource Materials:

1. Digital Science Album: A comprehensive digital resource that provides access to science-related content, including images, text, and interactive elements.
2. Digital Dictionary: An online dictionary designed to assist students in quickly looking up and understanding key terms and concepts related to the subject matter.
3. Digital Lab Manual: An interactive online lab manual that guides students through laboratory exercises and experiments, offering step-by-step instructions and explanations.
4. Digital Project Book: An online platform for students to create and present their projects, with multimedia elements such as text, images, and videos.
5. E-Workbook: A digital version of workbooks that allows students to complete exercises, quizzes, and assignments online.

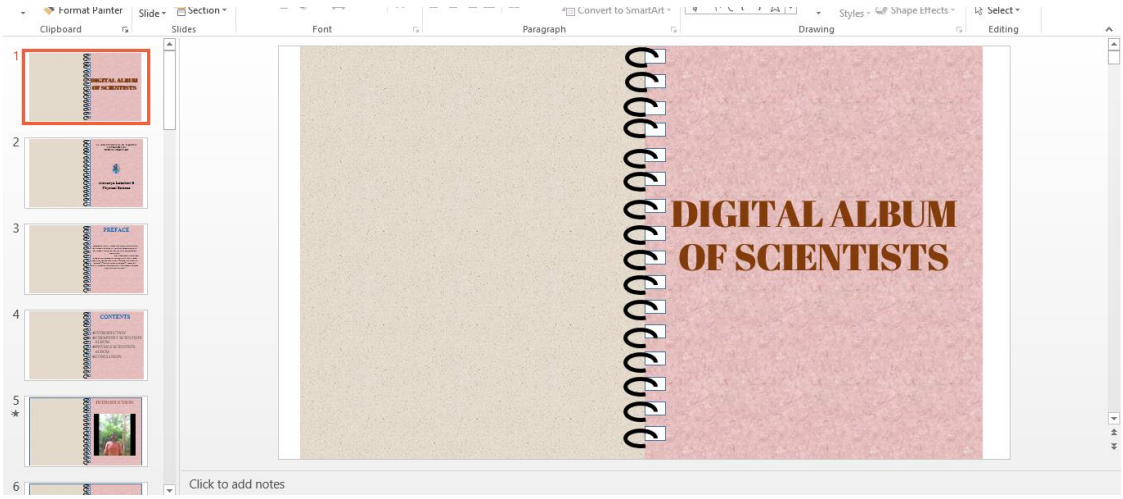
6. E-Content: Digital content resources, including text, multimedia, and interactive materials, designed to support the learning process.
7. E-Question Bank: An online repository of questions and assessments to help students practice and test their knowledge.
8. Audio Textbook: Audio recordings of textbooks or relevant content to support auditory learners.
9. Science In Daily Life: Online resources and examples demonstrating how scientific concepts are applied in everyday life.
10. Digital Formula Book: A digital resource containing formulas, equations, and mathematical content related to the subject.
11. Student's e-Guide: Online guides designed to help students navigate the learning materials effectively.
12. Science Quiz Book: Interactive quizzes and assessments related to science topics to test and reinforce learning.
13. Digital Puzzle Book: Interactive puzzles and games designed to engage students and reinforce learning through fun activities.
14. Digital Unit Book: Online resources organized by units or topics to facilitate structured learning.

It was made in the form of a flipbook consisting of experimental videos and knowledge about the respective topics. The tools used were Power Point presentation (2019), for introductory video, Animaker for animation videos and Clipchamp-video editor (Microsoft 2019), to edit all videos. Experimental videos were made using materials present at my home and all videos were given my own voice over. Clock needle animation effect was made using the features of Microsoft PowerPoint 2019 in the resource material to convey the summary of the respective topics.

The e-content material will help the students to develop scientific temper and scientific attitude. They will understand the science behind various things happening around them. Thereby, students will be able to relate the theory they learnt with the happenings in their daily life, making the knowledge sustain in their mind for a long time. It should be kept in mind that content is anything that adds value to the reader's life

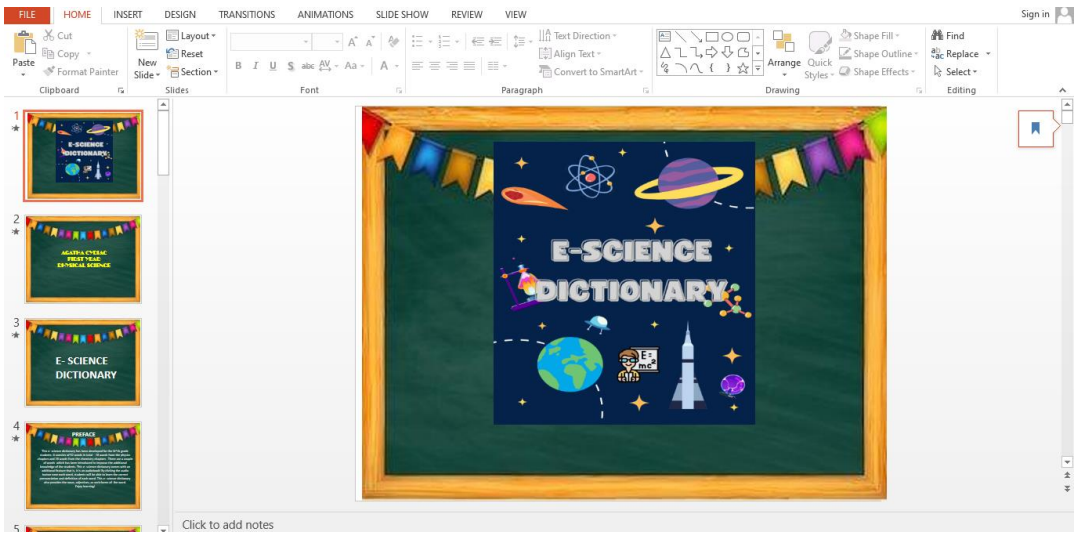
1. Digital Science Album

It explains the life journey of various scientists and also their milestone inventions. Tool used for the practical work was PowerPoint presentation (MicrosoftPowerPoint 2016).



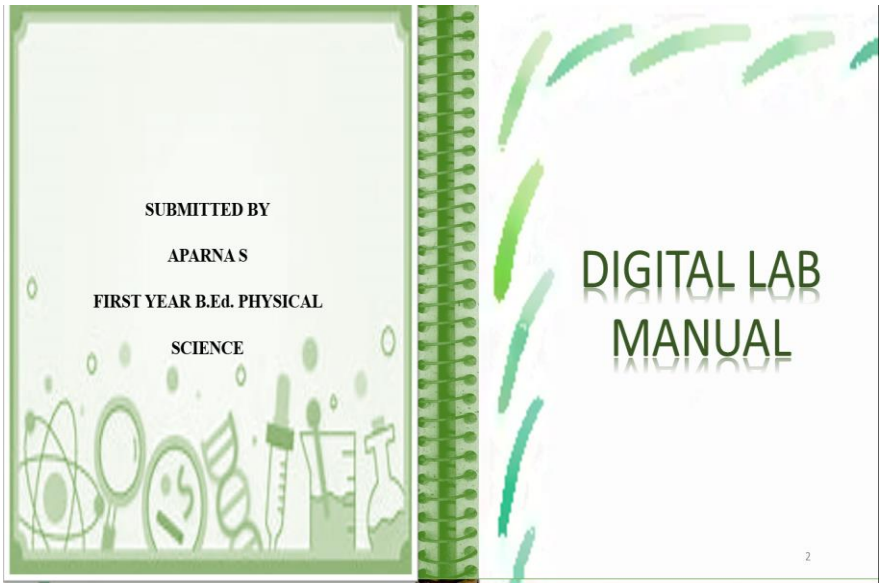
2. Digital Dictionary

An E dictionary is an Electronic reference resource that contains a science words and their meanings, spellings. Sometimes electronic dictionaries serve a similar function to regular dictionaries; They are searchable they allow one to find specific bits of information about words.



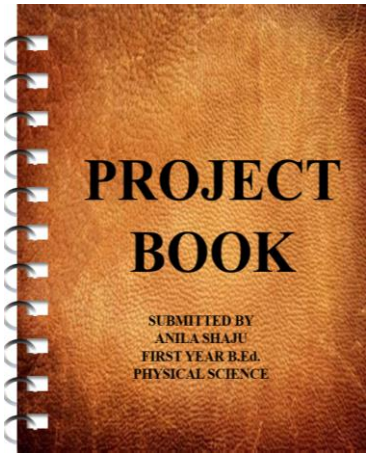
3. Digital Lab Manual

Digital lab manual along with providing all other data provided by a digital manual, provides experimentation videos, which further enhances the student's interest and motivates them to perform well in the laboratory.



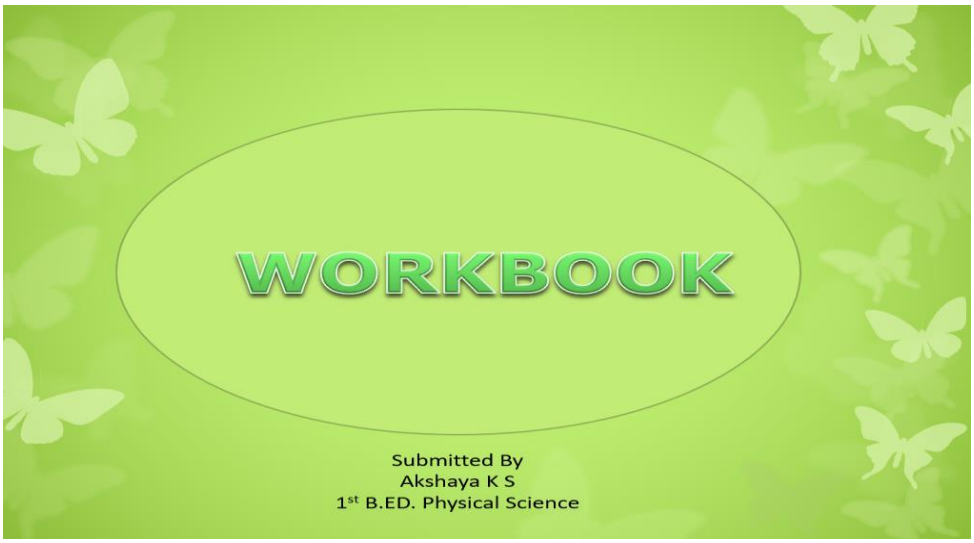
4. Digital Project Book

This presentation on 'e-Project Book' for high school students. It explains the format of a science project report. The tool used for the practical work was PowerPoint presentation and Graphics (Microsoft PowerPoint 2010). For this work, it is created an e- project book including 2 projects each from physics and chemistry designed work as a flipbook consisting of Pictures, Videos and Audio.



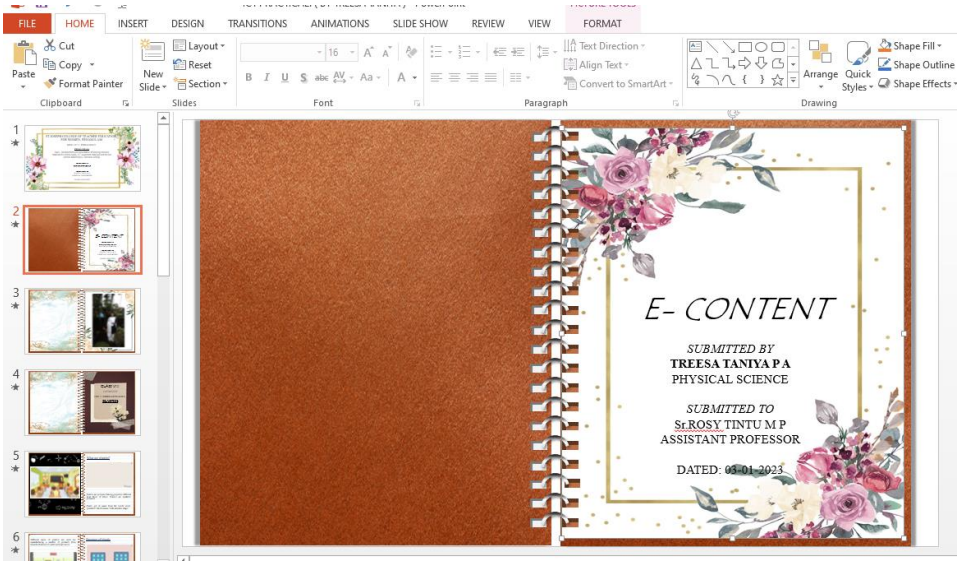
5. E-Workbook

This digital workbook for class VIII chemistry and physics exposes the various patterns of questions possible from each and every section. The questions are arranged in such a way that the child alone could move across the material with ease of work without external assistance.



6. E-Content

E-content is the innovation of technology to design, deliver, select, administer and extend learning. E-content in education is a powerful tool that can be used effectively and proficiently within the classroom to make more exciting learning environment and deliver a higher level of educational expertise to students.



7. Digital Programmed Instruction

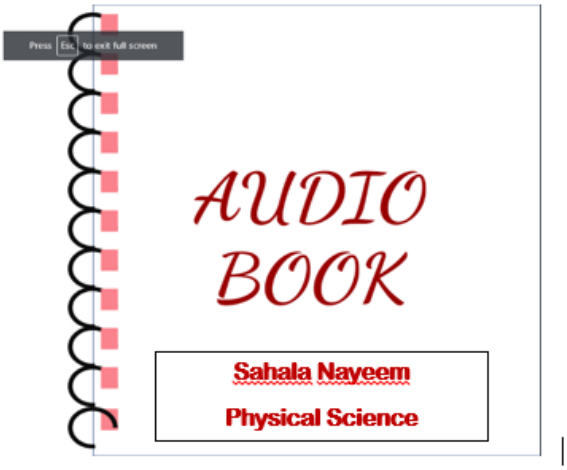
The learning resource material (presentation on programmed learning material) will help the students to develop a scientific temper and scientific attitude. Programmed instruction method of teaching is an autocratic and individualized strategy. Its main focus is to bring desirable change in the cognitive domain of the learner's behaviour. Students are left for learning at their own pace

8. E-Question Bank

ICT resource material were prepared a digital Question in the form of a ppt. two chapters of 8th std of chemistry of Kerala state syllabus –solutions, properties of matter. Divided into sub-topics 7 collected 5 fill in the blanks, 5 MCQs, 5 match the following, 5 true or false, 5 short answers, 5 Essays.Total 150 questions from these 2 chapters which selected.

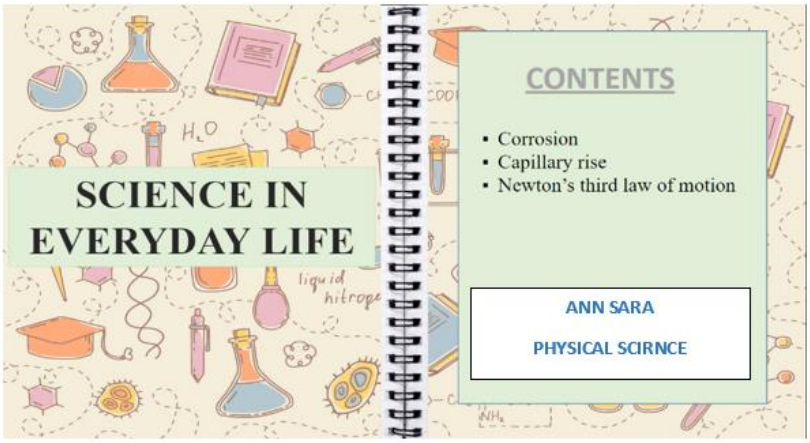
9. Audio Textbook

Audiobooks are the digital version of books on CD or books on tape. It can be downloaded also. Audiobooks allow students to hear explicit sounds of letters and letter patterns that forms words. It also helps students to engage in text and gain exposure to more words, ultimately improving vocabulary, comprehension and critical thinking skills. Audiobooks are the perfect accommodation for struggling readers.



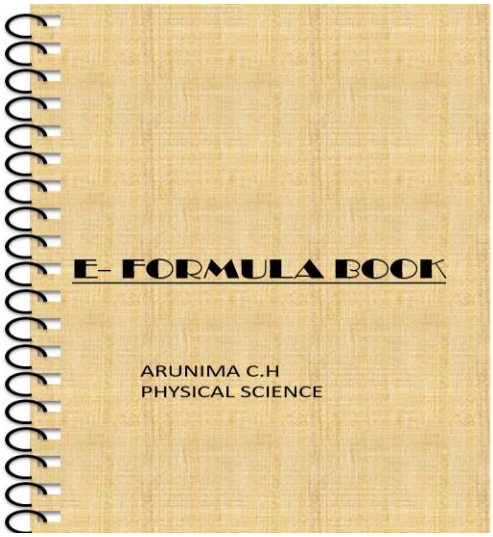
10. Science In Daily Life

Presentation on 'Science in everyday life for high school students. It explains the science behind different situations we come across in everyday life. The tool used for the practical work was PowerPoint presentation Animaker etc.



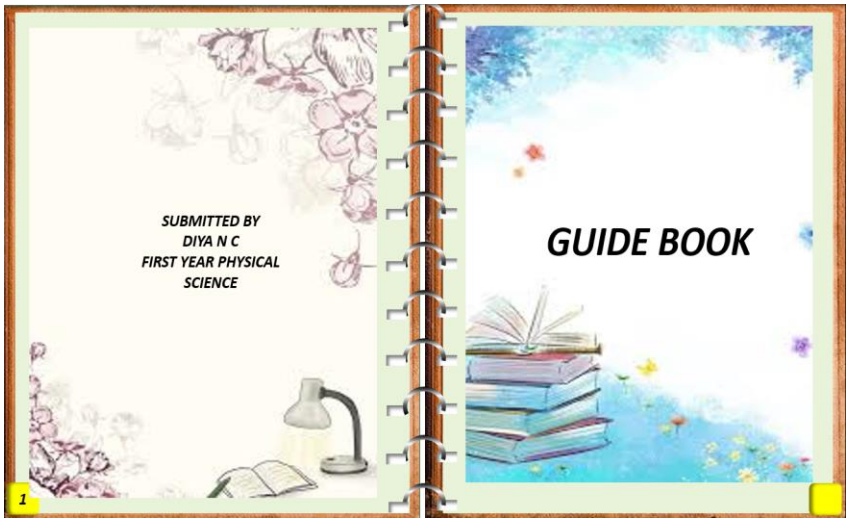
11. Digital Formula Book

This learning material provides support in learning and remembering formulas, which is actually a hectic thing for kids. Learning material includes audio file, video file, animations etc. This learning material is designed by keeping the academic needs of students. Each formulas are presented in an attractive way using colors ,highlights .This work will surely help students in retaining formulas for a long time in their brains.



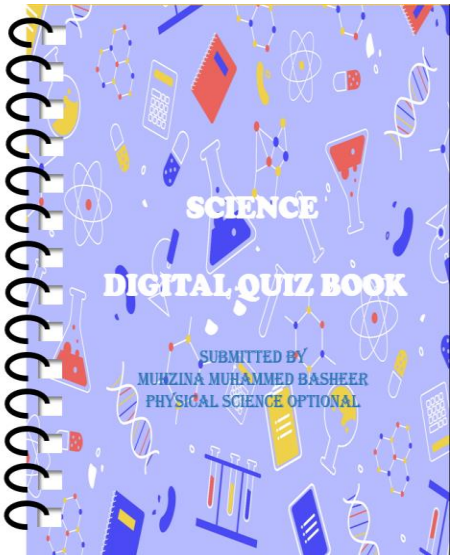
12. Student's e-Guide

e- Guide book gives useful information about a particular subject. The e-Guide book ensures all students to read understand and express their understanding of the complex grade-level text. A guide might be a leaflet or a handbook giving instruction on a topic and assisting students with their learning.



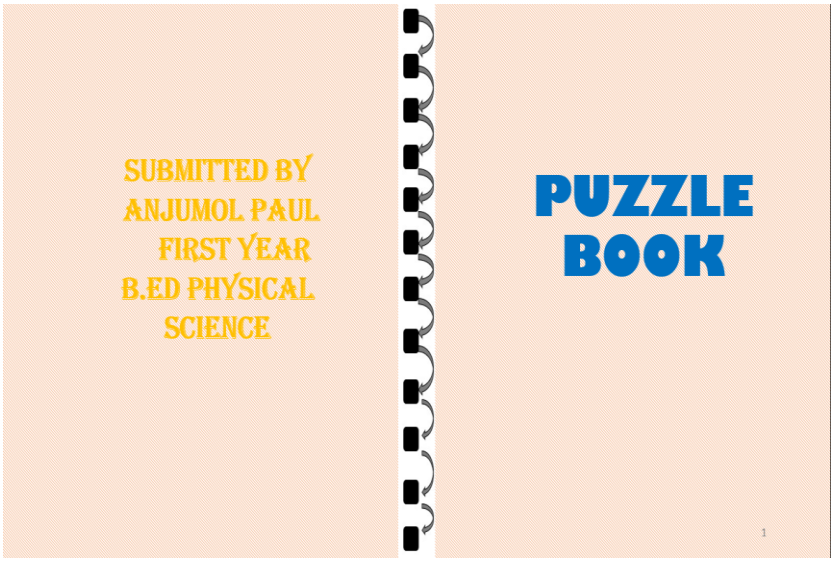
13. Science Quiz Book

Science digital quiz book is an easy method for assisting students in their studies, it also helps in individualized learning and self-evaluation by students. It makes them familiar with science through technology.



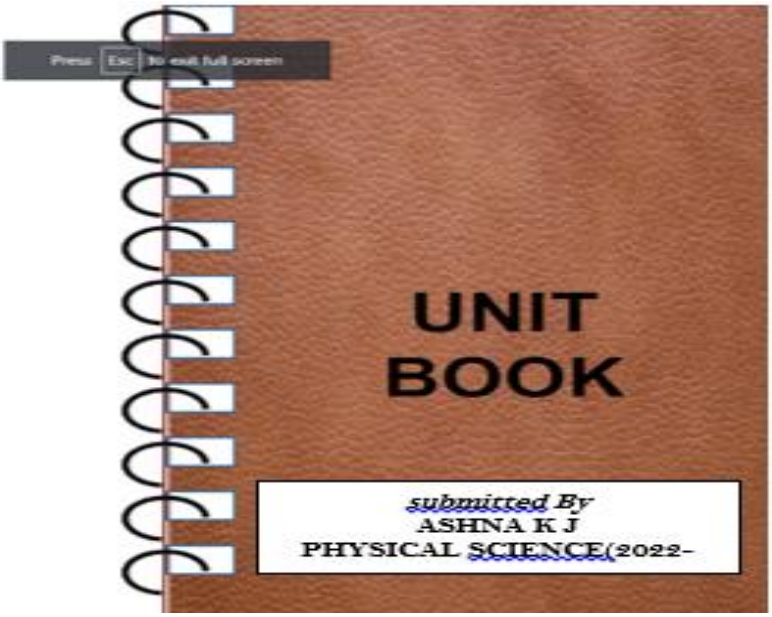
14. Digital Puzzle Book

Based on the training for learning resource material digital puzzle book has developed and presented in class . It contains 20 crosswords, 10 picture game and 10 word game, covering science topics of 9th standard.



15. Digital Unit Book

Gave training for develop and present a learning resource material for school pupils- ICT supported material, (school-based topic) –a presentation on 'Unit book' for high school students. This resource book provide units and of Physical quantities in Alphabetical order



Conclusion:

The workshop on developing online learning resources conducted by Mrs. Reshmi R.K on December 6 to 12, 2023, provided an extensive range of digital learning materials to enhance the educational experience. These materials, spanning from digital textbooks to interactive quizzes and multimedia content, offer diverse avenues for students to engage with subject matter and promote effective online learning.

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ST.JOSEPH COLLEGE OF TEACHER EDUCATION FOR WOMEN, ERNAKULAM

AUDIO BOOK

Submitted By,
Sahala Nayeem A A
First Year B.Ed. Physical Science

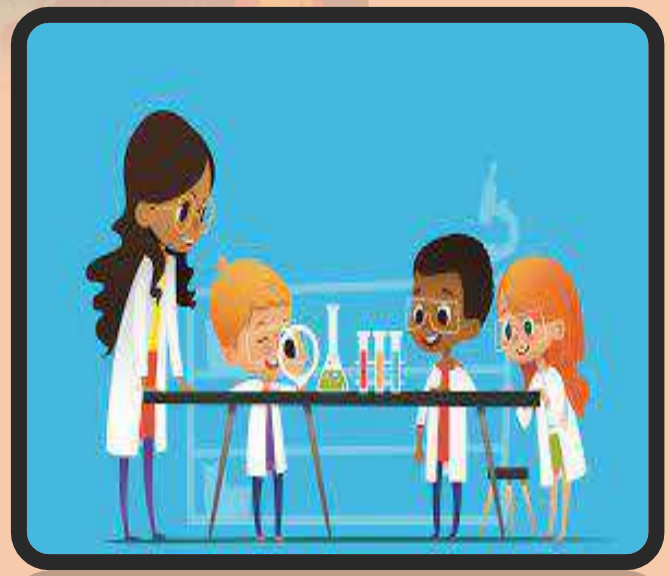
PREFACE

As a part of B.Ed curriculum, we are required to develop and present an ICT supported learning resource material for school pupils. I developed an audio book and the main objective of this audio book is to serve as a learning resource material for the blind students and to make their learning purpose much more easier.

This audio book is prepared based on the SCERT syllabus of Class IX. This audio book consists of two chapters titled "ACIDS, BASES AND SALTS" and "WORK, ENERGY AND POWER". I hope this audio book will be helpful to all the students to enjoy and learn their syllabus.

CONTENTS

INTRODUCTION



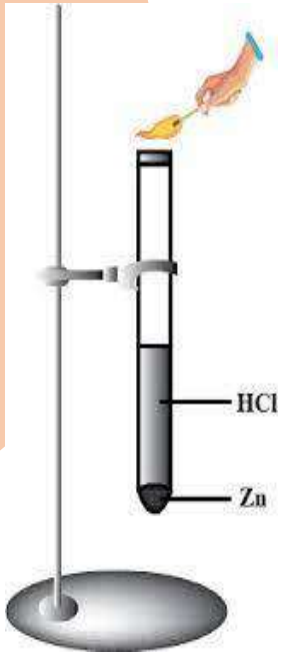
Acids

Can you identify the characteristics of above given examples?

SUBSTANCE	CHARACTERISTICS
Orange	Sour/sweet taste
Vinegar	Sour taste
Soap	Slippery/bitter
Lemon	Sour taste
Toothpaste	Slippery
Baking soda	Bitter taste

Let us do an experiment

Take a small piece of zinc in a test tube. Add 2 ml of dilute hydrochloric acid. Show a burning matchstick at the mouth of the test tube. Did you hear any sound?



The matchstick extinguished and the gas burnt with pop sound

Acids react with reactive metals to form hydrogen gas

Look at the examples for acids:

- **HCl**
- **HNO_3**
- **H_2SO_4**
- **CH_3COOH**

Which is the ion common in all the acids given above?

How can we define acids?

1. Acids are substances which can increase the concentration of Hydrogen (H^+) ions in an aqueous solution

2. The properties of acids are due to the presence of hydrogen ions in them

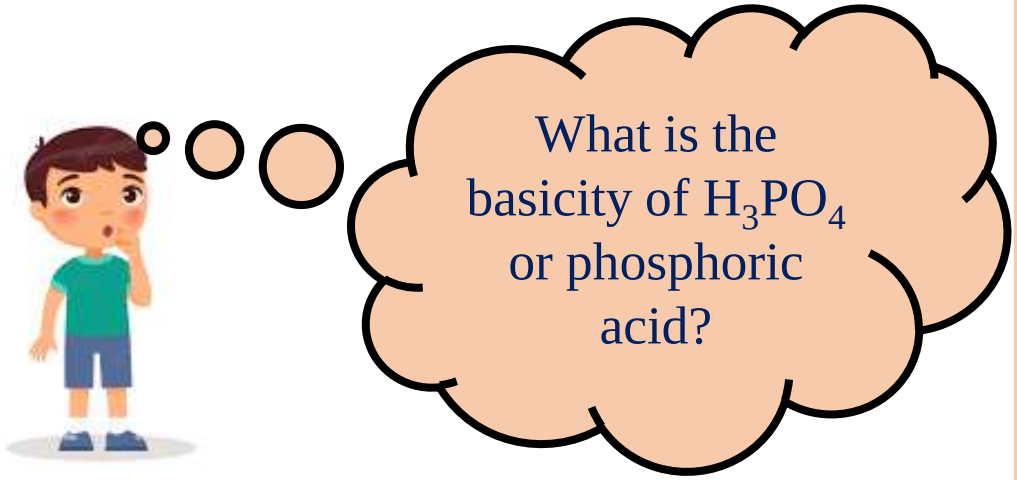
Basicity of acids

The number of hydrogen ions that can be donated by one molecule of an acid is its basicity. Based on the number of Hydrogen ions liberated it can be classified as monobasic, dibasic, tribasic acids etc.

- For the ionization of HCl, one hydrogen ion is liberated. So it is a monobasic acid.

$HCl \longrightarrow H^+ + Cl^-$

- H_2SO_4 is a dibasic acid.



ACID RAIN

In industrial areas the chances of air pollution are very high. In such regions gases like SO2 and NO2 reach the atmosphere in larger amounts. These gases dissolve in rain water and reach the soil as acids. This is known as acid rain.

Harmful effects of acid rain:

- Plants lose their ability of photosynthesis
- Damage of monuments
- Destroys the greenery
- It causes death and destruction of fish and corals

Measures that can be undertaken to prevent acid rain:

- Reduce the excessive use of fossil fuels
- Reduce the amount of sulphur compounds in fossil fuels
- Use more solar and wind power

BASES AND ALKALIES

- Alkalies are substances which can increase the concentration of hydroxide (OH^-) ions in an aqueous solution.
- All bases are not alkalies.
- Only water soluble bases are known as alkalies.
- NaOH and KOH are alkalies but $Al(OH)_3$ and $Cu(OH)_3$ are known as bases

EXAMPLES!!!

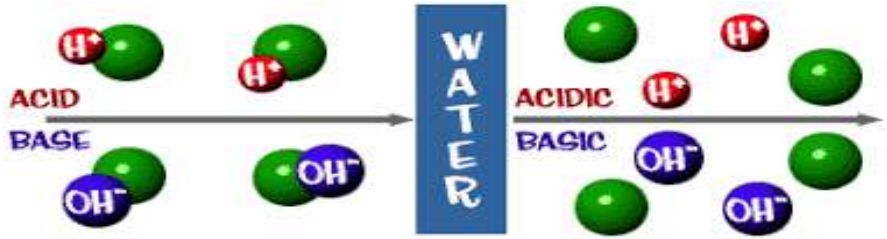
COMMON NAME	CHEMICAL NAME	CHEMICAL FORMULA
Caustic soda	Sodium hydroxide	NaOH
Milk of lime	Calcium hydroxide	$Ca(OH)_2$
Caustic potash	Potassium hydroxide	KOH

ARRHENIUS THEORY

Any acid or base, when dissolved in water dissociates into ions

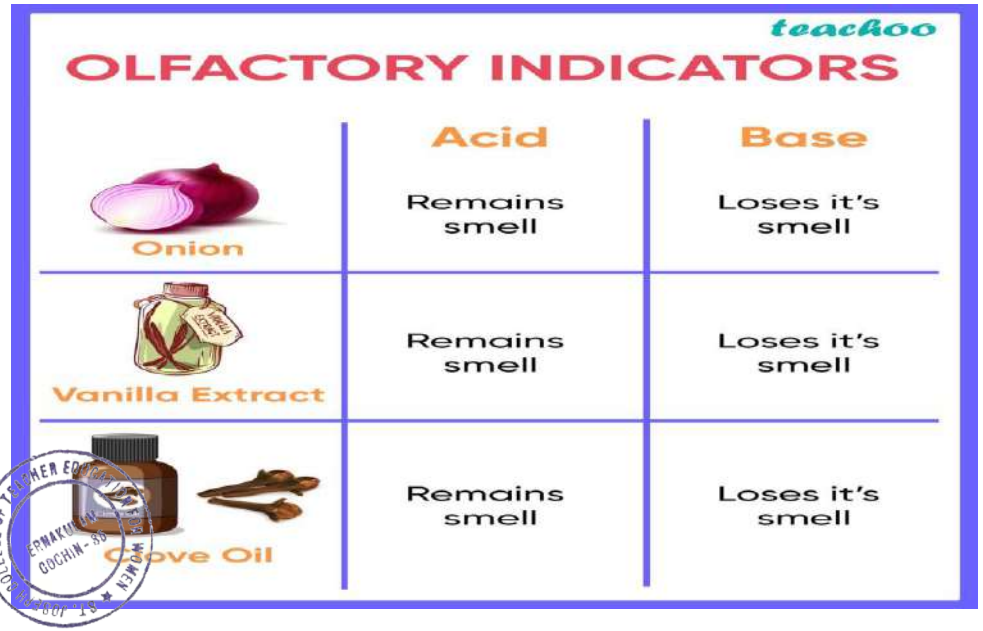
Acids are the substances which liberate hydrogen ions in aqueous solution

Bases are the substances which liberate hydroxide ions in aqueous solution



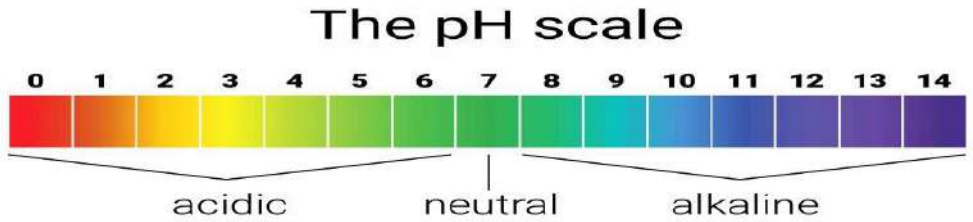
How can you identify acids and bases?

1. Olfactory Indicators: It is a substance whose smell varies when it is mixed with an acidic or basic solution



2. pH Scale

The pH scale is the method used to express the acidic or basic nature of a substance based on the amount of Hydrogen ions present in their aqueous solutions.



pH Meter

It is a device used to measure the pH of solution. It measures the voltage between two electrodes and converts into pH value.

SALTS

Neutralisation reaction is the reaction in which acid and alkali react with each other to form salt and water. Salts are usually ionic compounds.

$NaOH + HCl \longrightarrow Na^+Cl^- + H_2O$

$Mg(OH)_2 + 2HCl \longrightarrow Mg^+Cl_2^- + 2H_2O$

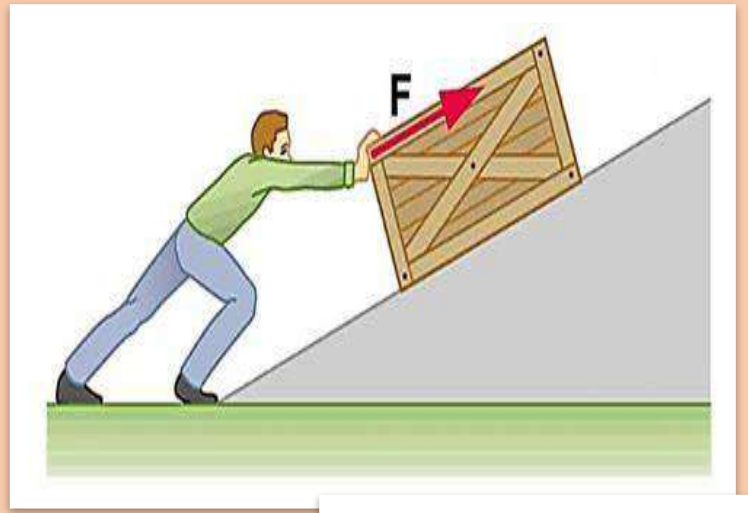
Salts are neutral or not?

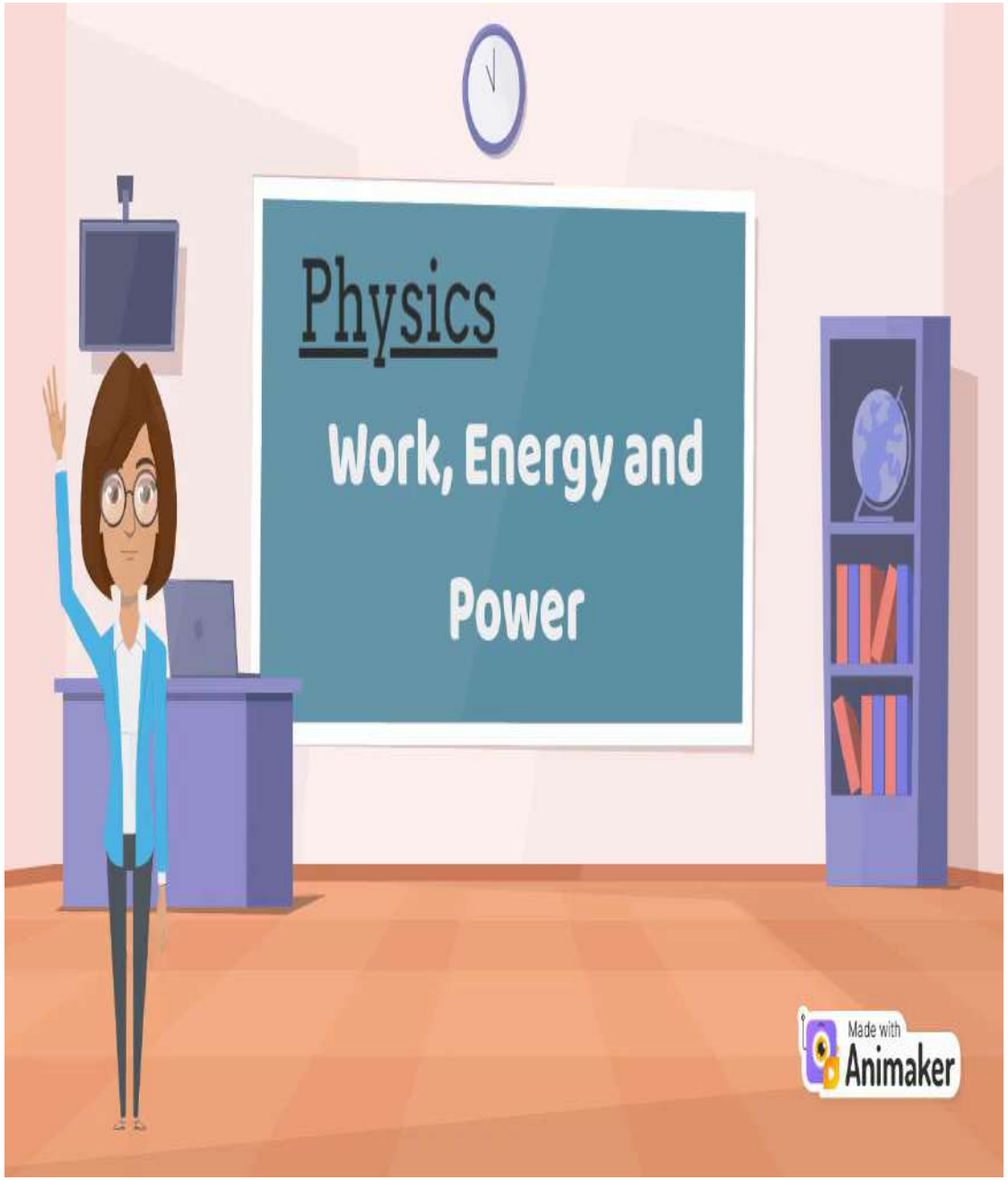
Salts dissociate into positive and negative ions when dissolved in water or melted. But, **salts are electrically neutral**. The sum of the charge of the positive and negative ions in a salt will be zero.

Uses Of Salts

Salt	Uses
Sodium Chloride	Used in food, preservatives, manufacture of soap
Sodium hydroxide	Used for making detergents, dyes, bleaches etc.
Sodium carbonate or washing soda	Used as cleansing agent
Sodium Bicarbonate or baking soda	Used as an antacid, baking powder etc.

WORK, ENERGY AND POWER





WORK

Work is said to be done only when a body undergoes displacement in the direction of the applied force

Factors affecting work

CASE 1

A boy pushed an object of mass 30 kg across a floor through 50 m. Another boy pushed an object of mass 50 kg across the same floor through 50 m. Both of them gave same speed for moving the objects.

Who applied the greater force?

CASE 2

A child pushed an object of mass 30kg across a horizontal floor through 20m. Another child pushed the same object through 30m, on the same floor with same speed.

Who pushed the object to a greater distance?

CASE 3

A body of mass m kg is placed on a table. If this body is raised through h metre, in which direction has the force to be applied on the body? If it raised to h metre, what would be the displacement?

If a force of F Newton is applied continuously on a body and the body undergoes a displacement of s metre in the direction of the force, then the work done by the applied force is,

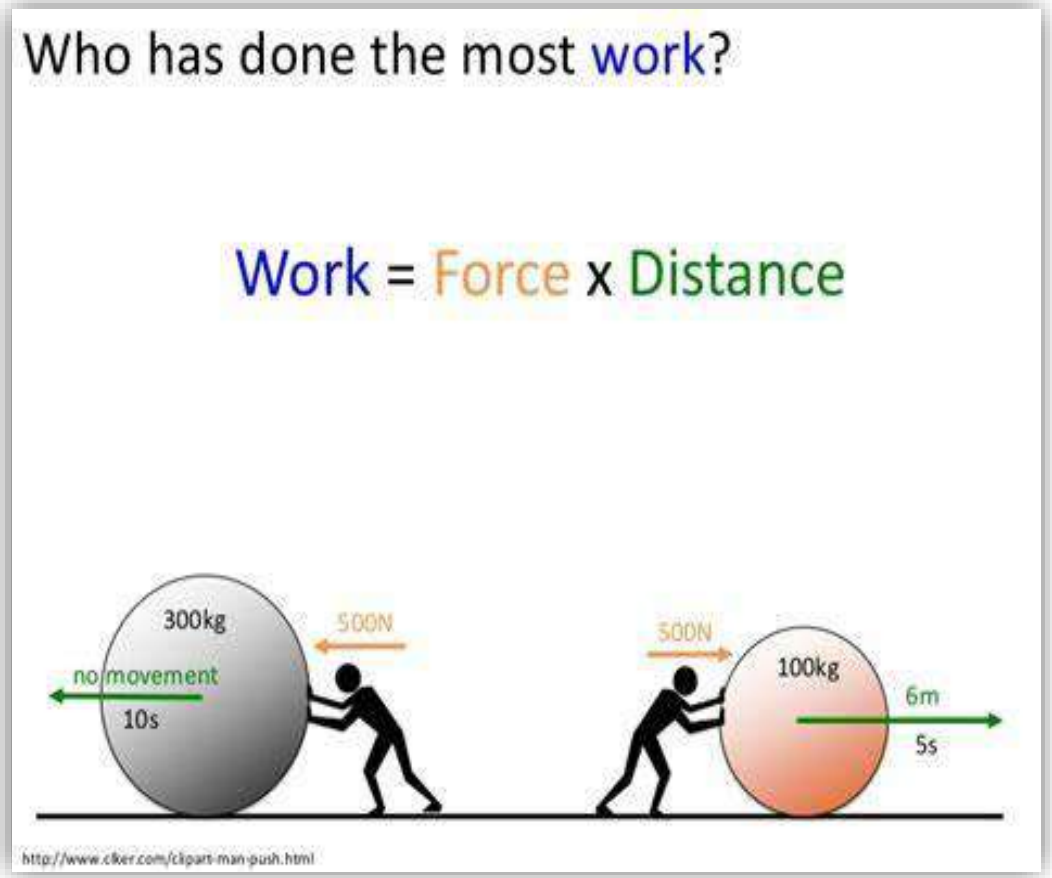
- **W= F *s**

When a body is raised to a height h, the work done against the gravitational force would be,

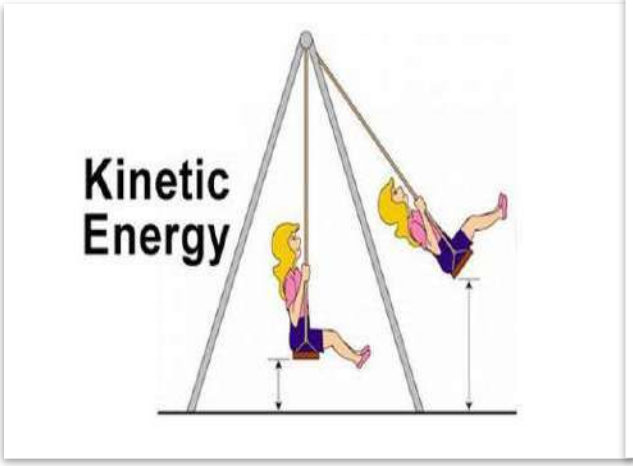
- **W = mgh**

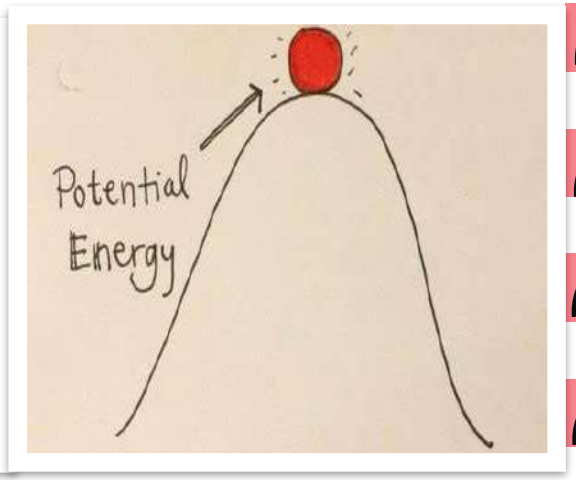
- Unit of work is Joules
- 1J is the amount of work done to raise a body of mass 100 g through a height of 1 m.

Find the answer!!



ENERGY





Energy is the capacity to do work

There are different forms of energy. Energy can be mainly divided into Kinetic Energy and Potential Energy

Kinetic Energy

DO THIS ACTIVITY

Arrange a toy car and a plastic ball on a smooth surface. Pull the toy car backwards a little and allow to hit the plastic ball.

What happens to the ball when the moving car hit it?

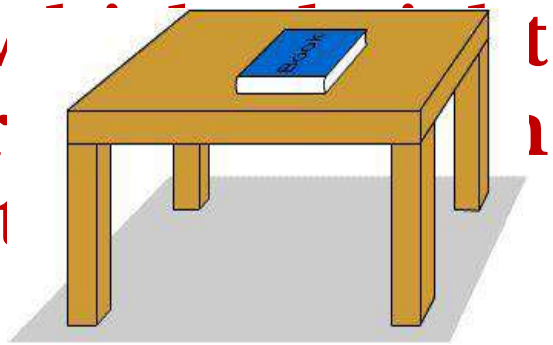
The energy possessed by a body by virtue of its motion is the kinetic energy. When a body of mass m moves with a velocity v, its kinetic energy will be,

$$K = \frac{1}{2} mv^2$$

Potential Energy

DO THIS ACTIVITY

Consider a book placed on a table. Is there any work done to lift the bodies? Against which force is work done here? Note the amount of work done to raise a body of mass m kg to different heights. At w t from the floor n work done on t



The energy possessed by a body by virtue of its position is the potential energy. Potential energy is equal to,

$$U = mgh$$

Here the work is done against the force of gravity So the energy increases as the height increases.

LAW OF CONSERVATION OF ENERGY

Look at the energy transformations in the following equipment

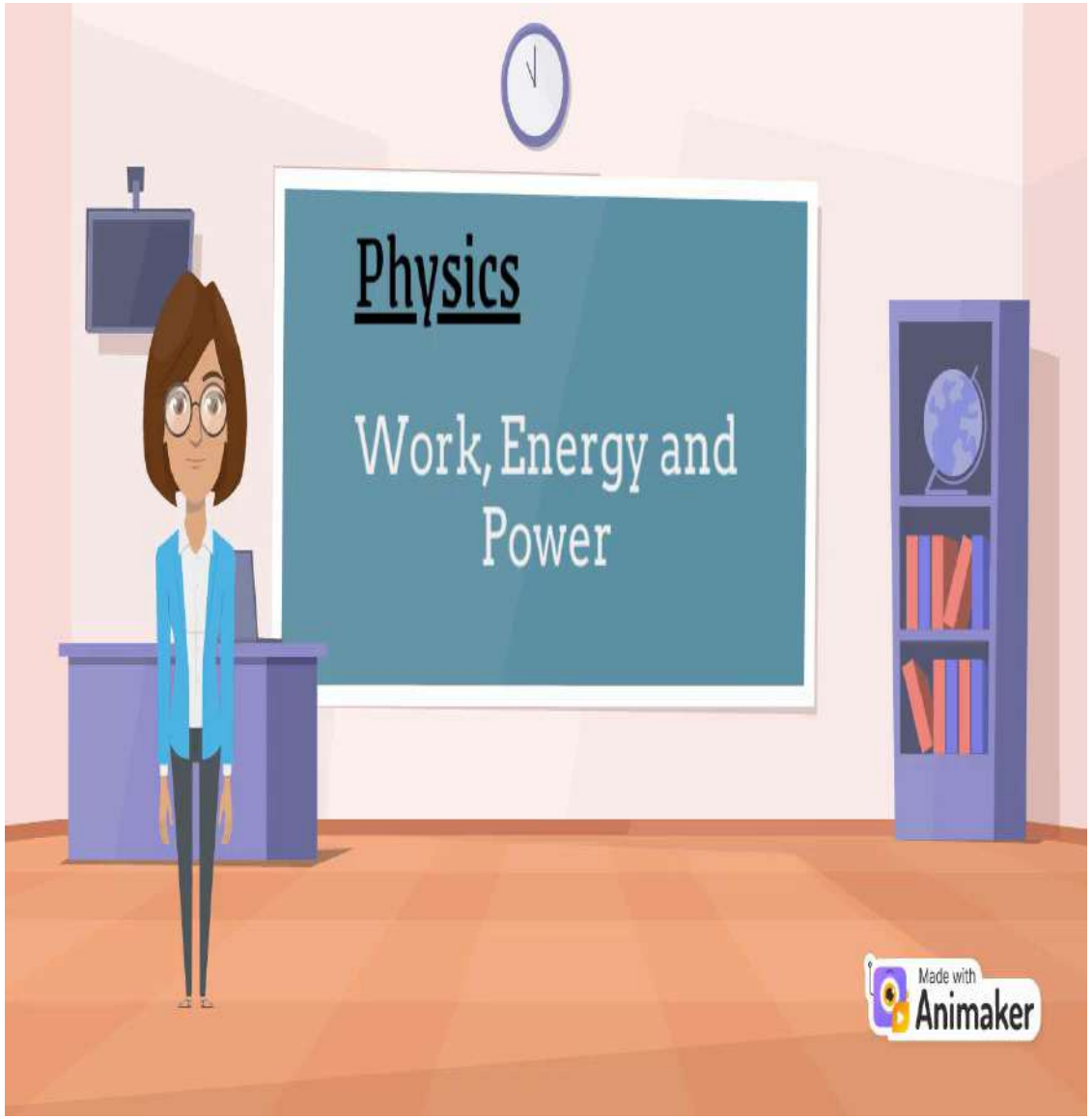
Equipment	Energy transformation
Electric generator	Mechanical energy to electrical energy
Fan	Electrical energy to mechanical energy
Electric iron box	Electrical energy to heat energy
Electric bulb	Electrical energy to light energy

In all the examples cited above energy is converted from one form to another.

Energy can neither be created nor destroyed. Energy can only be transformed from one form to another. This is the law of conservation of energy.

POWER

- Power is the work done per unit time or rate of doing work
- Power = $\frac{work}{time}$
- Unit of power is J/s or Watt(W)



CONCLUSION


ST. JOSEPH COLLEGE OF TEACHER EDUCATION FOR WOMEN
ERNAKULAM
COCHIN - 35

DIGITAL LAB MANUAL

SUBMITTED BY

APARNA S

FIRST YEAR B.Ed. PHYSICAL

SCIENCE

DIGITAL LAB MANUAL

PREFACE

This digital version of laboratory manual was designed for students of class IX highlighting the importance of laboratory skills as well as the importance of digital resources in academics. The manual includes four different science experiments, divided into two different units having both physics and chemistry experiments.

Digital Laboratory Manual in Science for Class IX is an exercise to familiarize pupil with the general facilities, equipment, measuring instruments, chemicals and glassware, specimen available in a school science laboratory for making the activities more interesting, engaging through digital version making highly portable and accessible.

INTRODUCTION

TABLE OF CONTENT

UNIT-1

SOUND

EXPERIMENT

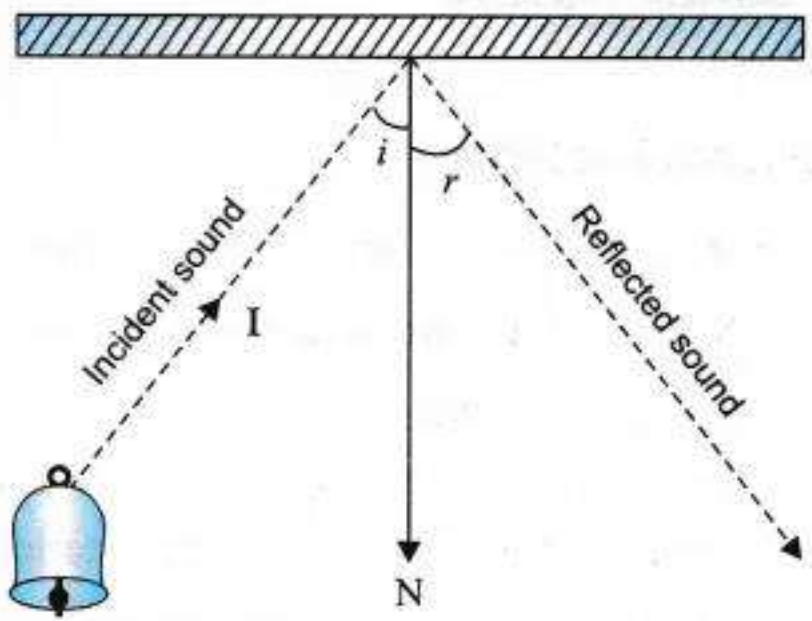
Aim

To verify the laws of reflection of sound.

Theory

1.Sound: It is a form of energy produced by vibration and it needs medium to propagate.

2.Reflection of sound: As light reflects when it strikes any hard object (opaque), sound also gets reflected when it strikes any object.



Reflection of Sound

$\angle i = \angle r$

Laws of Reflection of sound

1.The angle of incidence is always equal to the angle of reflection.

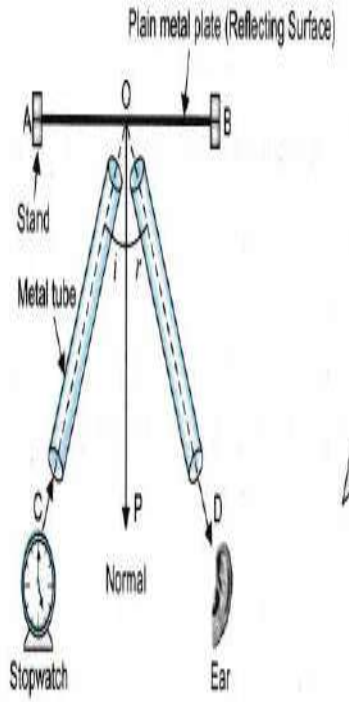
2.The incident sound wave, the normal and the reflected sound wave lie in the same plane

Materials Required

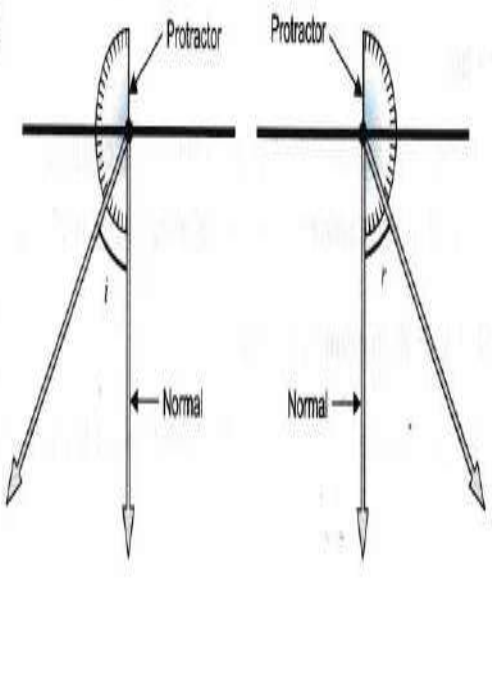
Two highly polished metal tubes made up of stainless steel or aluminium of length 25 cm and diameter 2 cm, a drawing sheet, metal plate, a geometrical set, thumb pins, drawing board/table, stopwatch, metal stand.

Procedure

1.Fix the white sheet on drawing board with thumb pin.



Reflection of Sound



Measurement of ∠i and ∠r

2.Draw a line AB to place the metal plate as reflecting surface with the help of metal stand, and draw normal OP to this line as shown in the figure.

3.Now draw a line OC making an angle of 30° with the line OP.

4.Place one metal tube near to the point O of normal and metal plate on the line OC.

5.Place the ticking watch closer to one end of this metal tube.

6.Now place the second tube so that its one end is near to the point O. Bring your ear close to the other end and adjust its position such that it collects the maximum reflected sound.

7. Mark the position of the tube when it collects the clear and maximum reflected sound.
8. Draw an extended line of reflected sound wave and mark it as OD.
9. Measure the angle of incidence and the angle of reflection.
10. Follow the above procedure and record your observation thrice.

Result

1. The angle of incidence is equal to the angle of reflection.
2. The incident, normal and reflected sound waves lie in the same plane

OBSERVATION TABLE

S.No.	Angle of Incidence ∠i	Angle of Reflection ∠r
1.	30°	30°
2.	35°	35°
3.	40°	40°

VIVA VOCE

Question 1:

What produces sound?

Answer:

Vibration produces sound.

Question 2:

How do human beings produce sound?

Answer:

Due to the vibration of vocal cords.

Question 3:

Can sound travel through the vacuum?

Answer:

No.

DENSITY OF SOLIDS
EXPERIMENT

Aim

To determine the density of solid (denser than water) by using a spring balance and a measuring cylinder.

Theory

1.Density: The density of a substance is defined as the mass per unit volume,[D=M/V]

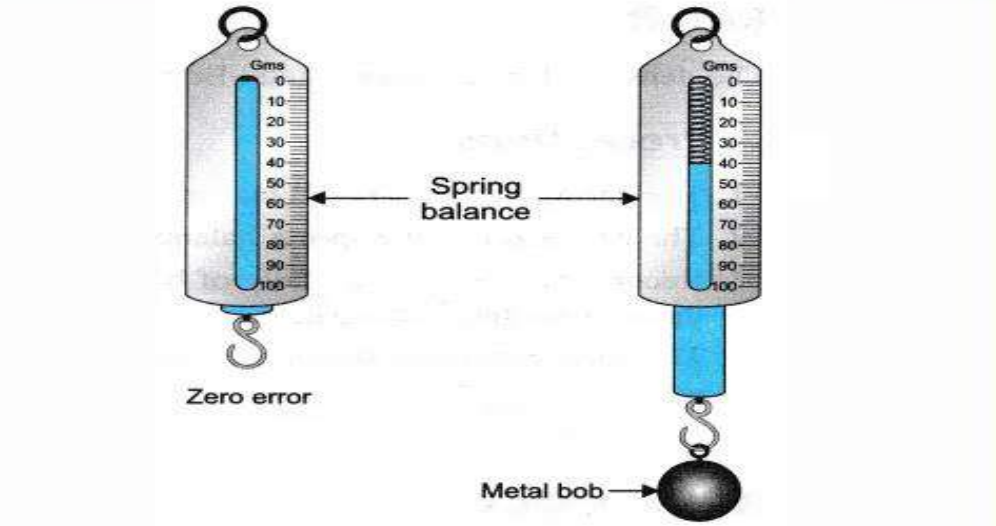
Here, D = Density of the body

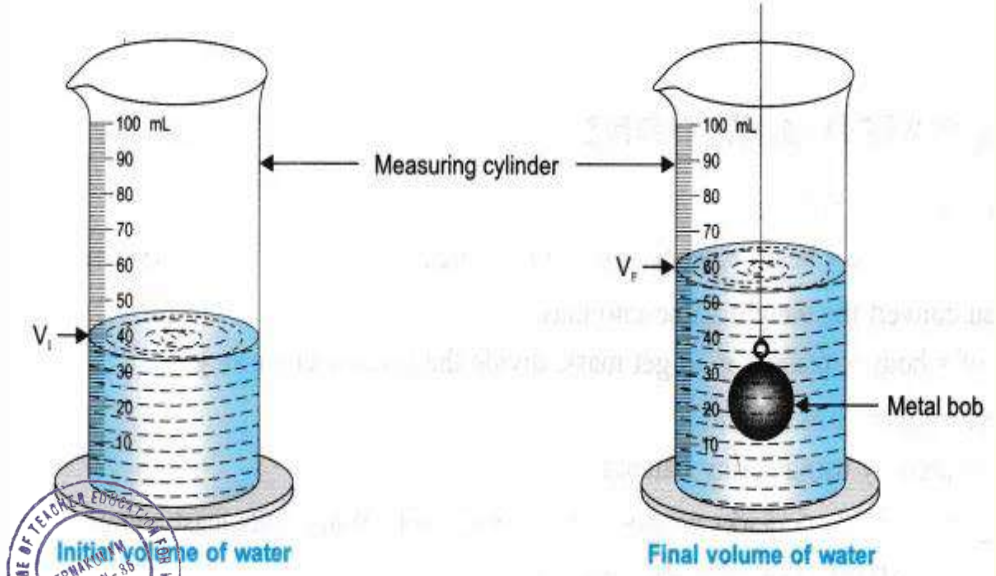
M = Mass of the body

V = Volume of the body.

1.S.I. unit of density = Kgm^{-3} or Kg/m^3

c.g.s. unit of density = g/cm^{-3} or $g\ cm^{-3}$





Weight

1. The force due to the gravitational attraction of the earth that acts on a body is called weight.
2. (Weight) Force = mass x acceleration.

Force = mass x acceleration due to gravity (g)

Force = mass x g

i.e Weight = m x g

3. Weight of a body = Force on the body.
4. S.I. unit = Newton = 1 kg m/s^2

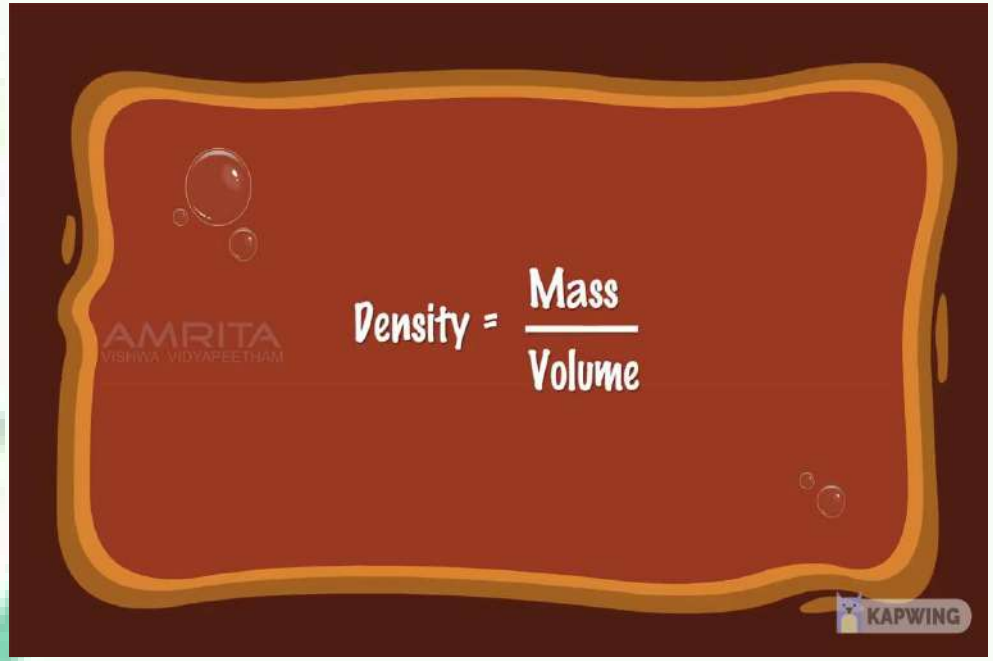
N=1 kgf=1 kilogram force,

i.e g = 9.8 m/s^2

5. Weight is measured by spring balance.

Materials Required

A spring balance, a measuring cylinder, a beaker with water, a metal bob (or any body that is heavier than water and does not dissolve in water), a cotton string, a stand (optional).



Procedure

1.Tie a metal bob (or any solid) with the string of cotton to the hook of the spring balance. The spring balance should be checked for any error. Let the zero error be 'x'.

2.Hold the spring balance (or tie it to the stand), suspended with the metal bob in air. Measure the weight of the bob. Let its weight be 'W_F'

3.Pour the water in the measuring cylinder and record the initial volume of water, let it be ' V_1'

4.Suspend the metal bob into the measuring cylinder with water. The bob should not touch the base, nor the sides of the cylinder.

The water level rises, measure the increased water level, let this volume be ' V_F'

5.Record all your observations in the observation table and do the calculation to find the density of a given solid metal bob.

OBSERVATION TABLE

WEIGHT OF THE SOLID (METAL BOB) (M)

Initial Reading of Spring balance, x	Final Reading of spring balance with Metal Bob (W_F)	Weight of the Metal Bob $W = W_F - x$
0	400	400

1. Weight of the given Metal Bob = 400N
2. Mass of the Metal Bob = 400/9.8 = 40.8 g

VOLUME OF THE SOLID (METAL BOB) (V)

Initial Volume of water in cylinder V_I (mL)	Final volume of water when Metal Bob is immersed V_F (mL)	Volume of the Metal Bob $V = V_F - V_I$
40	60	20

Volume of water displaced by solid (metal bob) = 20 ml

2. Density of a solid (metal bob) = 40.8g20ml = 2.04 g/cm3

Result

The density of given solid (Metal Bob) is 2.04 g/cm^3

VIVA VOCE

Question 1:

Define density.

Answer:

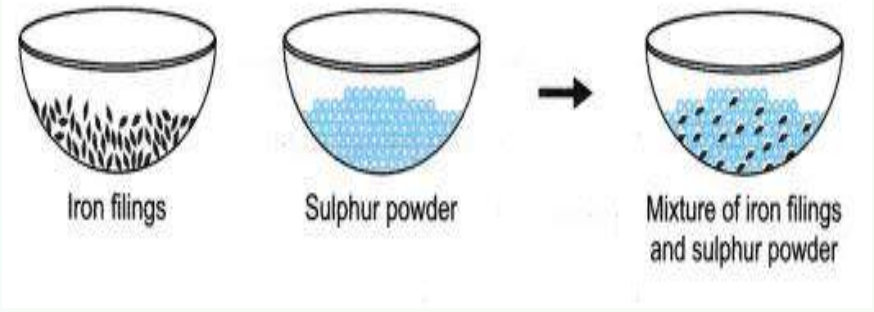
Density is defined as the mass per unit volume.

Question 2:

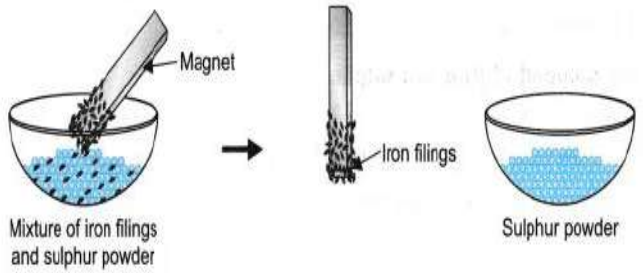
State the S.I. unit of density.

Answer:

kg/m^3.



I.



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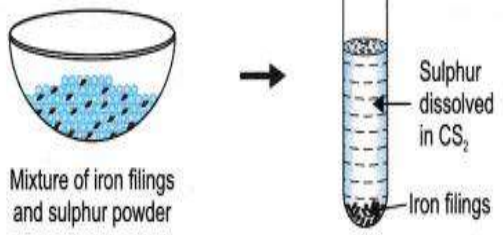


UNIT-2

MIXTURES AND COMPOUNDS

EXPERIMENT

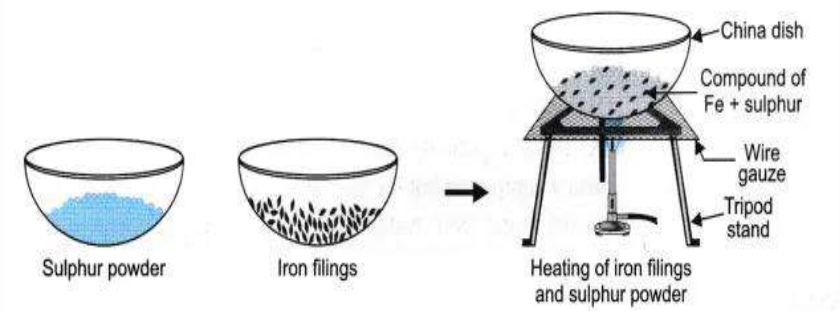
AIM

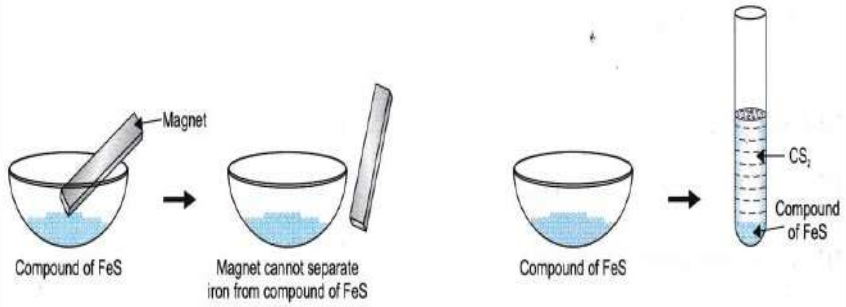
To prepare
1.a mixture
2.a compound
using iron filings and sulphur powder

THEORY

Mixture: When two or more than two substances mix together in any proportion physically and do not show any chemical change, retain their individual properties, then they form a mixture.

Compound: When two or more than two substances combine together chemically in a fixed ratio, such that they can be separated only by chemical means, then a compound is formed.





Materials Required

Test tubes, test tube stand, test tube holder, hard glass test tube, Bunsen burner, tripod stand, wire gauze, magnet, China dish and a watch glass.

Chemicals Required

Iron filings, sulphur powder, carbon disulphide

Procedure

1.Preparation of a mixture of iron and sulphur powder.

Take a pinch of iron filings and two pinch of sulphur powder, mix them thoroughly. The product obtained is mixture of iron and sulphur. Keep it in a watch glass (A).

2.Preparation of the compound of iron and sulphur.

Take a pinch of iron filing and a pinch of sulphur powder in a hard glass test tube. Hold it in a test tube holder, heat it on the flame till the contents glow. The reaction between sulphur and iron filings is seen in the test tube and iron sulphide is formed. Transfer the compound formed in a watch glass (B).

(The mixture of iron filing and sulphur powder can be heated in China dish)

Record your observations in the table.

OBSERVATION TABLE

	Experiment	Observations	Inference
1.	**Observe for appearance**	Watch glass (A) shows heterogenous mixture and (B) shows a black mass of homogeneous substance.	(A) is mixture which is heterogeneous and (B) is homogeneous substance.
2.	**Action with Magnet.** A bar magnet is rolled over both the watch glasses A and B.	Iron filings cling to magnet from watch glass (A) but not in (B).	Constituents of mixture (A) can be separated physically but not in (B) *i.e.*, compound.
3.	**Behaviour towards carbon disulphide.** Take components from watch glass (A) and (B) in separate test tubes and add carbon disulphide in it.	In test tube (A) sulphur dissolves in carbon disulphide and iron filings settles down. Whereas in other test tube (B) nothing dissolves.	Components of mixture can be separated by physical means. A is mixture. B is compound.
4.	**Effect of heat**	On heating mixture from watch glass (A) the components react together to form a compound but no change is seen in compound from watch glass (B).	The mixture components from watch glass (A) react together to form a chemical compound, but no change is seen in compound from watch glass (B).

RESULT

Mixtures and compounds differentiated clearly

VIVA VOCE

Question 1:

Is mixture a pure substance?

Answer:

No.

Question 2:

Is alloy a homogeneous or heterogeneous mixture?

Answer:

It is a homogeneous mixture.

Question 3:

Give one test to show that mixtures can be separated physically.

Answer:

Take sulphur + iron-mixture, roll magnet over it, iron filings clings to magnet

Melting Point of Ice and Boiling Point of Water

EXPERIMENT

AIM

To determine the melting point of ice and boiling point of water.

THEORY

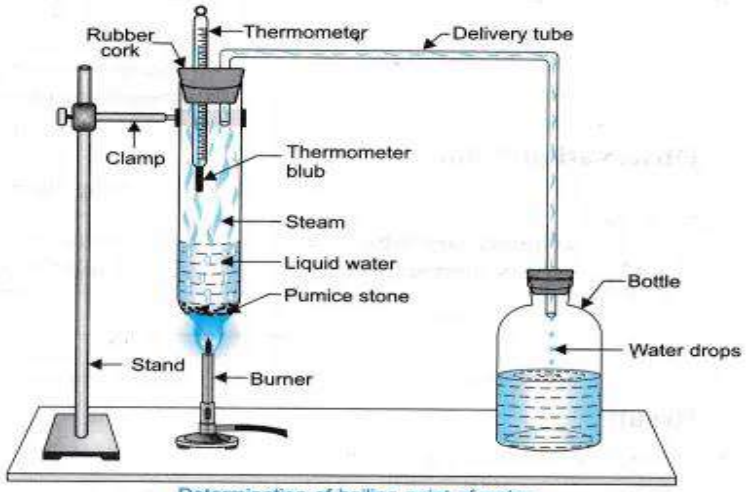
1.Melting Point: The temperature at which the solid changes into liquid at the atmospheric pressure is called melting point. For example, ice melts at 0°C to form water.
2.Boiling Point: The temperature at which the liquid boils and changes into gaseous state at the atmospheric pressure is called boiling point. For example, water boils at 100°C

5.Latent Heat of Fusion: The heat energy absorbed during the melting of ice is stored in the water formed, this energy is called latent heat of fusion.

4.Latent Heat of Vaporisation: The heat energy absorbed by water when it changed its phase to steam, this hidden heat is called latent heat of vaporisation.

Materials Required

Two thermometers, (Celsius scale), boiling tube, a glass rod, two iron stands, a bunsen burner, wire gauze, beakers, tripod stand, distilled water, ice cubes prepared from distilled water



Determination of boiling point of water.

Procedure

(A)To determine the boiling point of water.

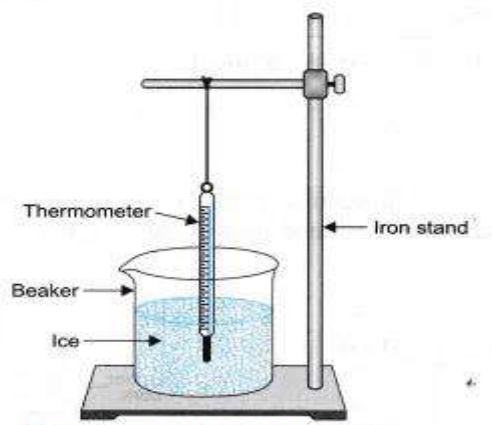
1.Take 25-30 ml of water in a boiling tube and add few pumice stones to it.

2.Clamp the boiling tube on iron stand with two holed cork, in one hole fix the thermometer and in the other one fix the delivery tube.

3.Place the thermometer above the water in the flask as shown in the figure.

4.Place a burner under the boiling tube.

5.Read the temperature and record it in the given observation table till the water boils. Record the reading after the time interval of 1 minute.



Determination of melting point of ice

To determine the melting point of ice.

1.Take a beaker half-filled with the dry crushed ice obtained from distilled water.

2.Suspend a Celsius thermometer from the clamp stand such that the bulb of the thermometer is completely surrounded by ice.

3.Read the thermometer reading and record the temperature after every 1 minute till the ice melts and the thermometer reading remains stationary for 2 minutes.

4.Note the readings in the observation table

Observation Table

Boiling Point of Water

S.No.	Temperature when water starts boiling (t_1°C)	Temperature when water continues to boil till constant (t_2°C)	Boiling point of water $\left(\frac{t_1+t_2}{2}\right)$°C
1.	99.8	100	99.9
2.	100	100	100

Melting Point of Ice

S.No.	Temperature when ice starts melting (t_1°C)	Temperature when ice melts completely (t_2°C)	Melting point of ice $\left(\frac{t_1+t_2}{2}\right)$
1.	0.5	0	0.25
2.	0	0	0

Result

1. Boiling Point of water is 100 °C.
2. Melting point of ice is 0 °C.

VIVA VOCE

Question 1:

What is the melting point of pure water ice cubes?

Answer:

0°C.

Question 2:

What is the boiling point of pure water?

Answer:

100°C.

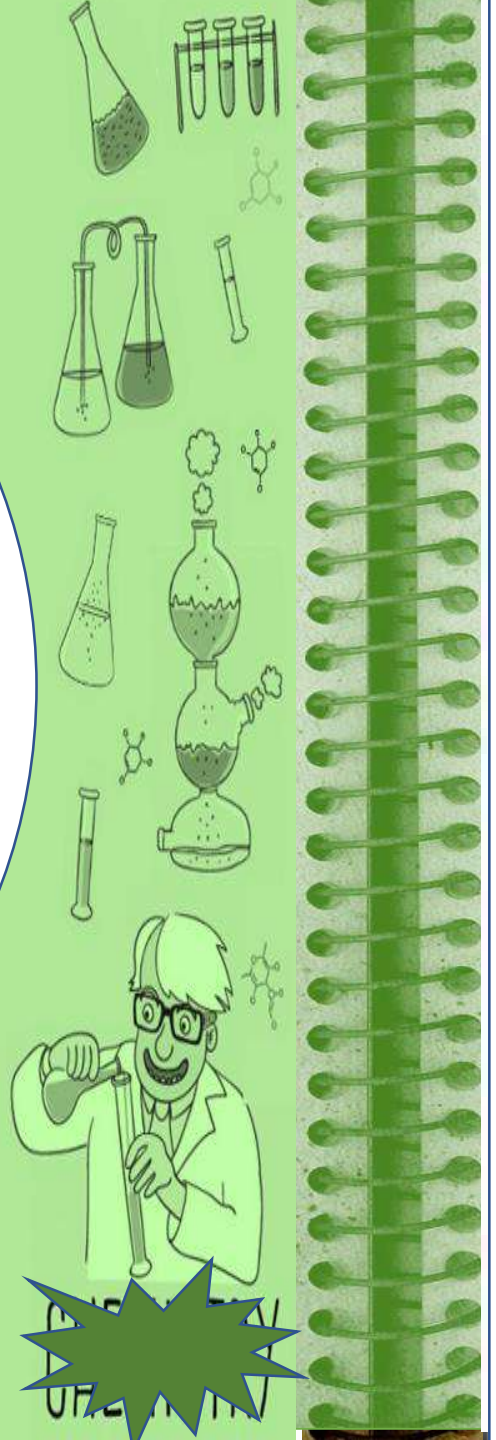
Question 3:

At what temperature will you get the latent heat of fusion for water?

Answer:

At 0°C.

THANKYOU



PUZZLE BOOK

Anjumol Paul
First Year B.Ed
Physical Science

PREFACE

Puzzle book is basically an activity book which contains a collection of puzzles. Puzzles helps to build cognitive and fine motor skills. Furthermore it will develop critical thinking and problem solving skills.

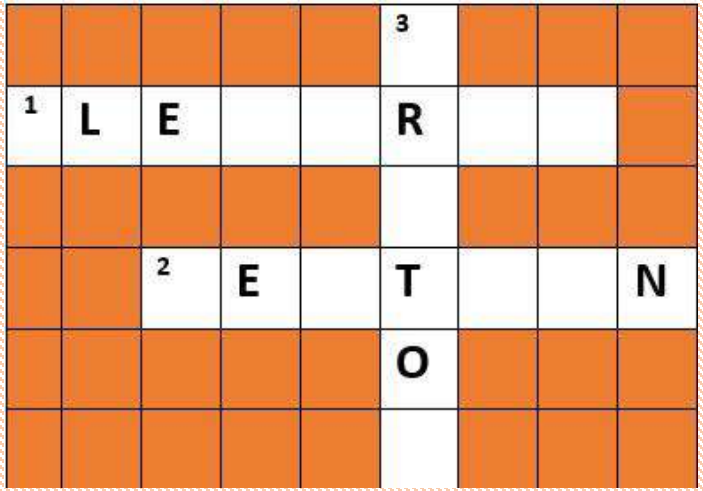
This puzzle book is prepared based on the SCERT syllabus of class 9.This puzzle book contains 20 crosswords, 10 picture game and 10 word game , covering the entire syllabus of class 9. I hope this puzzle book will help students to build self-confidence and boost their interest in learning.

CONTENT

INTRODUCTION

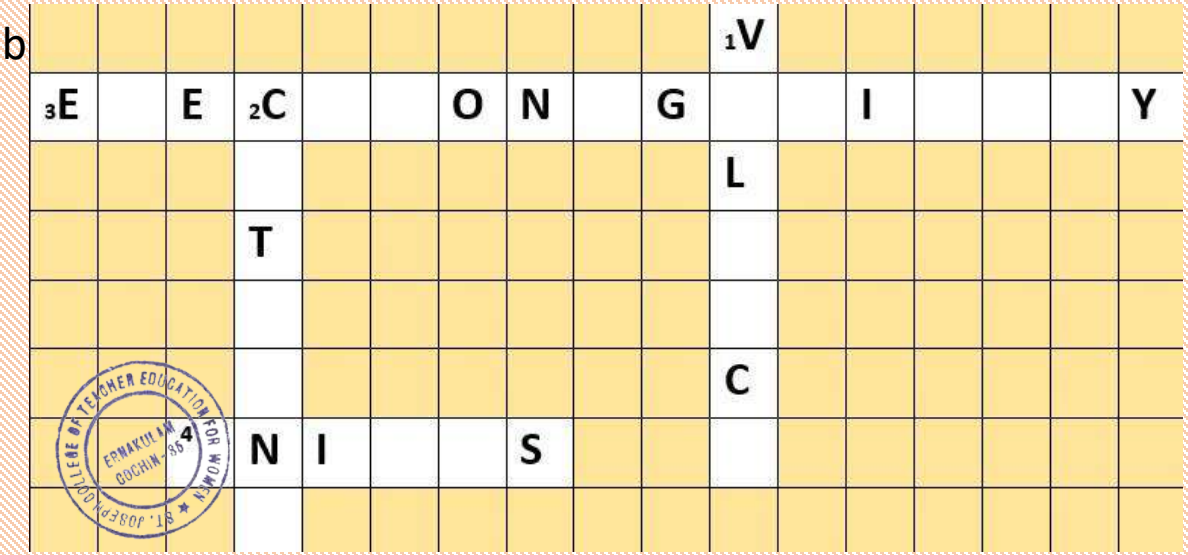
CROSSWORDS

a



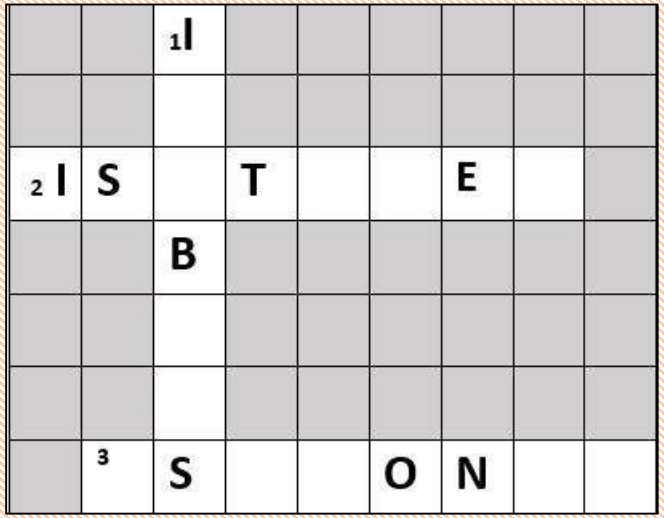
1: Negatively charged particle seen around the nucleus
2: Neutrally charged particles present inside the nucleus
3:Positively charged particle present inside the nucleus

b



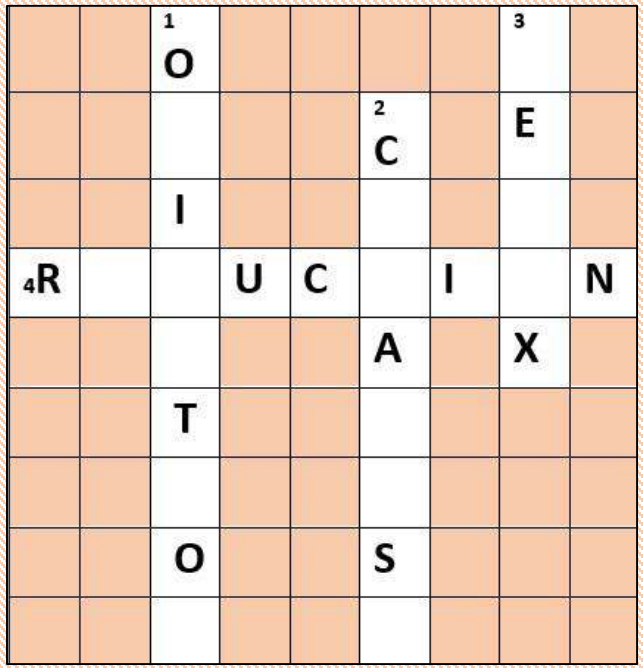
1: The number of electrons lost, gained or shared by an atom during chemical reaction
2: Positively charged ions
3: In a covalent bond the relative ability of each atom to attract the bonded pair of electrons towards itself.
4: Negatively charged ions

c



1 : Atoms having same mass number but different atomic number.
2: Atoms of the same element having the same atomic number but different mass number.
3: Atoms with same number of neutrons.

d



1: The process of loss of electron.
2:Substances which alter the rate of chemical reactions without themselves undergoing any permanent chemical change.
3:The process in which oxidation and reduction take place simultaneously.
4: The process of gain of electrons.

e

1 N		B		E	3 G		S
	2 P		R			D	
					U		

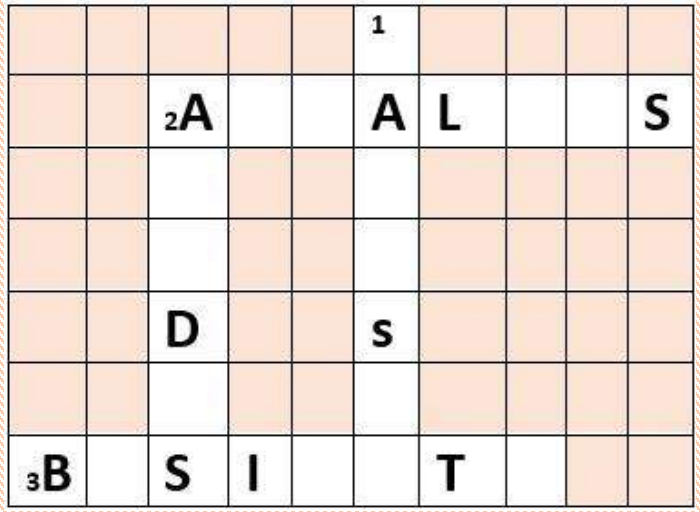
f

	1 L	2	N	T		A		O	I			S
		C										
2 M	E		A		L	O		D				
		I										
		O										
		E										

1: The elements of group 18 in the periodic table.
2:The horizontal rows in the periodic table.
3: The vertical column in the periodic table.

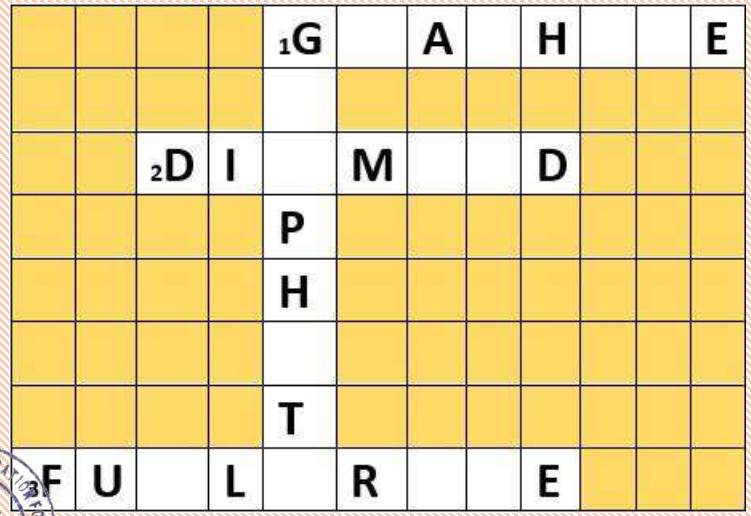
1: Inner transition elements from Lanthanum to Lutetium of period 6.
2: Inner transition elements from Actinium to Lawrencium of period 7.
3: Elements exhibiting the properties of both metals as well as non-metals.

g



1: substances which can increase the concentration of hydroxide ions in an aqueous solutions
2: Water soluble bases.
3: The number of hydrogen ions that can be donated by one molecule of an acid.
Downwards
2: Substance which can increase the concentration of hydrogen ions in aqueous soltions.

h



1: Two dimensional sheets of hexagonal rings formed by carbon.
2:Hardest allotrope of carbon.
3: Allotrope of carbon which is a hollow structure consisting of pentagons and hexagons.
Downwards
1:The softest crystalline allotrope of carbon.

i

				1C										
2D		C	O			O			T		O	N		
				B										
			3D		S			A	C			E		
				N										
				T										
				N										

1: Chemical process in which a substance reacts rapidly with oxygen and gives off heat.
2: Chemical reaction in which one reactant breaks down into two or more products.
3: Reaction wherein the atom or a set of atoms is displaced by another atom in a molecule.

j

		1A		2N							
3L		T			S						
				T							
		I		A							
		D									
				I							
	4D	I			S		C				
				T							
			5M		N			A			C
				N							

1:Medicine used to reduce acidity in stomach.
2:Chemical reaction in which acid and alkali react to nullify their individual properties.
3:A type of paper that changes colour in response to the pH of solution.
4: Acid in which basicity is 2
5: Acid in which basicity is 1

k

		1C		2C							
4B		O	Y				Y				
				P							
		S		L				3V			
				5	D		E			O	
		N		R				C			
				Y				S			

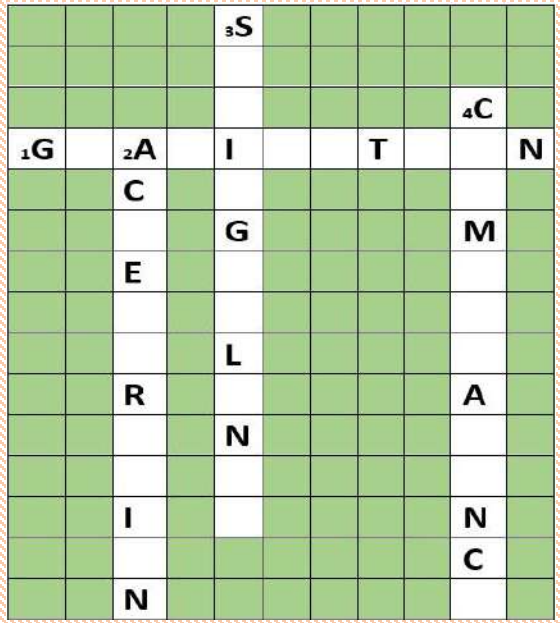
l

		1						
3	N			T	I			
		W						
								2I
	4M			E			U	
		N						
								U
								E

1:The intermolecular attraction between like molecules.
2:The rise or depression of a liquid in a narrow tube or a minute hole
3:The frictional force acting parallel to the layers of a liquid in motion, which try to prevent the relative motion between layer.
4:The upward force exerted by a fluid on a body which is immersed completely or partially in a fluid.
5:The tendency of dissimilar particles or surfaces to cling to one another.

1: SI unit of force
2:An effect of force acting over time to change the momentum of an object.
3:A property of matter by which it continues in its existing state of rest or uniform motion in a straight line ,unless that state is changed by an external force.
4: It is the product of mass and velocity.

m

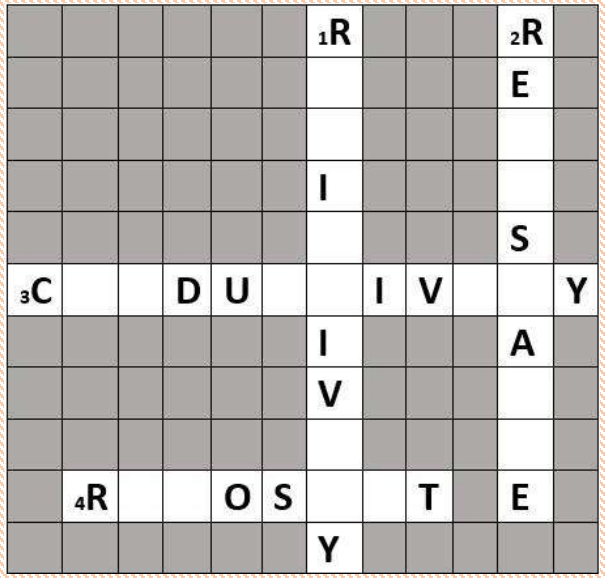


n

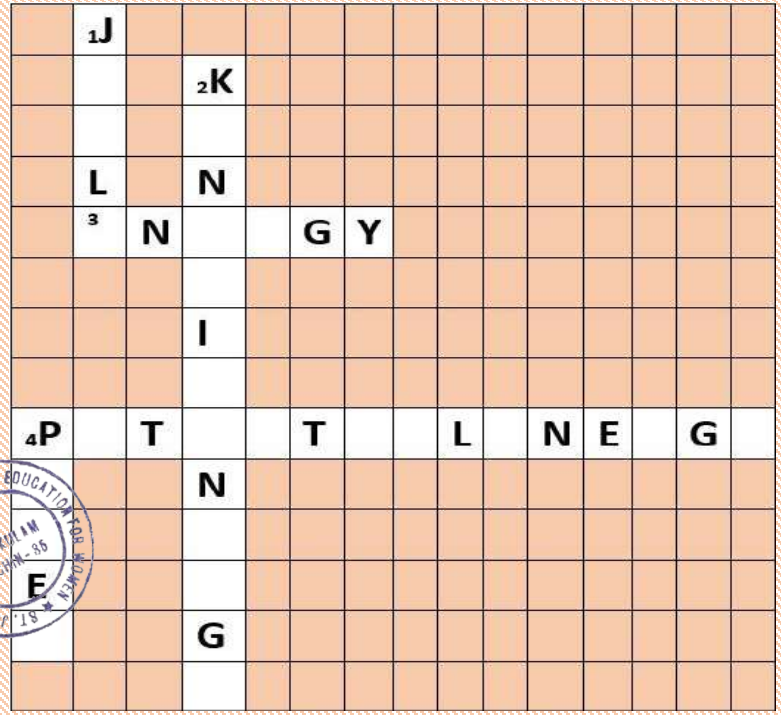
1. Movement ,or a tendency to move towards a centre of gravity,as in the falling of bodies to the earth.
2. Rate of change of the velocity of an object with respect to time.
3. Instrument used to measure weight.
4. Instrument used to measure mass.

1:Device used to measure the potential difference and emf.
2:SI unit of electric resistance.
3:SI unit of electric charge.
4:Device used to measure current in a circuit.

o



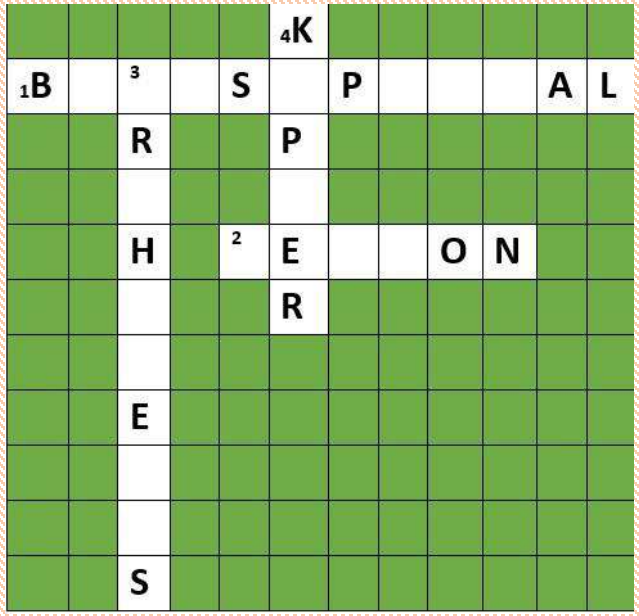
p



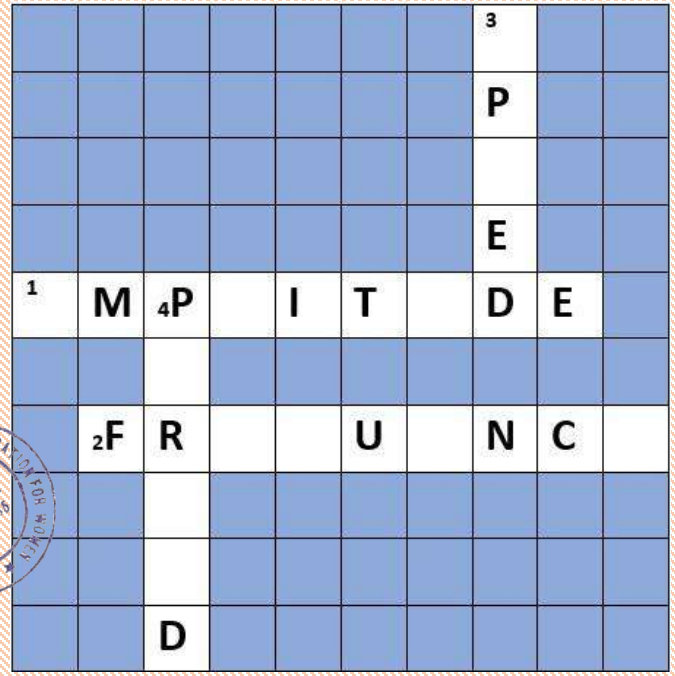
1: The resistance of the conductor of unit length and unit area of cross section.
2: A measure of the opposition to current flow.
3: Reciprocal of resistivity.
4: Device used to regulate the current in a circuit by changing the resistance gradually.

1:SI unit of work.
2:Energy possessed by a body by virtue of its motion.
3: Capacity to do work.
4: The energy possessed by a body by virtue of its position.
Downwards
4: work done per unit time.

q



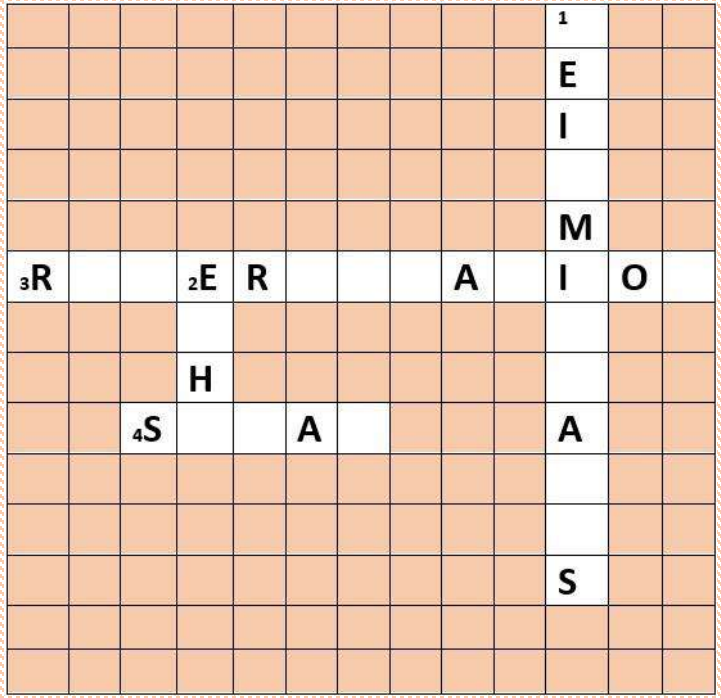
r



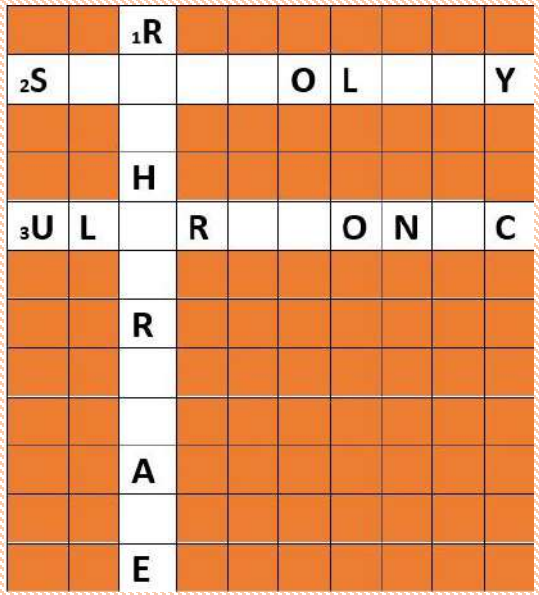
1: Scientist regarded as the father of pressure.
2:Scientist best known for his theory about law of gravity.
3: Scientist best known for his formulation of a hydrostatic principle known as Archimedes principle.
4:scientist who discovered that Earth and planets travel about the sun in elliptical orbits.

1:Maximum displacement of a particle from its mean position.
2: Number of vibrations in one second.
3: Distance travelled by a wave in one second.
4: Time taken for a particle in a medium to make one complete vibration.

s



t

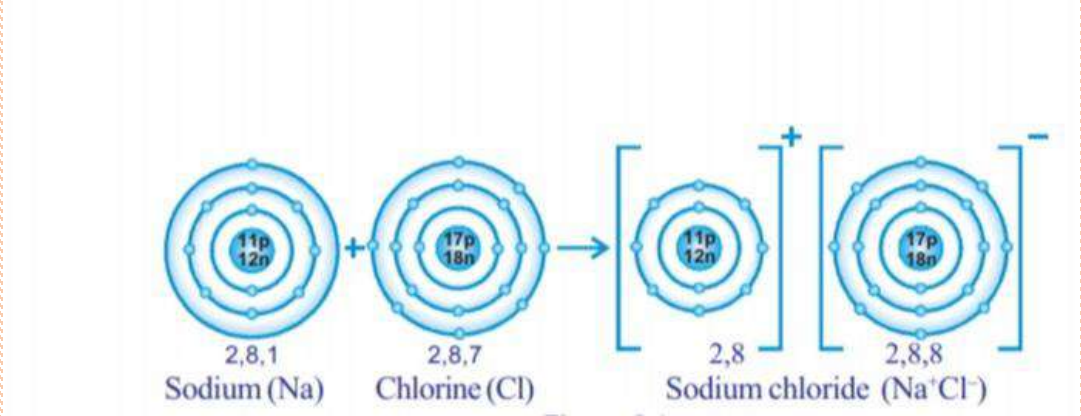


1: Waves originating from the epicentre of the earthquake.
2:The phenomenon of hearing a sound by reflection from a surface or obstacle,after hearing the original sound.
3: The persistence of sound as a result of multiple reflection.
4: Device that uses ultrasonic waves to measure the distance ,direction and speed of objects under water.

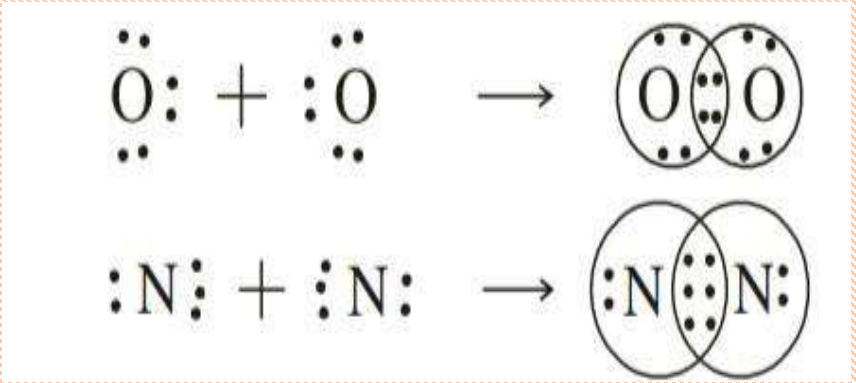
1: Intensity of earthquake is measured in ……
2: Branch of science that deals with the study of seismic waves.
3: Sound with a frequency greater than 20000 Hz.

PICTURE GAME

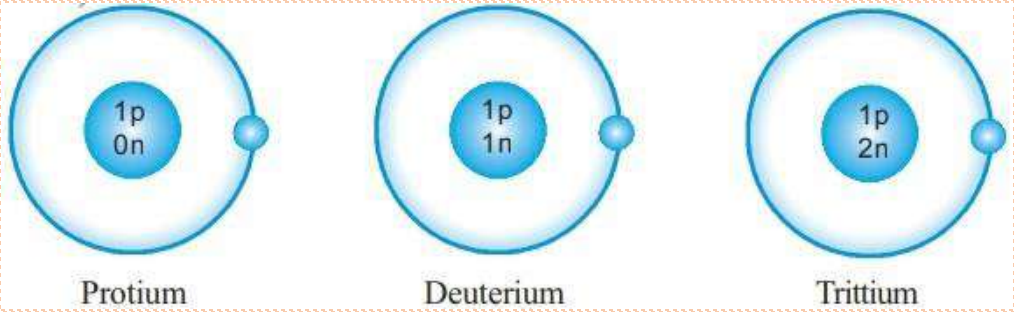
1. Carefully observe the picture and identify the type of bonding present ?



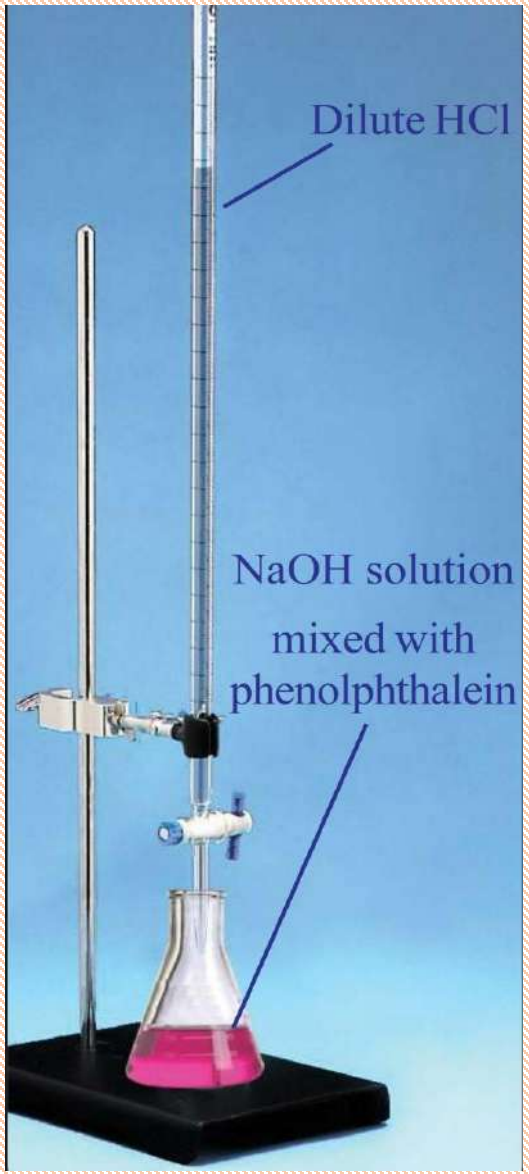
2. Comment on the type of bonding seen in the given figure.



3. Mention the name commonly used to denote the atoms shown in the figure .Also comment about the peculiarity of these atoms.

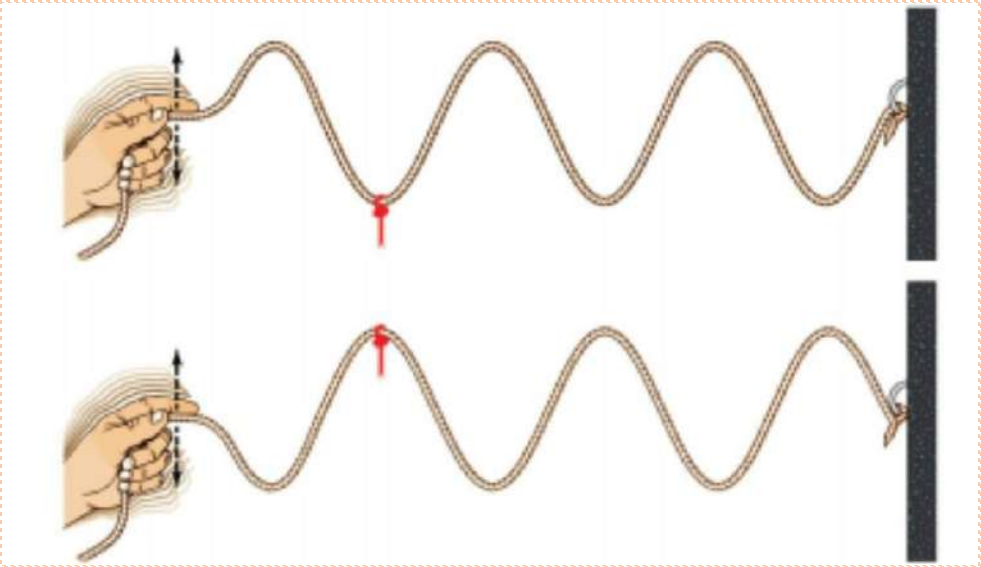


4. Carefully observe the picture and name the reaction takes place when Dil. HCl reacts with NaOH using phenolphthalein indicator



5. Name the gas liberated when Zn reacts with HCl

6. Identify the type of wave formed in the given figure and comment on the direction of propagation of wave.



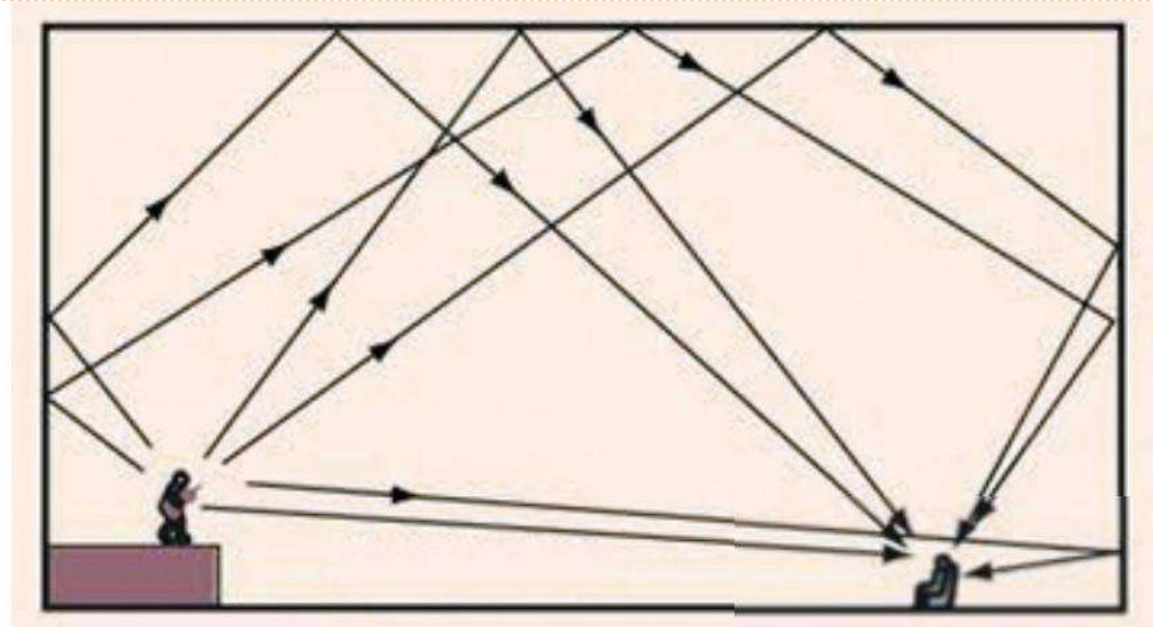
7. Which team will win and why?

TEAM A

TEAM B

8. Observe the picture and identify the force acting in the upward direction which is responsible for floating of a ship and blade in water.

9. Carefully observe the picture and identify the phenomenon depicted in the picture.



10. The instrument given in the figure is used for measuring the EMF and potential difference. Identify the instrument.

WORD GAME

Who Am I?

1.

I am the device , which is used to measure the relative density of a liquid.

2.

I am the force responsible for the spherical shape of water droplets on a leaf.

3.

I am the characteristic property of moving objects. I am measured as the product of the mass and velocity of a body.

4.

I am the force responsible for the circular motion of a stone, tied to a string during whirling.

5.

I am responsible for the downward falling of rain drops.

6.

I am the person who discovered electron.

7.

I am the attractive force that holds together various atoms in a molecule.

8.

I am the one who loss electron during a chemical reaction.

9.

I am the person who is regarded as the father of modern periodic table.

10.

I am the instrument used to measure pH of solution.

Answers

CROSSWORDS

a) 1.Electron
2.Neuton
3.Proton

b) 1:valency
2:cations
3:Electronegativity
4: Anions

c) 1:Isobars
2:Isotopes
3:Isotones

d) 1:Oxidation
2: Catalyst
3: Redox
4: Reduction

e) 1:Noblegas
2:Period
3:Group

f) 1:Lanthanoids
2: Actinoids
3:Metalloids

g) 1:Bases
2:Alkalies
3:Basicity
DOWNWARDS
2: Acid

h) 1:Graphene
2:Diamond
3:Fullerene
DOWNWARDS
1: Graphite

i)
1: Combustion
2: Decomposition
3: Displacement

j)
1: Antacid
2: Neutralisation
3: Basicity
4: Dibasic
5: Monobasic

k)
1: Cohesion
2: Capillarity
3: Viscous
4: Buoyancy
5: Adhesion

l)
1: Newton
2: Impulse
3: Inertia
4: Momentum

m)
1: Gravitation
2: Acceleration
3: Spring Balance
4: Common Balance

n)
1: Voltmeter
2: Ohm
3: Coulomb
4: Ammeter

o)
1: Resistivity
2: Resistance
3: Conductivity
4: Rheostat

p)
1: Joule
2: Kinetic Energy
3: Energy
4: Potential Energy

DOWNWARDS
4: Power

q)
1: Blaise Pascal
2: Newton
3: Archimedes
4: Kepler

r)
1: Amplitude
2: Frequency
3: Speed
4: Period

s)
1: Seismic waves
2: Echo
3: Reverberation
4: SONAR

t)
1: Richter scale
2: Seismology
3: Ultrasonic

Answers

PICTURE GAME

1: Ionic bonding
2: Covalent bonding
3: Isotopes
They are atoms of same element having same atomic number but different mass number
4: Neutralisation
5: Hydrogen
6: Transverse wave
In this waves,displacement of particle is perpendicular to the direction of propagation of waves.
7: Team A
Because a force of 400 N is applied by Team A whereas only a force of 300 N is applied by Team B.
8: Buoyancy
9: Reverberation
10: Voltmeter.

ANSWERS

WORD GAME

1: Hydrometer
2:Surface tension
3: Momentum
4:Centripetal force
5:Gravitation
6:J.J Thomson
7: Chemical bonding
8:Reducing agent
9: Dmitri Ivanovich Mendeleev
10:pH meter

Submitted by
Vinny Pappachan
Physical Science

DIGITAL QUESTION BANK

ST.JOSEPH COLLEGE
OF TEACHER EDUCATION
FOR WOMEN, ERNAKULAM..

Vinny pappachan
Physical Science

15th .SOLUTIONS

- Soft Drinks.
- True solution,colloid,suspension.
- Concentration of solution.

4th .PROPERTIES OF *MATTER*

- Matter
- Separate the component from mixtures.

15.Solutions

!.SOFT DRINKS

I].Fill in the blanks

a].which acid is contained in soft drink?

b].Soft drinks contains excess amounts of…..we don't feel the sour taste of the acids in them?

c]. MSG is……

d]…….is used as a stimulating agent in chocolate.

e]…..give red color to drinks.

II].Multiple choice questions.

a].which chemical is used for ripening of fruits?
[MSG,Tartrazine,Ethylene]

b].What is the name of the preservative used in pickle?
[sodium benzoate ,phosphoric acid ,caffeine]

c].A substance which is used to give red color to drinks.
[Amaranth,Ethephone,Calcium Carbide].

d].Find the odd one.
(Ink,suspension,colloid,Tyndall effect)

e]. Which acid is used in soft drinks? . (carbonic acid, phosphoric acid, acetic acid)

III].Short Answers

a].What are the harmful side effects of adding coloring substances such as Metanil yellow, Lead chromate etc. to our food?.

b].What are the coloring materials used in food products?.

c].What are the flavouring agents used in food?.

d].what are the purposes of using various chemical substances in food?.

e].The regular use of fast food & packet food products are not good ?.Do you agree with this ?.Give reason.

IV].Match the following.

a].Soft drink - 1 Flavoring agents.

b].Preservative -2 Phosphoric acid

c].Erithrocine -3 Caffeine

d].Stimulating agent -4 coloring material

e].Aginomotto -5 Sodium benzoate.

V].True or False

a].Soft drinks contain a large quantity of citric acid.(T/F).

b].Aginomotto is not a flavouring agent. (T/F).

c].Tartrazine gives red color to food products.(T /F).

d].Caffeine is used a stimulating agent in chocolate.(T /F).

e].Amaranth gives red colour to drinks?. (T /F).

VI].Essay

a].What are the harmful effects of acids , sugar, Caffeine etc.that are added to soft drinks?.

b].Find out the chemicals used in chocolates and such sweets. Compare their merits and demerits?.

c].A friend of yours who participated in a seminar on soft drinks made the following statement “Excessive use of cola drinks will adversely affect our health and also the economic situation". How far do you agree with this statement?

d].Is it desirable to use preservatives in drinks?

e].Does the regular intake of such synthetic drinks cause the entry of harmful chemicals to our body?.

2.True solution, Colloid, Suspension.

I].Fill in the blanks

a].Paint: colloid ; Muddy water : ……

b].Air mixed with moisture ; solution ;mist: …….

c].Light can’t conduct : Suspension; path of the light is not visible : …….

d]. Sugar solution : true solution

milk : ……..

e].Colloids : heterogeneous.

True solution : ……

II].Multiple choice questions.

a].Example of colloid.

(Blood, Muddy water, Smoke).

b].which one is not the property of colloid?.

(Heterogeneous, Homogeneous, none of these)

c].which is the true solution.

(Chloride in water ,fog ,chalk and water)

d]. Size of particle in a true solution.

(<1nm ,1nm- 100nm ,>100 nm).

e]. How does diffusion take place in colloids?.

(Diffuse quickly, Diffuse slowly, Do not diffuse).

III].Short Answers.

a].What is a colloid?.
b].Why milk is seen as a white?.
c].Find out whether the statement given below is correct or not. Give reason for your answer?
" muddy water is a suspension".
d].How do true solution , colloid & suspension differ with regard to particle size.?.
e]. What is Tyndall effect? Write 2 properties of colloid?.

IV].Match the following.

a].colloid -1 charcoal
b].Homogeneous mixture -2 muddy water
c].scattering of light -3 Tyndall effect
d]. Suspension -4 True solution
e]. Heterogeneous mixture -5 blood.

V].True or False.

a].Atmospheric air is an example for suspension. (T /F) .
b].Substance containing more than one component are called mixtures. (T /F) .
c].Particles of milk can easier to filtered off using a filter paper. (T /F) .
d].Colloids are heterogeneous in nature.(T/F).
e].Colloidal particles do not settle down & can't be filtered out. (T/F).

VI]. Essay.

a].Consolidate the peculiarities of colloids and compare it with the peculiarities of solutions and suspensions.
b].Have you noticed that the path of the light beam can be clearly seen due to the dust particles in a cinema theatre and in smart classrooms where visuals are shown using a projector ? What is the reason behind this?.
c].write the properties and examples of colloids.
d].What are the differences between colloids and solutions.?.
e].How do true solution , colloid and suspension differ with regard to particle size, filtering, ability to settle down, existence of particles.

3.Concentration of solution.

I].Fill in the blanks.

a].The solubility will …… with increases in the temperature.
b].substances containing more than one component are called ……
c].In a sugar solution , sugar is the …(1)…and water is the …(2)…..
d].A solution in which maximum amount of solute dissolved is it's …….
e].The component present in the solution in greater quantity is the …..

II].Multiple choice Questions.

a].In a sugar solution sugar is the …….
(solute, solvent, solution).
b].The solute in soda water is …..& solvent is the water.
(soda, oxygen. Carbon dioxide, carbonic acid)
c].Brass is a solid solution. The solute in it is zinc .Which is the solvent?
(Tin,Brass,Copper,Bronze)
d].substances containing more than one component are called….
(mixtures,compound,unsaturated solution)
e].Find the odd one.
(sea water, Alloy of metal,Petrol,Muddy water).

III].Match the Following.

a].Muddy water -1 Temperature
b].Bronze -2 Heterogeneous
c].Carbon dioxide -3 Solute
d].Solubility - 4Copper + Tin.
e].Alloy of metal -5 Homogeneous

IV].True or False.

a].The solvent in soda water is Carbon dioxide.(T / F)
b].The substance which dissolved is the solute.(T/F).
c].When adding more of the solvent , conversion of a saturated solution to an unsaturated solution occures.(T/F).
d].Turpentine is used for removing the paint stain.(T/F).
e].Bronze is not a solid solution (T/F).

V].Short Answers.

a].You know that soda water is prepared By dissolving carbon dioxide in water. What is done to increase the solubility of carbon dioxide?.

b].what is meant by solubility?
c].What are the two factors that influence the solubility?
d].What is meant solvent,solute,solution?.
e].Is there any change in the amount of solute dissolved when the temperature changes?

VI].Essay.

a].What is a crystal?.How can it be grown?.
b].prepare a note on:
- conversion of unsaturated solution to saturated solution.
-conversion of a saturated solution to an unsaturated solution.
c].what is the influence of temperature on the solubility of substances, give example?
d].what is the difference between saturated and supersaturated solution?
e].How will you prepare a supersaturated solution of common salt?.

4.Properties of matter.

1.Matter

I].Fill in the blanks.

a].On heating force of attraction between molecules ……..
b].In …… substances molecules exist very close.
c].Formation of mixture: physical change.
Formation of compound : ……..
d]……..is responsible for the change of state of matter.
e].When molecular movement increases, diffusion will ……

II].Multiple choice Questions.

a].which of the following is matter?
(Heat, shadow, sunlight, Air)
b].The particles of a substances are …….
Packed in the solid state.
(Loosely, Closely)
c].The quantity of matter in a body is called it's …….(volume, mass, weight)

d].Any object or anything that takes up space & has mass is called……
(stuff, Gas,Matter,Atoms).
e].Dry ice means…
(Solid CO_2, solid carbon monoxide, solid sulphurdioxide, solid water).

III].Match the following.

a].4th state of matter - liquid
b].Lemonade - Plasma
c].Neither shape nor volume - heat
d].Change of state of matter - Solid CO_2
e].Dry ice - Gases.

IV].True or False.

a].Gases have mass.(T/F)
b].Light is a matter.(T/F)
c].A solid has it's own shape & take up space.(T/F).
d].Liquids are usually easier to pour than solids.(T/F).
e].Steam is an example of Gas.(T/F).

V].Short answers

a].What are the characteristics of particles of matter?
b].What are the properties of liquids?
c].Gases have no definite shape or volume compared to solids and liquids .Why?.
d].what is the difference between pure substances and mixtures?.
e].A wooden table should be called a solid. Give reasons.

VI].Essay.

a].What are the three states of matter?.Define each of them with two example.
b].What is diffusion?.write more example for diffusion from daily life. What is the relation between the movement of molecule and diffusion in different state?

c].What is the difference between pure substances & mixtures . Give examples.

d].Explain why, water is not a mixture?

e].An incense stick has fragrance .But the fragrance fills the room only when the stick is lit. why do the fragrance spreads quickly in the room when the incense stick is lit?

2.Separate the component from mixtures.

I].Fill in the blanks.

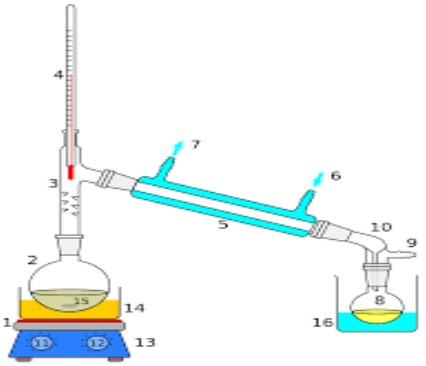
a].On heating a solid directly changes to gas is called ….

b]……. is used to separate the mixture of immiscible liquids.

c].The change of water vapor into water is called….

d].solid directly changes into a gas is called ……

e].Name the process.



II].Multiple choice Questions.

a].In distillation which component evaporates.
(Water, salt solution, salt)

b].Spirit kept open in a watch glass disappear after some time. which among the following phenomena are responsible for this?
(sublimation,distilation,Evaporation,Diffusion).

c].The method of separating the solvent by vaporization of the solution is called ….
(Evaporation, Diffusion, Distillation)

d].Change of water vapour into water is called …..
(condensation,diffusion,fusion).

e].Steam condenses to form water , attractive force …….
(Increases, Decreases).

III].Match the following.

a].Camphor &glass powder - 1.evaporation.

b].Sugar solution –2.using separating funnel.

c].petrol &kerosene - 3.sublimation

d].separation of cream from milk-4.fractional distillation

e].oxygen from liquid air-5.centrifugation.

IV].True or False.

a].Tea leaves can be separated by filtration.(T/F).

b].coloured substances are separated by centrifugation.(T/F)

c].Petrol & kerosene from crude oil can be separated by fractional distillation.(T/F).

d].A mixture of two miscible liquids can be separated by the process called distillation .(T/F).

e].Centrifugation is the process to separate particles of colloidal solution.(T/F).

V].Short Answers.

a].write 3 uses of centrifugation.

b].what is chromatography?

c].Observe the picture & write down the procedure.

d].what you meant by fractional distillation?

e].What is distillation?

VI].Essay.

a].You are given a mixture of sand ,water and mustard oil. How will you separate .?.

b].What is the importance of evaporation?.where is this technique used on a large scale?.

c].what is centrifugation?.Give any four application.

d].What is the difference between distillation & fractional distillation?.

e].Note on chromatography.

Answers

1.Soft drinks.

I].Fill in the blanks.

a].Phosphoric acid

b].sugar

c].Monosodium glutamate

d].Caffeine.

e].Amaranth.

II].MCQs.

a].Ethylene.

b].Sodium Benzoate.

c].Amaranth.

d].Suspension.

e].Phosphoric acid.

III].Short Answers.

a].affect kidney,liver,brain –foetal abnormalities –mutation of genes.

b].Tartrazine,Erithrocine,Indigo-Carmine

c].MSG, esters,common salt

d].for color,taste,smell.

e].Agree.chemicals which are harmful –malnutrition.

IV].Match the Following.

a]2

b].5

c].4

d].3

e].1.

V].T / F

a].T

b]F

c].F

d].T

e].T

VI].Essay

a].soft drinks contain phosphoric acid, citric acid –enamel of tooth is attacked by these –large quantity of sugar-tooth decay-caffeine –stimulating agent alkaloid stimulates central nerve system –harmful.

b].sugar ,cocoa,milk,fat -no nutrients -caffeine-affect the health –lack of appetite, tension –damage of kidney -liver.

c].not get nutrition from soft drinks –mal nutrition-sugar,saccarin –preservatives-health problems -regular use-high price –financial loss lack of appetite, acidity, tooth decay –affect health.

d].No –not get any nutrition –malnutrition –sugar-saccharin –carbon dioxide –high price -financial loss, lack of appetite, acidity, tooth decay.

e]. cocoa,milk,fat -no nutrients -caffeine-affect the health –lack of appetite, tension –damage of kidney -liver. nutrition-sugar,saccarin –preservatives-health problems -regular use-high price –financial loss lack of appetite, acidity, tooth decay –affect health.

True solution , Colloid, Suspension

I].Fill in the blanks.

a].Suspension
b].True solution
c].Colloid
d].Colloid
e].Homogeneous

II].MCQs

a].Blood
b].Homogeneous
c].Chloride in water.
d].<1nm
e].Diffuse slowly.

III].Short Answers.

a].Is a mixture –neither a solution nor a suspension. eg : milk,smoke.

b].milk is a colloid the colloidal particles protein& fat scatter light .
c].Correct. Particles of muddy water are visible it's particles settle down &filtered off.
d].Solution -<1nm -colloid 1nm-100nm –suspension >100nm.
e].The scattering of light by colloidal particles –Particles are visible through a microscope –do not settle down –can not be filtered out.

VI].Match the following

a].5
b].4
c].3
d].2
e].1

V].T / F

a].F
b].T
c].F
d].T
e].T

VI].Essay.

a].True solution –particle size <1nm – homogeneous mixture –particles can not be seen even with a microscope-transparent –not scatter light – colloids -1nm-100nm- heterogeneous translucent suspension –quite big >100nm.

b].Dust particles is in the form of colloid. The path of light inside the colloid become visible –solute particles big enough –to scatter light scattered enter our eyes.

c].particles are visible through poweful microscope – do not settle down – ca not filtered out heterogeneous –muddy in nature translucent eg:milk ,Ink.

d]. True solution –particle size <1nm –homogeneous mixture – particles can not be seen even with a microscope-transparent – not scatter light –colloids -1nm-100nm- heterogeneous translucent .

e].true solution -<1nm-as a single molecule -does not settle down-can not filtered Colloid-1nm-100nm-as very big molecule –donot settle down cant be filtered using ordinary filter paper.

Suspension->100nm –molecules extremely big – settle down can be filtered.Eg:muddy water.

Concentration of Solution

I].Fill in the blanks.

a].Increases
b].Mixture.
c].1,solute.2,solvent
d].saturated solution
e].Solvent

II].MCQs.

a].solute
b].CO_2
c].Copper
d].mixtures
e].Muddy water.

III].Match the following.

a].2
b].4
c].3

d].1
e].5.

IV].T / F

a].F
b].T
c].T
d].T
e].F

V].Short Answers.

a].at low pressure carbon dioxide dissolves only in small quantities.so it is dissolved in water using high pressure.

b].At a given temperature the maximum amount of solute dissolves in 100 gm of solvent.

c].T and P.

d].solute dissolves in solvent-The component present in the solution in lesser quantity ,solute –in greater quantity –solvent.

e].Yes.solubility increases with increase in temperature.

VI].Essay

a].A crystal is clear shaped ppt of solute –slow evaporation – prepare a saturated solution of common salt in water – evaporating in room temperature –common salt crystals out.

b].-(1) adding necessary amount of solute –lowering the temperature to the level where the dissolved solute is sufficient.-evaporating out the solvent.

-(2)-Heating the saturated solution - adding more of the solvent.

c].solubility increases with increase in temperature-Eg solubility of sodium chloride increases with increase in temperature-solubility of some salt decreases with increase in temperature Eg.calcium sulphate.

d].The solution obtained by dissolving maximum amount of solute at a given temperature – saturated –exist in equilibrium state with the pure solute.

On adding more solute to saturated - heating it –solute dissolve –brought back to ordinary temperature –

e].process-take some water –salt – dissolve –heat –bring to room temperature get supersaturated solution of common salt.

2.Properties of Matter.

Matter

I].Fill in the blanks.

a].Increases.
b].Solid
c].Chemical changes.
d].Heat energy.
e].Increases.

II].MCQs.

a].Air
b].closely.
c].Mass
d].Matter
e].Solid CO_2.

III].Match the Following.

a].2.
b].1
c].4
d].5
e].3.

IV].T \ F

a].T
b].F
c].T
d].T
e].T.

V].Short Answers.

a].Have space between them-are continuously moving-attract each other.
b].particles are close to each other ,no fixed shape-take the shape of the container –fixed volume –flow easily

c].The attraction between the molecules is very less –maximum freedom of movement-due to that no definite shape or volume.

d].materials made of particles of identical nature are called pure substances-substances made of particles of different nature are called mixtures.

e].It has a definite shape and volume It is very rigid and can not be compressed.

VI].Essay.

a].solids-standard volume and shape most closely packed –diffusion slowly E.g.. Wood, stone

Liquid –definite volume can flow – less rigid-fast diffusion less closely packed –not a definite shape- – Eg:milk ,oil

Gases-neither definite shape nor definite volume shape-can flow –very fast diffusion –not rigid least closely packed -E.g.: air ,Oxygen.

b].Diffusion is the spontaneous mixing of different particles having freedom of movement.

-E.g.: ripening of fruit, Exposing kerosene, petrol.

-Molecular movement increases ,diffusion will also increases.

c]. materials made of particles of identical nature are called pure substances-substances made of particles of different nature are called mixtures.

Pure substances: gold,sugar,salt, Aluminium,hydrogen,copper.
Mixture: soda water, Tea , sea water ,salt solution, soil.
d].Water can not be separated into its constituents-hydrogen and oxygen by Physical methods-
The properties of water are entirely
Different from those of it's constituents , hydrogen and oxygen-
Water has a fixed boiling point .
e].It spread to other parts-
molecules fill in the empty space-
diffusion.

Separate the component from Mixtures

I].Fill in the Blanks.

a].Sublimation
b].Separating funnel.
c].Condensation
d].sublimation
e].Distillation.

II].MCQs

a].Water
b].Evaporation & Diffusion
c].Evaporation
d].Condensation.
e].Increases

III].Match the Following.

a].3
b].1
c].2
d].5
e].4

IV].T/ F.

a].T
b].F
c].T
d].F
e].T

V].Short Answers.

a]. Separation of blood plasma in a clinical lab- used in diaries and home to separate butter from cream-used in washing machines to squeeze out water from wet clothes.

b].process of separation of different
Components of a mixture by adsorbing them over a suitable material.

c]. In the process of sublimation, the compound which converts from solid to directly in the vapour is called sublimate. Hence, on heating ammonium chloride, it gets converted into white vapours. The gaseous form of ammonium chloride can be cooled easily to get a pure solid.

d]. the process of separating the constituents of a liquid mixture by heating it and condensing separately the components according to their different boiling points.

e] the selective boiling and subsequent condensation of a component in a liquid mixture. It is a separation technique that can be used to either increase the concentration of a particular component in the mixture or to obtain (almost) pure components from the mixture.

VI]Essay.

a]. Mixture of mustard oil and water is immiscible liquid (liquids which do not mix each other) and they are separated by using separating funnel. This method of separation is based on the difference in densities of the liquids.-

-If we have a mixture of sand, water and mustard oil then these processes can be separated by filtration and a separating funnel. Firstly as we know both mustard oil and water are immiscible so this mixture can be easily separated by a separating funnel.

b]. Evaporation is a very important part of the water cycle. Heat from the sun, or solar energy, powers the evaporation process. It soaks up moisture from soil in a garden, as well as the biggest oceans and lakes.

-is used to separate solids dissolved in liquids, mainly water.- used on a large scale to obtain common salt from sea water.

c]. Centrifugation is a method of separating molecules having different densities by spinning them in solution around an axis (in a centrifuge rotor) at high speed. It is one of the most useful and frequently employed techniques in the molecular biology laboratory.-Used in diagnostic laboratories for blood and urine test-.Used in dairies and home to separate butter from cream-Used in a washing machines to squeeze out water from wet clothes-

d]distillation, process involving the conversion of a liquid into vapor that is subsequently condensed back to liquid form. - It is exemplified at its simplest when steam from a kettle becomes deposited as drops of distilled water on a cold surface- Fractional distillation is a type of distillation which involves the separation of miscible liquids. The process involves repeated distillations and condensations and the mixture is usually separated into component parts.

e]. is a process for separating components of a mixture. To get the process started- the mixture is dissolved in a substance called the mobile phase- which carries it through a second substance called the stationary phase--based on the principle where molecules in mixture applied onto the surface or into the solid, and fluid stationary phase (stable phase) is separating from each other while moving with the aid of a mobile phase. method used by scientists for separating organic and inorganic compounds so that they can be analyzed and studied.

ALICE JOSEPH

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DIGITAL QUESTION BANK

ST.JOSEPH COLLEGE
OF TEACHER EDUCATION
FOR WOMEN, ERNAKULAM..

Vinny pappachan
Physical Science

15th .SOLUTIONS

- Soft Drinks.
- True solution,colloid,suspension.
- Concentration of solution.

4th .PROPERTIES OF *MATTER*

- Matter
- Separate the component from mixtures.

15.Solutions

!.SOFT DRINKS

I].Fill in the blanks

a].which acid is contained in soft drink?

b].Soft drinks contains excess amounts of…..we don't feel the sour taste of the acids in them?

c]. MSG is……

d]…….is used as a stimulating agent in chocolate.

e]…..give red color to drinks.

II].Multiple choice questions.

a].which chemical is used for ripening of fruits?
[MSG,Tartrazine,Ethylene]

b].What is the name of the preservative used in pickle?
[sodium benzoate ,phosphoric acid ,caffeine]

c].A substance which is used to give red color to drinks.
[Amaranth,Ethephone,Calcium Carbide].

d].Find the odd one.
(Ink,suspension,colloid,Tyndall effect)

e]. Which acid is used in soft drinks? .
(carbonic acid, phosphoric acid, acetic acid)

III].Short Answers

a].What are the harmful side effects of adding coloring substances such as Metanil yellow, Lead chromate etc. to our food?.

b].What are the coloring materials used in food products?.

c].What are the flavouring agents used in food?.

d].what are the purposes of using various chemical substances in food?.

e].The regular use of fast food & packet food products are not good ?.Do you agree with this ?.Give reason.

IV].Match the following.

a].Soft drink - 1 Flavoring agents.

b].Preservative -2 Phosphoric acid

c].Erithrocine -3 Caffeine

d].Stimulating agent -4 coloring material

e].Aginomotto -5 Sodium benzoate.

V].True or False

a].Soft drinks contain a large quantity of citric acid.(T/F).

b].Aginomotto is not a flavouring agent. (T/F).

c].Tartrazine gives red color to food products.(T /F).

d].Caffeine is used a stimulating agent in chocolate.(T /F).

e].Amaranth gives red colour to drinks?. (T /F).

VI].Essay

a].What are the harmful effects of acids , sugar, Caffeine etc.that are added to soft drinks?.

b].Find out the chemicals used in chocolates and such sweets. Compare their merits and demerits?.

c].A friend of yours who participated in a seminar on soft drinks made the following statement “Excessive use of cola drinks will adversely affect our health and also the economic situation". How far do you agree with this statement?

d].Is it desirable to use preservatives in drinks?

e].Does the regular intake of such synthetic drinks cause the entry of harmful chemicals to our body?.

2.True solution, Colloid, Suspension.

I].Fill in the blanks

a].Paint: colloid ; Muddy water : ……

b].Air mixed with moisture ; solution ;mist: …….

c].Light can’t conduct : Suspension; path of the light is not visible : …….

d]. Sugar solution : true solution

milk : ……..

e].Colloids : heterogeneous.

True solution : ……

II].Multiple choice questions.

a].Example of colloid.

(Blood, Muddy water, Smoke).

b].which one is not the property of colloid?.

(Heterogeneous, Homogeneous, none of these)

c].which is the true solution.

(Chloride in water ,fog ,chalk and water)

d]. Size of particle in a true solution.

(<1nm ,1nm- 100nm ,>100 nm).

e]. How does diffusion take place in colloids?.

(Diffuse quickly, Diffuse slowly, Do not diffuse).

III].Short Answers.

a].What is a colloid?.
b].Why milk is seen as a white?.
c].Find out whether the statement given below is correct or not. Give reason for your answer?
" muddy water is a suspension".
d].How do true solution , colloid & suspension differ with regard to particle size.?.
e]. What is Tyndall effect? Write 2 properties of colloid?.

IV].Match the following.

a].colloid -1 charcoal
b].Homogeneous mixture -2 muddy water
c].scattering of light -3 Tyndall effect
d]. Suspension -4 True solution
e]. Heterogeneous mixture -5 blood.

V].True or False.

a].Atmospheric air is an example for suspension. (T /F) .
b].Substance containing more than one component are called mixtures. (T /F) .
c].Particles of milk can easier to filtered off using a filter paper. (T /F) .
d].Colloids are heterogeneous in nature.(T/F).
e].Colloidal particles do not settle down & can't be filtered out. (T/F).

VI]. Essay.

a].Consolidate the peculiarities of colloids and compare it with the peculiarities of solutions and suspensions.
b].Have you noticed that the path of the light beam can be clearly seen due to the dust particles in a cinema theatre and in smart classrooms where visuals are shown using a projector ? What is the reason behind this?.
c].write the properties and examples of colloids.
d].What are the differences between colloids and solutions.?.
e].How do true solution , colloid and suspension differ with regard to particle size, filtering, ability to settle down, existence of particles.

3.Concentration of solution.

I].Fill in the blanks.

a].The solubility will …… with increases in the temperature.

b].substances containing more than one component are called ……

c].In a sugar solution , sugar is the …(1)…and water is the …(2)…..

d].A solution in which maximum amount of solute dissolved is it's …….

e].The component present in the solution in greater quantity is the …..

II].Multiple choice Questions.

a].In a sugar solution sugar is the …….
(solute, solvent, solution).

b].The solute in soda water is …..& solvent is the water.
(soda, oxygen. Carbon dioxide, carbonic acid)

c].Brass is a solid solution. The solute in it is zinc .Which is the solvent?
(Tin,Brass,Copper,Bronze)

d].substances containing more than one component are called….
(mixtures,compound,unsaturated solution)

e].Find the odd one.
(sea water, Alloy of metal,Petrol,Muddy water).

III].Match the Following.

a].Muddy water -1 Temperature
b].Bronze -2 Heterogeneous
c].Carbon dioxide -3 Solute
d].Solubility - 4Copper + Tin.
e].Alloy of metal -5 Homogeneous

IV].True or False.

a].The solvent in soda water is Carbon dioxide.(T / F)

b].The substance which dissolved is the solute.(T/F).

c].When adding more of the solvent , conversion of a saturated solution to an unsaturated solution occures.(T/F).

d].Turpentine is used for removing the paint stain.(T/F).

e].Bronze is not a solid solution (T/F).

V].Short Answers.

a].You know that soda water is prepared By dissolving carbon dioxide in water. What is done to increase the solubility of carbon dioxide?.

b].what is meant by solubility?
c].What are the two factors that influence the solubility?
d].What is meant solvent,solute,solution?.
e].Is there any change in the amount of solute dissolved when the temperature changes?

VI].Essay.

a].What is a crystal?.How can it be grown?.
b].prepare a note on:
- conversion of unsaturated solution to saturated solution.
-conversion of a saturated solution to an unsaturated solution.
c].what is the influence of temperature on the solubility of substances, give example?
d].what is the difference between saturated and supersaturated solution?
e].How will you prepare a supersaturated solution of common salt?.

4.Properties of matter.

1.Matter

I].Fill in the blanks.

a].On heating force of attraction between molecules ……..
b].In …… substances molecules exist very close.
c].Formation of mixture: physical change.
Formation of compound : ……..
d]……..is responsible for the change of state of matter.
e].When molecular movement increases, diffusion will ……

II].Multiple choice Questions.

a].which of the following is matter?
(Heat, shadow, sunlight, Air)
b].The particles of a substances are …….
Packed in the solid state.
(Loosely, Closely)
c].The quantity of matter in a body is called it's …….(volume, mass, weight)

d].Any object or anything that takes up space & has mass is called……
(stuff, Gas,Matter,Atoms).
e].Dry ice means…
(Solid CO_2, solid carbon monoxide, solid sulphurdioxide, solid water).

III].Match the following.

a].4th state of matter - liquid
b].Lemonade - Plasma
c].Neither shape nor volume - heat
d].Change of state of matter - Solid CO_2
e].Dry ice - Gases.

IV].True or False.

a].Gases have mass.(T/F)
b].Light is a matter.(T/F)
c].A solid has it's own shape & take up space.(T/F).
d].Liquids are usually easier to pour than solids.(T/F).
e].Steam is an example of Gas.(T/F).

V].Short answers

a].What are the characteristics of particles of matter?
b].What are the properties of liquids?
c].Gases have no definite shape or volume compared to solids and liquids .Why?.
d].what is the difference between pure substances and mixtures?.
e].A wooden table should be called a solid. Give reasons.

VI].Essay.

a].What are the three states of matter?.Define each of them with two example.
b].What is diffusion?.write more example for diffusion from daily life. What is the relation between the movement of molecule and diffusion in different state?

c].What is the difference between pure substances & mixtures . Give examples.

d].Explain why, water is not a mixture?

e].An incense stick has fragrance .But the fragrance fills the room only when the stick is lit. why do the fragrance spreads quickly in the room when the incense stick is lit?

2.Separate the component from mixtures.

I].Fill in the blanks.

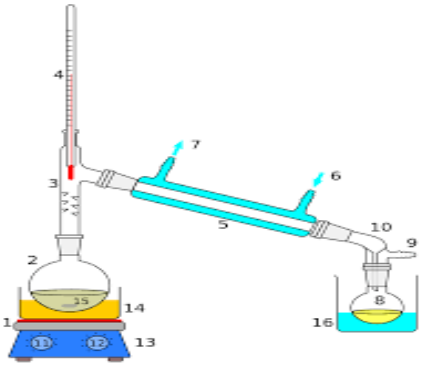
a].On heating a solid directly changes to gas is called ….

b]……. is used to separate the mixture of immiscible liquids.

c].The change of water vapor into water is called….

d].solid directly changes into a gas is called ……

e].Name the process.



II].Multiple choice Questions.

a].In distillation which component evaporates.
(Water, salt solution, salt)

b].Spirit kept open in a watch glass disappear after some time. which among the following phenomena are responsible for this?
(sublimation,distilation,Evaporation,Diffusion).

c].The method of separating the solvent by vaporization of the solution is called ….
(Evaporation, Diffusion, Distillation)

d].Change of water vapour into water is called …..
(condensation,diffusion,fusion).

e].Steam condenses to form water , attractive force …….
(Increases, Decreases).

III].Match the following.

a].Camphor &glass powder - 1.evaporation.

b].Sugar solution –2.using separating funnel.

c].petrol &kerosene - 3.sublimation

d].separation of cream from milk-4.fractional distillation

e].oxygen from liquid air-5.centrifugation.

IV].True or False.

a].Tea leaves can be separated by filtration.(T/F).

b].coloured substances are separated by centrifugation.(T/F)

c].Petrol & kerosene from crude oil can be separated by fractional distillation.(T/F).

d].A mixture of two miscible liquids can be separated by the process called distillation .(T/F).

e].Centrifugation is the process to separate particles of colloidal solution.(T/F).

V].Short Answers.

a].write 3 uses of centrifugation.

b].what is chromatography?

c].Observe the picture & write down the procedure.

d].what you meant by fractional distillation?

e].What is distillation?

VI].Essay.

a].You are given a mixture of sand ,water and mustard oil. How will you separate .?.

b].What is the importance of evaporation?.where is this technique used on a large scale?.

c].what is centrifugation?.Give any four application.

d].What is the difference between distillation & fractional distillation?.

e].Note on chromatography.

Answers

1.Soft drinks.

I].Fill in the blanks.

a].Phosphoric acid

b].sugar

c].Monosodium glutamate

d].Caffeine.

e].Amaranth.

II].MCQs.

a].Ethylene.

b].Sodium Benzoate.

c].Amaranth.

d].Suspension.

e].Phosphoric acid.

III].Short Answers.

a].affect kidney,liver,brain –foetal abnormalities –mutation of genes.

b].Tartrazine,Erithrocine,Indigo-Carmine

c].MSG, esters,common salt

d].for color,taste,smell.

e].Agree.chemicals which are harmful –malnutrition.

IV].Match the Following.

a]2

b].5

c].4

d].3

e].1.

V].T / F

a].T

b]F

c].F

d].T

e].T

VI].Essay

a].soft drinks contain phosphoric acid, citric acid –enamel of tooth is attacked by these –large quantity of sugar-tooth decay-caffeine –stimulating agent alkaloid stimulates central nerve system –harmful.

b].sugar ,cocoa,milk,fat -no nutrients -caffeine-affect the health –lack of appetite, tension –damage of kidney -liver.

c].not get nutrition from soft drinks –mal nutrition-sugar,saccarin –preservatives-health problems -regular use-high price –financial loss lack of appetite, acidity, tooth decay –affect health.

d].No –not get any nutrition –malnutrition –sugar-saccharin –carbon dioxide –high price -financial loss, lack of appetite, acidity, tooth decay.

e]. cocoa,milk,fat -no nutrients -caffeine-affect the health –lack of appetite, tension –damage of kidney -liver. nutrition-sugar,saccarin –preservatives-health problems -regular use-high price –financial loss lack of appetite, acidity, tooth decay –affect health.

True solution , Colloid, Suspension

I].Fill in the blanks.

a].Suspension
b].True solution
c].Colloid
d].Colloid
e].Homogeneous

II].MCQs

a].Blood
b].Homogeneous
c].Chloride in water.
d].<1nm
e].Diffuse slowly.

III].Short Answers.

a].Is a mixture –neither a solution nor a suspension. eg : milk,smoke.

b].milk is a colloid the colloidal particles protein& fat scatter light .
c].Correct. Particles of muddy water are visible it's particles settle down &filtered off.
d].Solution -<1nm -colloid 1nm-100nm –suspension >100nm.
e].The scattering of light by colloidal particles –Particles are visible through a microscope –do not settle down –can not be filtered out.

VI].Match the following

a].5
b].4
c].3
d].2
e].1

V].T / F

a].F
b].T
c].F
d].T
e].T

VI].Essay.

a].True solution –particle size <1nm – homogeneous mixture –particles can not be seen even with a microscope-transparent –not scatter light – colloids -1nm-100nm- heterogeneous translucent suspension –quite big >100nm.

b].Dust particles is in the form of colloid. The path of light inside the colloid become visible –solute particles big enough –to scatter light scattered enter our eyes.

c].particles are visible through poweful microscope – do not settle down – ca not filtered out heterogeneous –muddy in nature translucent eg:milk ,Ink.

d]. True solution –particle size <1nm –homogeneous mixture – particles can not be seen even with a microscope-transparent – not scatter light –colloids -1nm-100nm- heterogeneous translucent .

e].true solution -<1nm-as a single molecule -does not settle down-can not filtered Colloid-1nm-100nm-as very big molecule –donot settle down cant be filtered using ordinary filter paper.

Suspension->100nm –molecules extremely big – settle down can be filtered.Eg:muddy water.

Concentration of Solution

I].Fill in the blanks.

a].Increases
b].Mixture.
c].1,solute.2,solvent
d].saturated solution
e].Solvent

II].MCQs.

a].solute
b].CO_2
c].Copper
d].mixtures
e].Muddy water.

III].Match the following.

a].2
b].4
c].3

d].1
e].5.

IV].T / F

a].F
b].T
c].T
d].T
e].F

V].Short Answers.

a].at low pressure carbon dioxide dissolves only in small quantities.so it is dissolved in water using high pressure.

b].At a given temperature the maximum amount of solute dissolves in 100 gm of solvent.

c].T and P.

d].solute dissolves in solvent-The component present in the solution in lesser quantity ,solute –in greater quantity –solvent.

e].Yes.solubility increases with increase in temperature.

VI].Essay

a].A crystal is clear shaped ppt of solute –slow evaporation – prepare a saturated solution of common salt in water – evaporating in room temperature –common salt crystals out.

b].-(1) adding necessary amount of solute –lowering the temperature to the level where the dissolved solute is sufficient.-evaporating out the solvent.

-(2)-Heating the saturated solution - adding more of the solvent.

c].solubility increases with increase in temperature-Eg solubility of sodium chloride increases with increase in temperature-solubility of some salt decreases with increase in temperature Eg.calcium sulphate.

d].The solution obtained by dissolving maximum amount of solute at a given temperature – saturated –exist in equilibrium state with the pure solute.

On adding more solute to saturated - heating it –solute dissolve –brought back to ordinary temperature –

e].process-take some water –salt – dissolve –heat –bring to room temperature get supersaturated solution of common salt.

2.Properties of Matter.

Matter

I].Fill in the blanks.

a].Increases.
b].Solid
c].Chemical changes.
d].Heat energy.
e].Increases.

II].MCQs.

a].Air
b].closely.
c].Mass
d].Matter
e].Solid CO_2.

III].Match the Following.

a].2.
b].1
c].4
d].5
e].3.

IV].T \ F

a].T
b].F
c].T
d].T
e].T.

V].Short Answers.

a].Have space between them-are continuously moving-attract each other.
b].particles are close to each other ,no fixed shape-take the shape of the container –fixed volume –flow easily

c].The attraction between the molecules is very less –maximum freedom of movement-due to that no definite shape or volume.
d].materials made of particles of identical nature are called pure substances-substances made of particles of different nature are called mixtures.
e].It has a definite shape and volume It is very rigid and can not be compressed.

VI].Essay.

a].solids-standard volume and shape most closely packed –diffusion slowly E.g.. Wood, stone
Liquid –definite volume can flow – less rigid-fast diffusion less closely packed –not a definite shape- – Eg:milk ,oil

Gases-neither definite shape nor definite volume shape-can flow –very fast diffusion –not rigid least closely packed -E.g.: air ,Oxygen.
b].Diffusion is the spontaneous mixing of different particles having freedom of movement.
-E.g.: ripening of fruit, Exposing kerosene, petrol.
-Molecular movement increases ,diffusion will also increases.
c]. materials made of particles of identical nature are called pure substances-substances made of particles of different nature are called mixtures.

Pure substances: gold,sugar,salt, Aluminium,hydrogen,copper.
Mixture: soda water, Tea , sea water ,salt solution, soil.
d].Water can not be separated into its constituents-hydrogen and oxygen by Physical methods-
The properties of water are entirely
Different from those of it's constituents , hydrogen and oxygen-
Water has a fixed boiling point .
e].It spread to other parts-
molecules fill in the empty space-
diffusion.

Separate the component from Mixtures

I].Fill in the Blanks.

a].Sublimation
b].Separating funnel.
c].Condensation
d].sublimation
e].Distillation.

II].MCQs

a].Water
b].Evaporation & Diffusion
c].Evaporation
d].Condensation.
e].Increases

III].Match the Following.

a].3
b].1
c].2
d].5
e].4

IV].T/ F.

a].T
b].F
c].T
d].F
e].T

V].Short Answers.

a]. Separation of blood plasma in a clinical lab- used in diaries and home to separate butter from cream-used in washing machines to squeeze out water from wet clothes.

b].process of separation of different
Components of a mixture by adsorbing them over a suitable material.

c]. In the process of sublimation, the compound which converts from solid to directly in the vapour is called sublimate. Hence, on heating ammonium chloride, it gets converted into white vapours. The gaseous form of ammonium chloride can be cooled easily to get a pure solid.

d]. the process of separating the constituents of a liquid mixture by heating it and condensing separately the components according to their different boiling points.

e] the selective boiling and subsequent condensation of a component in a liquid mixture. It is a separation technique that can be used to either increase the concentration of a particular component in the mixture or to obtain (almost) pure components from the mixture.

VI]Essay.

a]. Mixture of mustard oil and water is immiscible liquid (liquids which do not mix each other) and they are separated by using separating funnel. This method of separation is based on the difference in densities of the liquids.-

-If we have a mixture of sand, water and mustard oil then these processes can be separated by filtration and a separating funnel. Firstly as we know both mustard oil and water are immiscible so this mixture can be easily separated by a separating funnel.

b]. Evaporation is a very important part of the water cycle. Heat from the sun, or solar energy, powers the evaporation process. It soaks up moisture from soil in a garden, as well as the biggest oceans and lakes.

-is used to separate solids dissolved in liquids, mainly water.- used on a large scale to obtain common salt from sea water.

c]. Centrifugation is a method of separating molecules having different densities by spinning them in solution around an axis (in a centrifuge rotor) at high speed. It is one of the most useful and frequently employed techniques in the molecular biology laboratory.-Used in diagnostic laboratories for blood and urine test-.Used in dairies and home to separate butter from cream-Used in a washing machines to squeeze out water from wet clothes-

d]distillation, process involving the conversion of a liquid into vapor that is subsequently condensed back to liquid form. - It is exemplified at its simplest when steam from a kettle becomes deposited as drops of distilled water on a cold surface- Fractional distillation is a type of distillation which involves the separation of miscible liquids. The process involves repeated distillations and condensations and the mixture is usually separated into component parts.

e]. is a process for separating components of a mixture. To get the process started- the mixture is dissolved in a substance called the mobile phase- which carries it through a second substance called the stationary phase--based on the principle where molecules in mixture applied onto the surface or into the solid, and fluid stationary phase (stable phase) is separating from each other while moving with the aid of a mobile phase. method used by scientists for separating organic and inorganic compounds so that they can be analyzed and studied.

ALICE JOSEPH

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Submitted by
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DIGITAL QUESTION BANK

ST.JOSEPH COLLEGE
OF TEACHER EDUCATION
FOR WOMEN, ERNAKULAM..

Vinny pappachan
Physical Science

15th .SOLUTIONS

- Soft Drinks.
- True solution,colloid,suspension.
- Concentration of solution.

4th .PROPERTIES OF *MATTER*

- Matter
- Separate the component from mixtures.

15.Solutions

!.SOFT DRINKS

I].Fill in the blanks

a].which acid is contained in soft drink?

b].Soft drinks contains excess amounts of…..we don't feel the sour taste of the acids in them?

c]. MSG is……

d]…….is used as a stimulating agent in chocolate.

e]…..give red color to drinks.

II].Multiple choice questions.

a].which chemical is used for ripening of fruits?
[MSG,Tartrazine,Ethylene]

b].What is the name of the preservative used in pickle?
[sodium benzoate ,phosphoric acid ,caffeine]

c].A substance which is used to give red color to drinks.
[Amaranth,Ethephone,Calcium Carbide].

d].Find the odd one.
(Ink,suspension,colloid,Tyndall effect)

e]. Which acid is used in soft drinks? . (carbonic acid, phosphoric acid, acetic acid)

III].Short Answers

a].What are the harmful side effects of adding coloring substances such as Metanil yellow, Lead chromate etc. to our food?.

b].What are the coloring materials used in food products?.

c].What are the flavouring agents used in food?.

d].what are the purposes of using various chemical substances in food?.

e].The regular use of fast food & packet food products are not good ?.Do you agree with this ?.Give reason.

IV].Match the following.

a].Soft drink - 1 Flavoring agents.

b].Preservative -2 Phosphoric acid

c].Erithrocine -3 Caffeine

d].Stimulating agent -4 coloring material

e].Aginomotto -5 Sodium benzoate.

V].True or False

a].Soft drinks contain a large quantity of citric acid.(T/F).

b].Aginomotto is not a flavouring agent. (T/F).

c].Tartrazine gives red color to food products.(T /F).

d].Caffeine is used a stimulating agent in chocolate.(T /F).

e].Amaranth gives red colour to drinks?. (T /F).

VI].Essay

a].What are the harmful effects of acids , sugar, Caffeine etc.that are added to soft drinks?.

b].Find out the chemicals used in chocolates and such sweets. Compare their merits and demerits?.

c].A friend of yours who participated in a seminar on soft drinks made the following statement “Excessive use of cola drinks will adversely affect our health and also the economic situation". How far do you agree with this statement?

d].Is it desirable to use preservatives in drinks?

e].Does the regular intake of such synthetic drinks cause the entry of harmful chemicals to our body?.

2.True solution, Colloid, Suspension.

I].Fill in the blanks

a].Paint: colloid ; Muddy water : ……

b].Air mixed with moisture ; solution ;mist: …….

c].Light can’t conduct : Suspension; path of the light is not visible : …….

d]. Sugar solution : true solution

milk : ……..

e].Colloids : heterogeneous.

True solution : ……

II].Multiple choice questions.

a].Example of colloid.

(Blood, Muddy water, Smoke).

b].which one is not the property of colloid?.

(Heterogeneous, Homogeneous, none of these)

c].which is the true solution.

(Chloride in water ,fog ,chalk and water)

d]. Size of particle in a true solution.

(<1nm ,1nm- 100nm ,>100 nm).

e]. How does diffusion take place in colloids?.

(Diffuse quickly, Diffuse slowly, Do not diffuse).

III].Short Answers.

a].What is a colloid?.
b].Why milk is seen as a white?.
c].Find out whether the statement given below is correct or not. Give reason for your answer?
" muddy water is a suspension".
d].How do true solution , colloid & suspension differ with regard to particle size.?.
e]. What is Tyndall effect? Write 2 properties of colloid?.

IV].Match the following.

a].colloid -1 charcoal
b].Homogeneous mixture -2 muddy water
c].scattering of light -3 Tyndall effect
d]. Suspension -4 True solution
e]. Heterogeneous mixture -5 blood.

V].True or False.

a].Atmospheric air is an example for suspension. (T /F) .
b].Substance containing more than one component are called mixtures. (T /F) .
c].Particles of milk can easier to filtered off using a filter paper. (T /F) .
d].Colloids are heterogeneous in nature.(T/F).
e].Colloidal particles do not settle down & can't be filtered out. (T/F).

VI]. Essay.

a].Consolidate the peculiarities of colloids and compare it with the peculiarities of solutions and suspensions.
b].Have you noticed that the path of the light beam can be clearly seen due to the dust particles in a cinema theatre and in smart classrooms where visuals are shown using a projector ? What is the reason behind this?.
c].write the properties and examples of colloids.
d].What are the differences between colloids and solutions.?.
e].How do true solution , colloid and suspension differ with regard to particle size, filtering, ability to settle down, existence of particles.

3.Concentration of solution.

I].Fill in the blanks.

a].The solubility will …… with increases in the temperature.
b].substances containing more than one component are called ……
c].In a sugar solution , sugar is the …(1)…and water is the …(2)…..
d].A solution in which maximum amount of solute dissolved is it's …….
e].The component present in the solution in greater quantity is the …..

II].Multiple choice Questions.

a].In a sugar solution sugar is the …….
(solute, solvent, solution).
b].The solute in soda water is …..& solvent is the water.
(soda, oxygen. Carbon dioxide, carbonic acid)
c].Brass is a solid solution. The solute in it is zinc .Which is the solvent?
(Tin,Brass,Copper,Bronze)
d].substances containing more than one component are called….
(mixtures,compound,unsaturated solution)
e].Find the odd one.
(sea water, Alloy of metal,Petrol,Muddy water).

III].Match the Following.

a].Muddy water -1 Temperature
b].Bronze -2 Heterogeneous
c].Carbon dioxide -3 Solute
d].Solubility - 4Copper + Tin.
e].Alloy of metal -5 Homogeneous

IV].True or False.

a].The solvent in soda water is Carbon dioxide.(T / F)
b].The substance which dissolved is the solute.(T/F).
c].When adding more of the solvent , conversion of a saturated solution to an unsaturated solution occures.(T/F).
d].Turpentine is used for removing the paint stain.(T/F).
e].Bronze is not a solid solution (T/F).

V].Short Answers.

a].You know that soda water is prepared By dissolving carbon dioxide in water. What is done to increase the solubility of carbon dioxide?.

b].what is meant by solubility?
c].What are the two factors that influence the solubility?
d].What is meant solvent,solute,solution?.
e].Is there any change in the amount of solute dissolved when the temperature changes?

VI].Essay.

a].What is a crystal?.How can it be grown?.
b].prepare a note on:
- conversion of unsaturated solution to saturated solution.
-conversion of a saturated solution to an unsaturated solution.
c].what is the influence of temperature on the solubility of substances, give example?
d].what is the difference between saturated and supersaturated solution?
e].How will you prepare a supersaturated solution of common salt?.

4.Properties of matter.

1.Matter

I].Fill in the blanks.

a].On heating force of attraction between molecules ……..
b].In …… substances molecules exist very close.
c].Formation of mixture: physical change.
Formation of compound : ……..
d]……..is responsible for the change of state of matter.
e].When molecular movement increases, diffusion will ……

II].Multiple choice Questions.

a].which of the following is matter?
(Heat, shadow, sunlight, Air)
b].The particles of a substances are …….
Packed in the solid state.
(Loosely, Closely)
c].The quantity of matter in a body is called it's …….(volume, mass, weight)

d].Any object or anything that takes up space & has mass is called……
(stuff, Gas,Matter,Atoms).
e].Dry ice means…
(Solid CO_2, solid carbon monoxide, solid sulphurdioxide, solid water).

III].Match the following.

a].4th state of matter - liquid
b].Lemonade - Plasma
c].Neither shape nor volume - heat
d].Change of state of matter - Solid CO_2
e].Dry ice - Gases.

IV].True or False.

a].Gases have mass.(T/F)
b].Light is a matter.(T/F)
c].A solid has it's own shape & take up space.(T/F).
d].Liquids are usually easier to pour than solids.(T/F).
e].Steam is an example of Gas.(T/F).

V].Short answers

a].What are the characteristics of particles of matter?
b].What are the properties of liquids?
c].Gases have no definite shape or volume compared to solids and liquids .Why?.
d].what is the difference between pure substances and mixtures?.
e].A wooden table should be called a solid. Give reasons.

VI].Essay.

a].What are the three states of matter?.Define each of them with two example.
b].What is diffusion?.write more example for diffusion from daily life. What is the relation between the movement of molecule and diffusion in different state?

c].What is the difference between pure substances & mixtures . Give examples.

d].Explain why, water is not a mixture?

e].An incense stick has fragrance .But the fragrance fills the room only when the stick is lit. why do the fragrance spreads quickly in the room when the incense stick is lit?

2.Separate the component from mixtures.

I].Fill in the blanks.

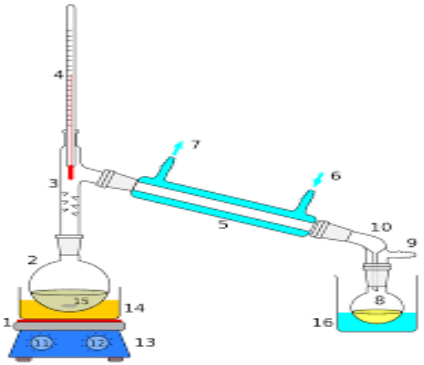
a].On heating a solid directly changes to gas is called ….

b]……. is used to separate the mixture of immiscible liquids.

c].The change of water vapor into water is called….

d].solid directly changes into a gas is called ……

e].Name the process.



II].Multiple choice Questions.

a].In distillation which component evaporates.
(Water, salt solution, salt)

b].Spirit kept open in a watch glass disappear after some time. which among the following phenomena are responsible for this?
(sublimation,distilation,Evaporation,Diffusion).

c].The method of separating the solvent by vaporization of the solution is called ….
(Evaporation, Diffusion, Distillation)

d].Change of water vapour into water is called …..
(condensation,diffusion,fusion).

e].Steam condenses to form water , attractive force …….
(Increases, Decreases).

III].Match the following.

a].Camphor &glass powder - 1.evaporation.

b].Sugar solution –2.using separating funnel.

c].petrol &kerosene - 3.sublimation

d].separation of cream from milk-4.fractional distillation

e].oxygen from liquid air-5.centrifugation.

IV].True or False.

a].Tea leaves can be separated by filtration.(T/F).

b].coloured substances are separated by centrifugation.(T/F)

c].Petrol & kerosene from crude oil can be separated by fractional distillation.(T/F).

d].A mixture of two miscible liquids can be separated by the process called distillation .(T/F).

e].Centrifugation is the process to separate particles of colloidal solution.(T/F).

V].Short Answers.

a].write 3 uses of centrifugation.

b].what is chromatography?

c].Observe the picture & write down the procedure.

d].what you meant by fractional distillation?

e].What is distillation?

VI].Essay.

a].You are given a mixture of sand ,water and mustard oil. How will you separate .?.

b].What is the importance of evaporation?.where is this technique used on a large scale?.

c].what is centrifugation?.Give any four application.

d].What is the difference between distillation & fractional distillation?.

e].Note on chromatography.

Answers

1.Soft drinks.

I].Fill in the blanks.

a].Phosphoric acid

b].sugar

c].Monosodium glutamate

d].Caffeine.

e].Amaranth.

II].MCQs.

a].Ethylene.

b].Sodium Benzoate.

c].Amaranth.

d].Suspension.

e].Phosphoric acid.

III].Short Answers.

a].affect kidney,liver,brain –foetal abnormalities –mutation of genes.

b].Tartrazine,Erithrocine,Indigo-Carmine

c].MSG, esters,common salt

d].for color,taste,smell.

e].Agree.chemicals which are harmful –malnutrition.

IV].Match the Following.

a]2

b].5

c].4

d].3

e].1.

V].T / F

a].T

b]F

c].F

d].T

e].T

VI].Essay

a].soft drinks contain phosphoric acid, citric acid –enamel of tooth is attacked by these –large quantity of sugar-tooth decay-caffeine –stimulating agent alkaloid stimulates central nerve system –harmful.

b].sugar ,cocoa,milk,fat -no nutrients -caffeine-affect the health –lack of appetite, tension –damage of kidney -liver.

c].not get nutrition from soft drinks –mal nutrition-sugar,saccarin –preservatives-health problems -regular use-high price –financial loss lack of appetite, acidity, tooth decay –affect health.

d].No –not get any nutrition –malnutrition –sugar-saccharin –carbon dioxide –high price -financial loss, lack of appetite, acidity, tooth decay.

e]. cocoa,milk,fat -no nutrients -caffeine-affect the health –lack of appetite, tension –damage of kidney -liver. nutrition-sugar,saccarin –preservatives-health problems -regular use-high price –financial loss lack of appetite, acidity, tooth decay –affect health.

True solution , Colloid, Suspension

I].Fill in the blanks.

a].Suspension
b].True solution
c].Colloid
d].Colloid
e].Homogeneous

II].MCQs

a].Blood
b].Homogeneous
c].Chloride in water.
d].<1nm
e].Diffuse slowly.

III].Short Answers.

a].Is a mixture –neither a solution nor a suspension. eg : milk,smoke.

b].milk is a colloid the colloidal particles protein& fat scatter light .
c].Correct. Particles of muddy water are visible it's particles settle down &filtered off.
d].Solution -<1nm -colloid 1nm-100nm –suspension >100nm.
e].The scattering of light by colloidal particles –Particles are visible through a microscope –do not settle down –can not be filtered out.

VI].Match the following

a].5
b].4
c].3
d].2
e].1

V].T / F

a].F
b].T
c].F
d].T
e].T

VI].Essay.

a].True solution –particle size <1nm – homogeneous mixture –particles can not be seen even with a microscope-transparent –not scatter light – colloids -1nm-100nm- heterogeneous translucent suspension –quite big >100nm.

b].Dust particles is in the form of colloid. The path of light inside the colloid become visible –solute particles big enough –to scatter light scattered enter our eyes.

c].particles are visible through poweful microscope – do not settle down – ca not filtered out heterogeneous –muddy in nature translucent eg:milk ,Ink.

d]. True solution –particle size <1nm –homogeneous mixture – particles can not be seen even with a microscope-transparent – not scatter light –colloids -1nm-100nm- heterogeneous translucent .

e].true solution -<1nm-as a single molecule -does not settle down-can not filtered Colloid-1nm-100nm-as very big molecule –donot settle down cant be filtered using ordinary filter paper.

Suspension->100nm –molecules extremely big – settle down can be filtered.Eg:muddy water.

Concentration of Solution

I].Fill in the blanks.

a].Increases
b].Mixture.
c].1,solute.2,solvent
d].saturated solution
e].Solvent

II].MCQs.

a].solute
b].CO_2
c].Copper
d].mixtures
e].Muddy water.

III].Match the following.

a].2
b].4
c].3

d].1
e].5.

IV].T / F

a].F
b].T
c].T
d].T
e].F

V].Short Answers.

a].at low pressure carbon dioxide dissolves only in small quantities.so it is dissolved in water using high pressure.

b].At a given temperature the maximum amount of solute dissolves in 100 gm of solvent.

c].T and P.

d].solute dissolves in solvent-The component present in the solution in lesser quantity ,solute –in greater quantity –solvent.

e].Yes.solubility increases with increase in temperature.

VI].Essay

a].A crystal is clear shaped ppt of solute –slow evaporation – prepare a saturated solution of common salt in water – evaporating in room temperature –common salt crystals out.

b].-(1) adding necessary amount of solute –lowering the temperature to the level where the dissolved solute is sufficient.-evaporating out the solvent.

-(2)-Heating the saturated solution - adding more of the solvent.

c].solubility increases with increase in temperature-Eg solubility of sodium chloride increases with increase in temperature-solubility of some salt decreases with increase in temperature Eg.calcium sulphate.

d].The solution obtained by dissolving maximum amount of solute at a given temperature – saturated –exist in equilibrium state with the pure solute.

On adding more solute to saturated - heating it –solute dissolve –brought back to ordinary temperature –

e].process-take some water –salt – dissolve –heat –bring to room temperature get supersaturated solution of common salt.

2.Properties of Matter.

Matter

I].Fill in the blanks.

a].Increases.
b].Solid
c].Chemical changes.
d].Heat energy.
e].Increases.

II].MCQs.

a].Air
b].closely.
c].Mass
d].Matter
e].Solid CO_2.

III].Match the Following.

a].2.
b].1
c].4
d].5
e].3.

IV].T \ F

a].T
b].F
c].T
d].T
e].T.

V].Short Answers.

a].Have space between them-are continuously moving-attract each other.
b].particles are close to each other ,no fixed shape-take the shape of the container –fixed volume –flow easily

c].The attraction between the molecules is very less –maximum freedom of movement-due to that no definite shape or volume.
d].materials made of particles of identical nature are called pure substances-substances made of particles of different nature are called mixtures.
e].It has a definite shape and volume It is very rigid and can not be compressed.

VI].Essay.

a].solids-standard volume and shape most closely packed –diffusion slowly E.g.. Wood, stone
Liquid –definite volume can flow – less rigid-fast diffusion less closely packed –not a definite shape- – Eg:milk ,oil

Gases-neither definite shape nor definite volume shape-can flow –very fast diffusion –not rigid least closely packed -E.g.: air ,Oxygen.
b].Diffusion is the spontaneous mixing of different particles having freedom of movement.
-E.g.: ripening of fruit, Exposing kerosene, petrol.
-Molecular movement increases ,diffusion will also increases.
c]. materials made of particles of identical nature are called pure substances-substances made of particles of different nature are called mixtures.

Pure substances: gold,sugar,salt, Aluminium,hydrogen,copper.
Mixture: soda water, Tea , sea water ,salt solution, soil.
d].Water can not be separated into its constituents-hydrogen and oxygen by Physical methods-
The properties of water are entirely
Different from those of it's constituents , hydrogen and oxygen-
Water has a fixed boiling point .
e].It spread to other parts-molecules fill in the empty space-diffusion.

Separate the component from Mixtures

I].Fill in the Blanks.

a].Sublimation
b].Separating funnel.
c].Condensation
d].sublimation
e].Distillation.

II].MCQs

a].Water
b].Evaporation & Diffusion
c].Evaporation
d].Condensation.
e].Increases

III].Match the Following.

a].3
b].1
c].2
d].5
e].4

IV].T/ F.

a].T
b].F
c].T
d].F
e].T

V].Short Answers.

a]. Separation of blood plasma in a clinical lab- used in diaries and home to separate butter from cream-used in washing machines to squeeze out water from wet clothes.

b].process of separation of different
Components of a mixture by adsorbing them over a suitable material.

c]. In the process of sublimation, the compound which converts from solid to directly in the vapour is called sublimate. Hence, on heating ammonium chloride, it gets converted into white vapours. The gaseous form of ammonium chloride can be cooled easily to get a pure solid.

d]. the process of separating the constituents of a liquid mixture by heating it and condensing separately the components according to their different boiling points.

e] the selective boiling and subsequent condensation of a component in a liquid mixture. It is a separation technique that can be used to either increase the concentration of a particular component in the mixture or to obtain (almost) pure components from the mixture.

VI]Essay.

a]. Mixture of mustard oil and water is immiscible liquid (liquids which do not mix each other) and they are separated by using separating funnel. This method of separation is based on the difference in densities of the liquids.-

--

-If we have a mixture of sand, water and mustard oil then these processes can be separated by filtration and a separating funnel. Firstly as we know both mustard oil and water are immiscible so this mixture can be easily separated by a separating funnel.

b]. Evaporation is a very important part of the water cycle. Heat from the sun, or solar energy, powers the evaporation process. It soaks up moisture from soil in a garden, as well as the biggest oceans and lakes.

-is used to separate solids dissolved in liquids, mainly water.- used on a large scale to obtain common salt from sea water.

c]. Centrifugation is a method of separating molecules having different densities by spinning them in solution around an axis (in a centrifuge rotor) at high speed. It is one of the most useful and frequently employed techniques in the molecular biology laboratory.-Used in diagnostic laboratories for blood and urine test-.Used in dairies and home to separate butter from cream-Used in a washing machines to squeeze out water from wet clothes-

d]distillation, process involving the conversion of a liquid into vapor that is subsequently condensed back to liquid form. - It is exemplified at its simplest when steam from a kettle becomes deposited as drops of distilled water on a cold surface- Fractional distillation is a type of distillation which involves the separation of miscible liquids. The process involves repeated distillations and condensations and the mixture is usually separated into component parts.

e]. is a process for separating components of a mixture. To get the process started- the mixture is dissolved in a substance called the mobile phase- which carries it through a second substance called the stationary phase--based on the principle where molecules in mixture applied onto the surface or into the solid, and fluid stationary phase (stable phase) is separating from each other while moving with the aid of a mobile phase. method used by scientists for separating organic and inorganic compounds so that they can be analyzed and studied.

ALICE JOSEPH

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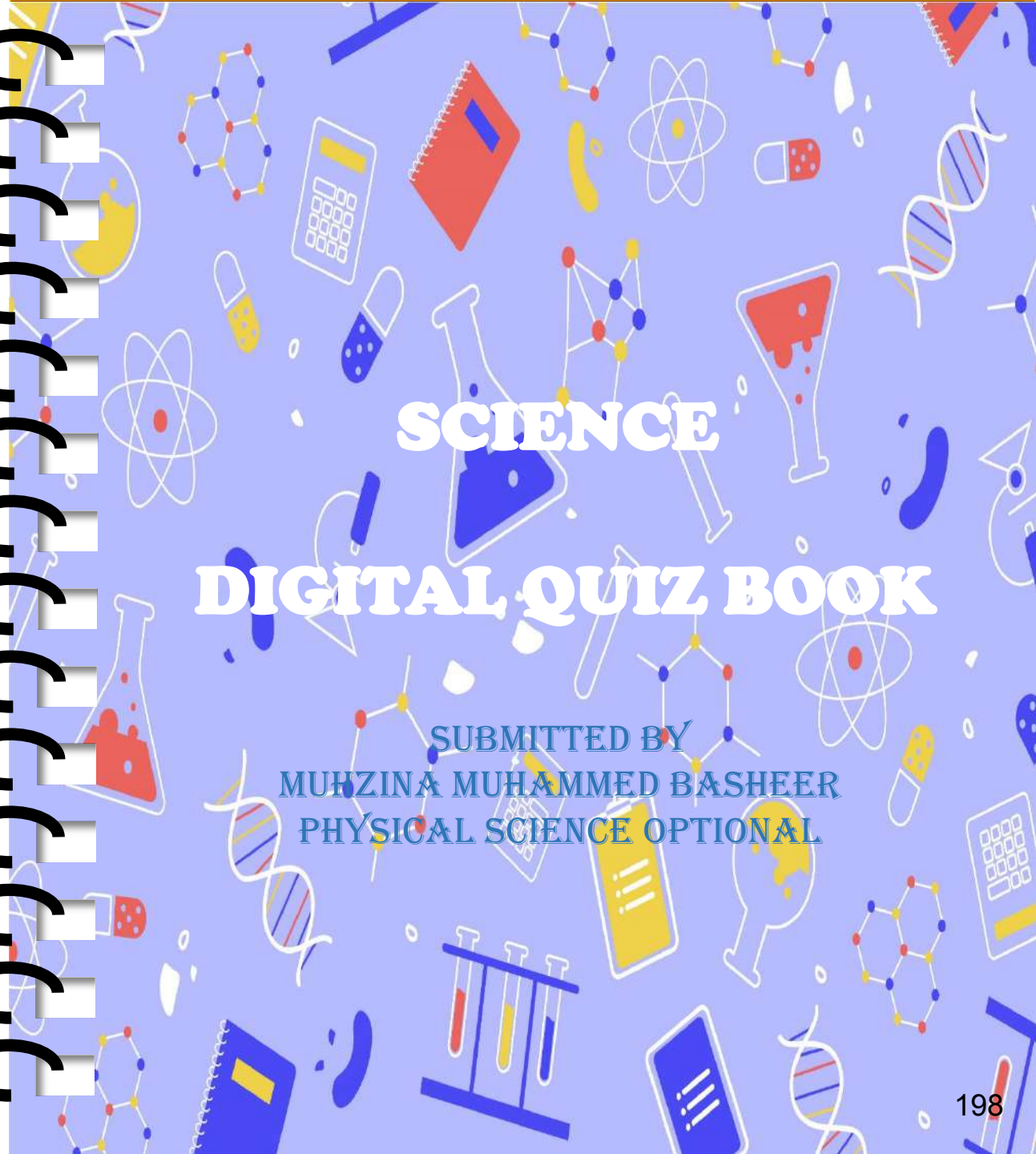


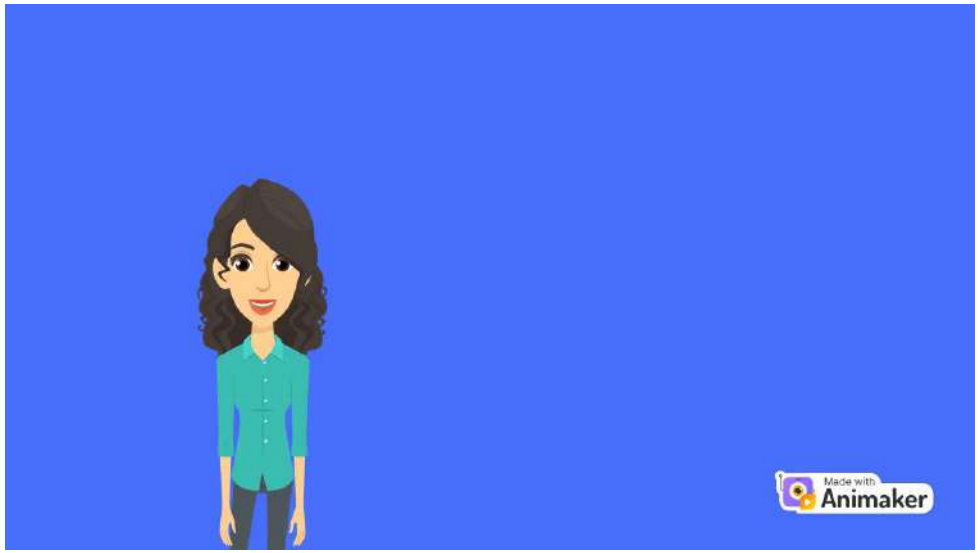
Preface

This science digital quiz book is made for Class 9 which describes the chapters in SCERT textbook.The question in this quiz book is selected in such a way that the students can undergoe a self evaluation and their understanding of each concept .it also focus on inculcating their scientific enquiry and understanding the subject .the quiz book make them Excited, motivated and provide an oppurtunity for self assesment

TABLE OF CONTENTS

INTRODUCTION

ANIMATED CLASSROOM



CHEMISTRY QUIZ BOOK

1.Which among the postulates not belong to Daltons Atomic Theory?

A .Matter is made up of minute particles called atoms

B. Atoms is the smallest particle that can Take part in chemical reaction

C.Atoms of different elements differ in their Properties and mass

D.Atoms can be divided

ANSWER: D.atoms can be divided

2.Which rays of electromagnetic radiation is used By Rutherford for the gold foil experiment?

A. Alpha B.beta
B. C.gamma D.Cosmic

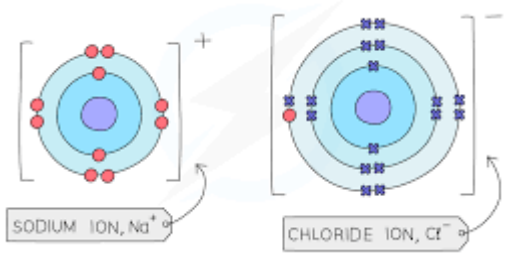
ANSWER: Alpha

3.What is the charge of neutron?

A Negative
B positive
C -1
D neutral

ANSWER: Neutral

4.Go through the picture and identify the bonding Shown here?



A ionic bonding
B covalent bonding
C hydrogen bonding
D coordinate bonding

ANSWER: ionic bonding

5. Among the given molecules which one is polar?

A H2 B O2
C N2 D HCl

ANSWER: HCl

6." In achemical reaction mass can neither be created nor be destroyed".identify this law?

A law of conservation of mass
B Law of reactions
C law of conservation of energy
D Laws of nature

ANSWER: Law of conservation of mass

7.Which gas is evolved when magnesium reacts with concentrated HCl?

A Oxygen
B Nitrogen
C Chlorine
D None of the above

ANSWER: Hydrogen

8. What happens to the rate of reaction when the concentration of reactants increases?

A Rate increases
B Rate decreases
C No change
D Reaction stops

ANSWER : Rate increases

9.Among the scientist who is known as the "father of periodic table"?

A Dobereiner
B Newlands
C Lavoisier
D Mendeleev

ANSWER : Mendeleev

10. Which group of periodic table contains the Noble gases ?

A 18
B 9
C 5
D 4

ANSWER : 18

11.What happens to ionisation energy down a group?

A No change
B Increases
C Decreases
D Become steady

ANSWER: Decreases

12. Which among this is a Metalloid ?

A Copper
B Silicon
C Carbon
D Gold

ANSWER :Silicon

13. What is the basicity of HCl?

A 0
B 2
C 1
D 3

ANSWER : 1

14.What is the PH value of neutral solution ?

A 0
B 3
C 7
D 5

ANSWER : 7

15. Which is the device used to measure the pH Of a solution ?

A Thermometer
B pH meter
C hydrometer
D barometer

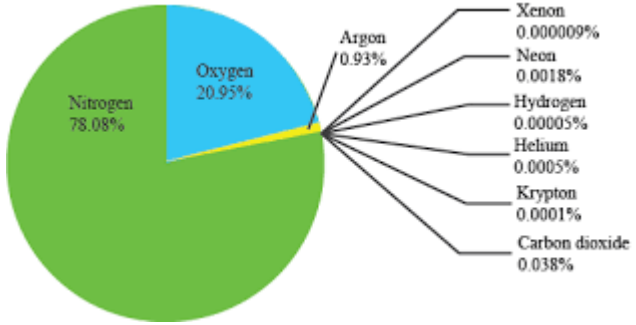
ANSWER : pH meter

16.Name the chemical name of baking soda?

A Sodium chloride
B Sodium carbonate
C calcium sulphate
D copper sulphate

ANSWER : Sodium bicarbonate

17. Identify the most abundant gas in atmosphere from the picture given below?



A Argon
B oxygen
C nitrogen
D hydrogen

ANSWER :Nitrogen

18. Which among the allotrope of carbon is hardest?

A Diamond
B Graphite

ANSWER: Diamond

19. Which among the properties not belong to graphite?

A conductor of electricity
B grey in color
C soft and slippery
D hard

ANSWER: hard

20 . Identify the element with atomic number 11?

A N
B Na
C K
D Mg

ANSWER :Na

PHYSICS QUIZ BOOK

1.Identify the substances having density lower than water?

A kerosene
B saline water
C mercury
D honey

ANSWER : Kerosene

2.When a body is fully immersed in a fluid the volume of displaced fluid is ..... to the volume of the body

A equal
B higher
C lower
D having no change

ANSWER : Equal

3. Which device is used for measuring relative density of a liquid ?

A barometer
B pH meter
C Thermometer
D lactometer

ANSWER : Hydrometer

4. Identify pascals law from the below laws?

A The pressure applied to any part of the enclosed liquid will be transmitted equally in all directions through the liquid.
B every object will remain at rest or in uniform motion in a straight line unless compelled to change its state by the action of an external force.
C Force is equal to the rate of change of momentum. For a constant mass, force equals mass times Acceleration
D for every action (force) in nature there is an equal and opposite reaction.

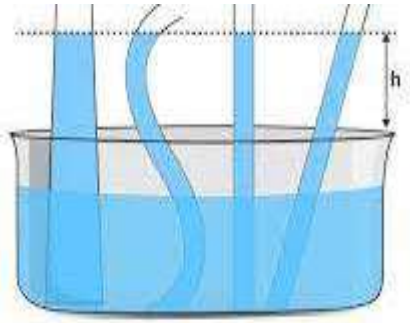
ANSWER : The pressure applied to any part of the enclosed liquid will be transmitted equally in all directions through the liquid

5. What is the unit of force?

A newton
B meter/second
C metre
D Joules

ANSWER: Newton

6. From the figure given below which tube is having the gratest capillary rise?



1 2 3 4

A 4
B 3
C 2
D 1

ANSWER: 3

7.Chose the right ones where adhesion is make use of?

A A water drop is composed of water molecules that like to stick together
B Mercury atoms are strongly attracted to each other; they bead together on surfaces
C dew drops hanging from the leaves of a plant.
D cloth get wet

ANSWER: dew drops hanging from the leaves of a plant.

8.What is the unit of momentum ?

A Kgm/s
B metre
C Kg/s
D m/s

ANSWER :Kgm/s

9.At which part of earth a body experience maximum Force of attraction?

A middle
B equator
C poles
D same everywhere

ANSWER : poles

10.From the instances given below,identify the one where work is done?

A a cricket ball hit by a bat
B a wall is pushed
C Climbing stairs
D climbing stairs with a load on head

ANSWER :a cricket ball hit by a bat

11. Which is the energy possessed by a body by virtue of its motion?

A static energy
B mechanical energy
C kinetic energy
D Potential energy

ANSWER : Kinetic energy

12.What is the potential energy of a object place At ground?

A low
B high
C zero
D equal to kinetic energy

ANSWER : Zero

13.What is the unit of power?

A metre
B watt
C kelvin
D joule

ANSWER : Watt

14.Identify the energy conversion takes place in a cell?

A chemical energy to electrical energy
B mechanical energy to electrical energy
C electrical energy to light energy
D light energy to electrical energy

ANSWER : Chemical energy to electrical energy

15. When resistance increases ,what happens to current?

A increases
B decreases
C no affect for current
D affect only voltage

ANSWER: Decreases

16.Whch among the factors doesn't affect the resistance of a conductor ?

A length of conductor
B nature of material
C area of cross section
D Color

ANSWER : Color

17.Rheostat is a device used to regulate current by changing what ?

A thickness
B current
C resistance
D voltage

ANSWER : Resistance

18.What is called the number of vibrations in One second for a wave?

A wavelength
B amplitude
C frequency
D period

ANSWER: Frequency

19.What is the use of SONAR?

A To measure distance,direction and speed of objects under water
B to determine density of water
C for measuring pressure of ocean
D for measuring average rainfall

ANSWER : To measure distance ,direction and speed of objects under water

20.Expand DART ?

A deep sky assessment and reporting of tsunami
B deep ocean assessment and reporting of tsunami
C deep ocean assessment and reporting of tides and tsunami
D deep ocean assessment and reporting of tides

ANSWER: deep ocean assessment and reporting of tsunami

THE END

ALICE
JOSEPH

DIGITAL ALBUM OF SCIENTISTS

ST. JOSEPH COLLEGE OF TEACHER EDUCATION FOR WOMEN,ERNAKULAM

Aiswarya Lakshmi S
Physical Science

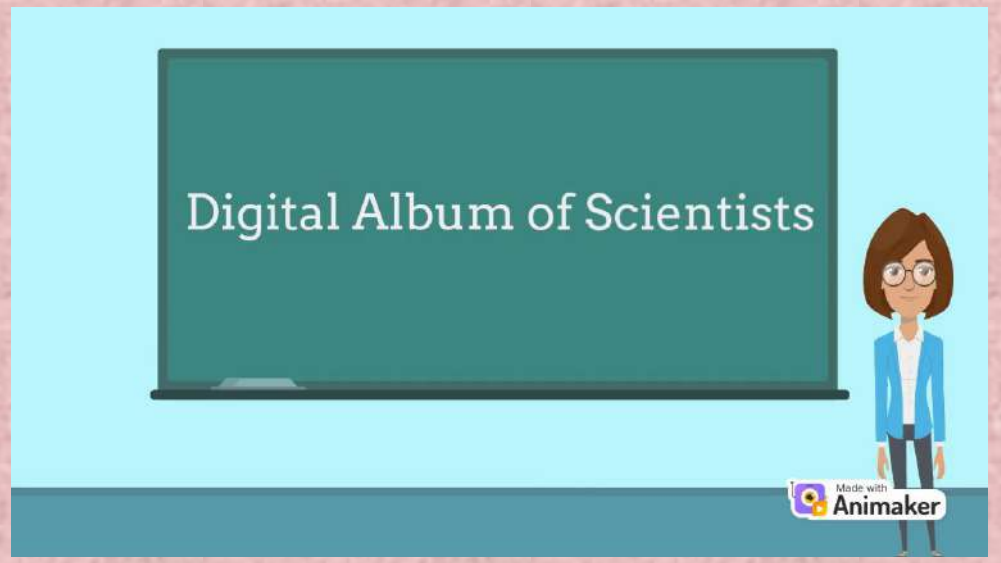
PREFACE

I developed a digital album and the main objective of this album is to serve as a learning resource material for students and make their learning purpose much more easier.

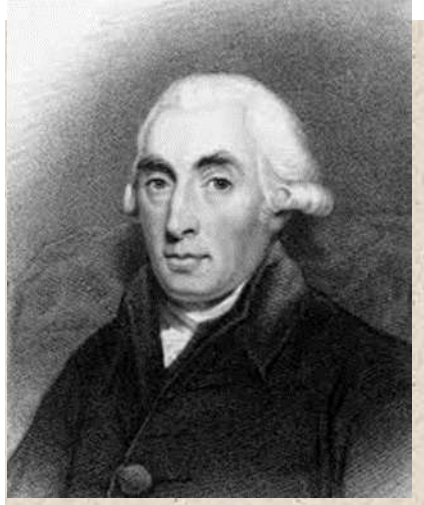
This audio book is prepared based on the SCERT syllabus of class 8. This album consists of two sections titled as “Chemistry Scientists Album” , “Physics Scientists Album”. I hope this digital album will be helpful to all the students to enjoy and learn their syllabus.

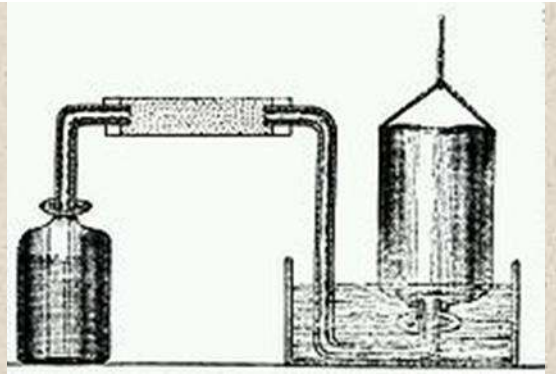
CONTENTS

INTRODUCTION



CHEMISTRY SCIENTISTS ALBUM





Henry Cavendish (1731-1810)

- English natural philosopher and scientist, chemist and physicist.
- Born: 10 October 1731, Nice, France
- Died: 24 February 1810, London, United Kingdom
- Discovered : Hydrogen
- Awards : Copley Metal
- Nationality : British, French
- Siblings : Frederick Cavendish

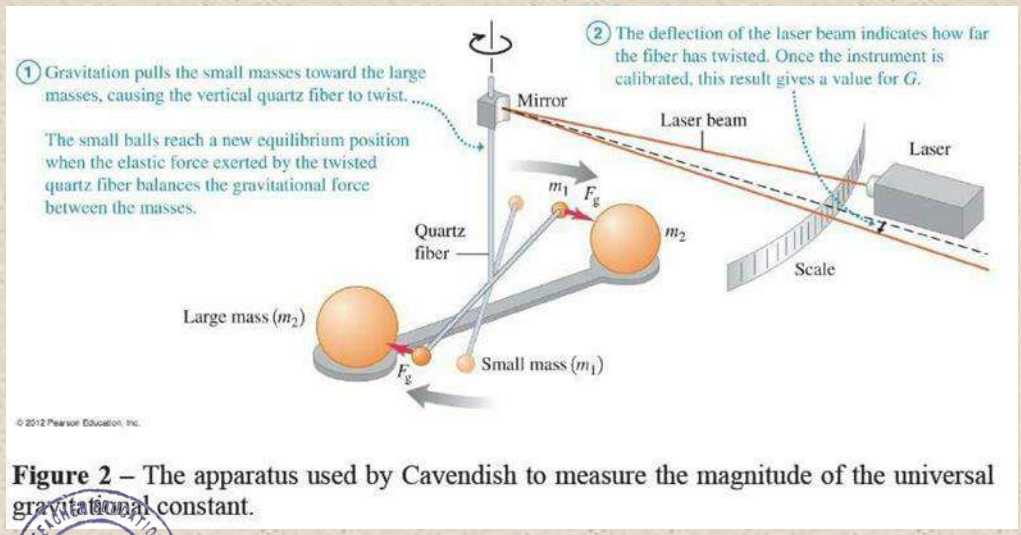
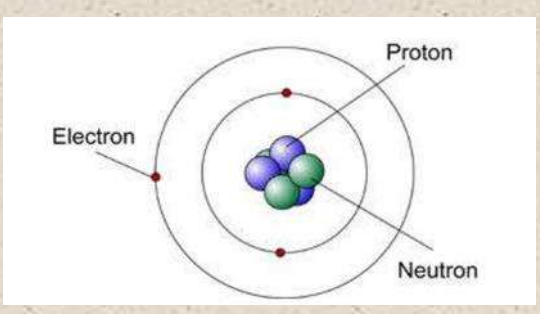


Figure 2 – The apparatus used by Cavendish to measure the magnitude of the universal gravitational constant.

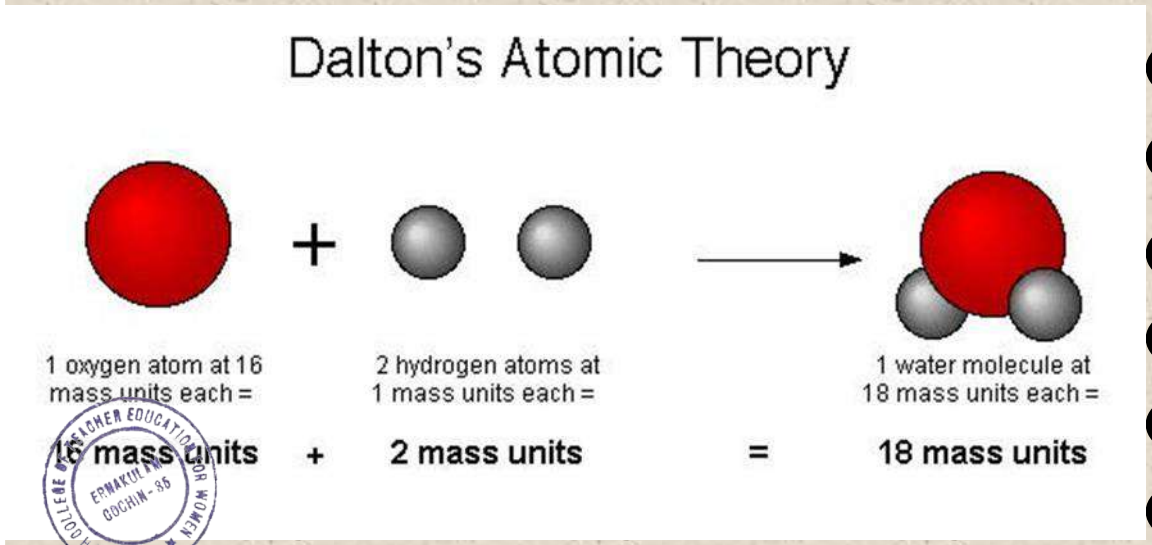
Contributions

- He is the first to recognize hydrogen gas.
- His observation led to the accurate value for gravitational constant and earth's mass.
- He founded the study of the properties of dielectrics and distinguish clearly between quantity of electricity which is known as potential.



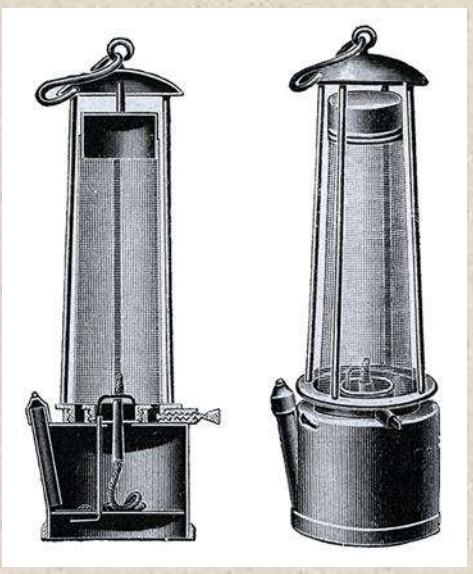
John Dalton (1766-1844)

- English chemist, physicist and meteorologist.
- He is best known for introducing the atomic theory into chemistry.
- Born: 6 September 1766, Eaglesfield, United Kingdom
- Died: 27 July 1844, Manchester, United Kingdom
- Nationality: British, English
- Awards: Royal Medal



Contributions

- Famous for research on relativity on atom.
- A book called " A New System of Chemical Philosophy" was published.
- Published a paper on the topic "Daltonism"
- Discovered the composition of ether and butylene.



Sir Humphry Davy (1778-1829)

- British chemist and inventor.
- Born:17 December 1778,Penzance, United Kingdom
- Died:29 May 1829, Geneva, Switzerland
- Spouse: Jane Apreece (1812-1829)
- Award: Copley Medal, Royal Medal, Rumford Medal
- Nationality: British

Contributions

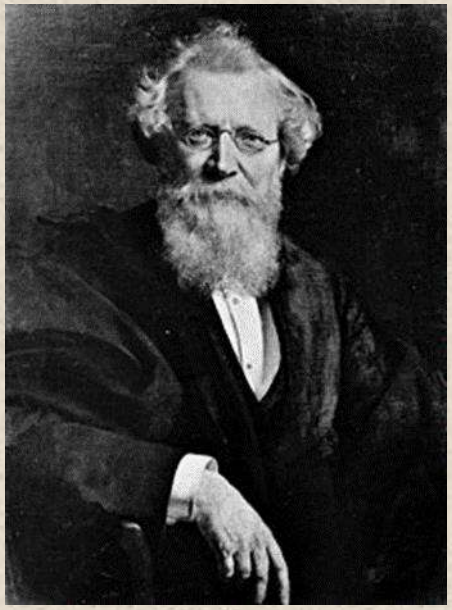
Using electrolysis he isolated many elements for the first time. Sodium,Pottasium in 1807 and Calcium,Strontium,Barium,Magnesium in 1808.
In 1799 he experimented ansthetic properties of nitrous acid and coined it as " laughing gas"
Inventor of Miner's Safety Lamp

Berzelius (1779-1848)

- Swedish chemist.
- One of the founders of modern chemistry.
- Born: 20 August 1779, Vaversunda, Sweden
- Died: 7 August 1848, Stockholm, Sweden
- Discovered: Selenium, Silicon, Cerium, Thorium
- Nationality: Swedish
- Spouse: Elisabeth Poppius (m. 1835–1848)
- Siblings: Flora Berzelius
- Awards: Copley Medal

Contributions

- Demonstrated the power of an electrochemical cell to decompose chemicals into pairs of electrically opposite constituents.
- Discovered and isolated several new elements including silicon, selenium, thorium and cerium.
- Berzelius is also credited with originating the chemical terms catalysis, polymer, isomer, and allotrope.
- He was the first person to make the distinction between organic compounds, and inorganic compounds



August Wilhelm Von Hofmann (1818-1892)

- German chemist
- Born: 8 April 1818
- Giessen, Germany
- Died: 5 May 1892 (aged 74),Berlin, Germany
- Known for
- Hofmann rearrangement
- Hofmann elimination
- Hofmann voltammeters
- Hofmann– Loffler reaction
- Hofmann– Martius rearrangement
- Ball-and-stick model

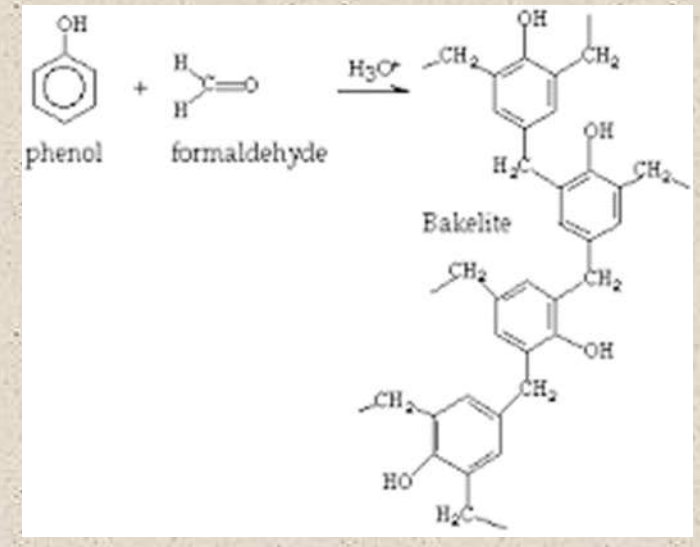
Contributions

First research, on coal tar, led to the development of practical methods for obtaining benzene and toluene and converting them into nitro compounds and amines.

Other work he prepared the three ethyl amines and tetraethyl ammonium compounds and established their structural relationship to ammonia.

He also developed a method for determining the molecular weights of liquids from vapor densities.

A Hofmann voltmeter is an apparatus for electrolyzing water, invented.



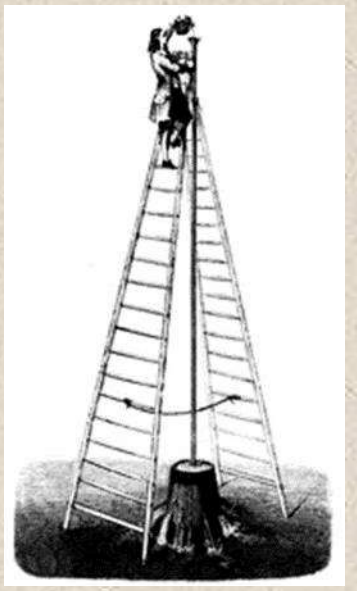
Leo Bakeland (1863-1944)

- Belgian chemist.
- Born: 14 November 1863, Sint-Martens-Latem, Belgium
- Died: 23 February 1944, Beacon, New York, United States
- Awards: Perkin Medal, Franklin Medal, John Scott Legacy Medal and Premium
- Education: Ghent University (1882)
- Nationality: American, Belgian

Contributions

- Bakeland's search, begun in 1905, for a synthetic substitute for shellac led to the discovery of Bakelite, a condensation product of formaldehyde and phenol that is produced at high temperature and pressure.
- Bakeland was the first to find a method of forming it into the thermosetting plastic.

PHYSICS SCIENTISTS ALBUM



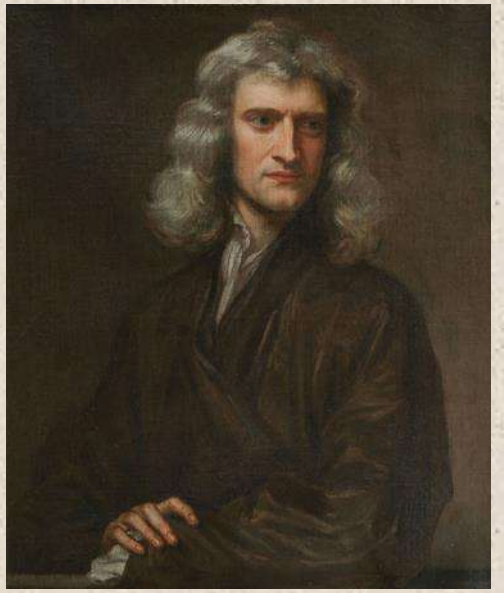
Blaise Pascal (1623-1662)

- French mathematician, physicist, inventor, philosopher, and Catholic writer.
- Born: 19 June 1623, Clermont-Ferrand, France
- Died: 19 August 1662, Paris, France
- Nationality: French

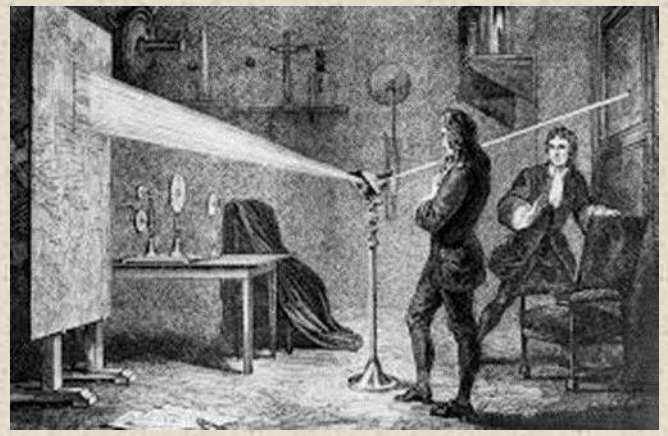
Contributions

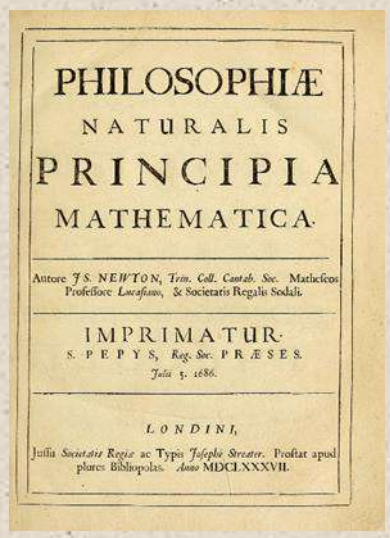
- Invented the syringe
- Invented hydraulic press
- Helped with the study of Pascal law of pressure
- Helped with the theory of probability
- Helped with the study of cycloid
- Invented the Pascal's Triangle
- 1st digital calculator

Sir Isaac newton (1643-1727)



- English mathematician, physicist, astronomer, alchemist, theologian, and author, widely recognized as one of the greatest mathematicians and physicists and among the most influential scientists of all time.
- Born: 4 January 1643, Woolsthorpe Manor House, United Kingdom
- Died: 31 March 1727, Kensington, London, United Kingdom
- Full name: Sir Isaac Newton
- Nationality: British, English
- Place of burial: Westminster Abbey, London, United Kingdom
- Contributions





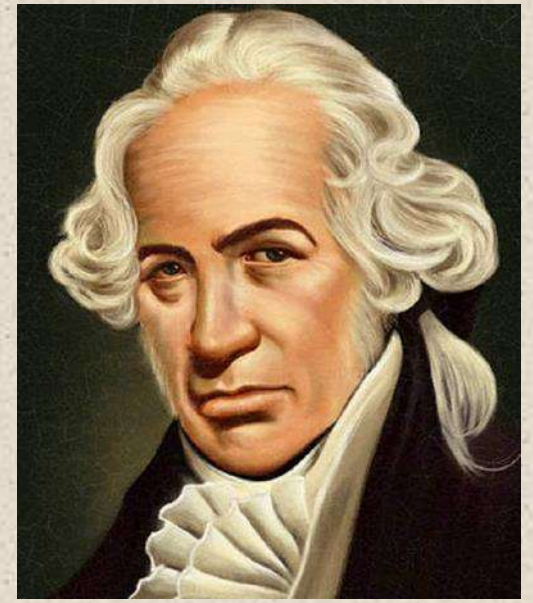
PHILOSOPHIÆ
NATURALIS
PRINCIPIA
MATHEMATICA

Autore *I.S. NEWTON*, *Trin. Coll. Cantab. Soc.* Matheseos Professore *Lucasiano*, & Societatis Regalis Sodali.

IMPRIMATUR.
S. PEPYS, *Reg. Soc.* PRÆSES.
Julii 5. 1686.

LONDINI,
Justu *Societatis Regiæ* ac Typis *Josephi Streater*. Prostat apud plures Bibliopolas. *Anno* MDCLXXXVII.

- Greatest contribution of science was the laws of motion.
- Compare effects of gravitational force on earth, on the moon and within the space.
- Invented calculus and explain the nature of white light.
- Author of the book “ Principia Mathematica”



Daniel Gabriel Fahrenheit (1686-1736)

- Physicist, inventor, and scientific instrument maker.
- Born: 24 May 1686, Gdańsk, Poland
- Died: 16 September 1736, The Hague, Netherlands
- Awards: Fellow of the Royal Society
- Nationality: Dutch, German, Polish

Contributions

- Invented the mercury thermometer.
- Fahrenheit suggested that this principle be used when building barometric devices.
- Another of his contributions has to do with the creation of an instrument that served to pump liquids.
- Created a hygrometer, which was an instrument that was used to measure humidity.

Anders Celsius (1701-1744)

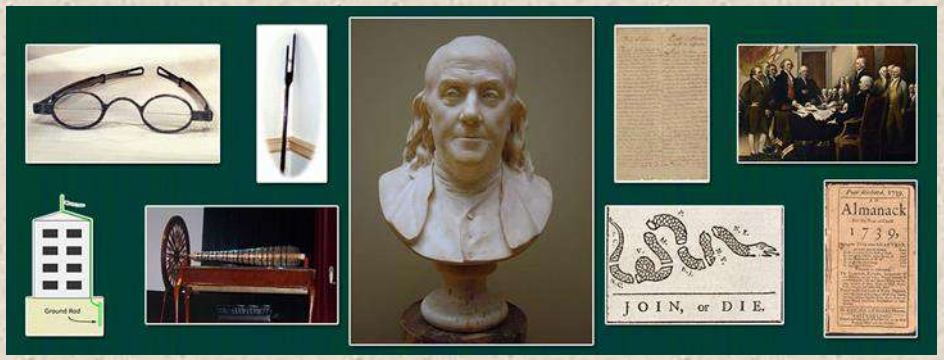
- Swedish astronomer, physicist and mathematician.
- He was professor of astronomy at Uppsala University from 1730 to 1744, but traveled from 1732 to 1735 visiting notable observatories in Germany, Italy and France.
- Born: 27 November 1701, Uppsala, Sweden
- Died: 25 April 1744, Uppsala, Sweden
- Nationality: Swedish
- Awards: Fellow of the Royal Society
- Place of burial: Church of Old Uppsala, Uppsala, Sweden.

Contributions

Celsius important contributions include determining the shape and size of the Earth; gauging the magnitude of the stars in the constellation Aries; publishing a catalog of 300 stars and their magnitudes; observing eclipses and other astronomical events; and preparing a study that revealed that the Nordic countries were slowly rising above the sea level of the Baltic. His most famous contribution falls in the area of temperature, and the one he is remembered most for is the creation of the Celsius temperature scale.

Benjamin franklin (1706-1790)

- American polymath who was active as a writer, scientist, inventor, statesman, diplomat, printer, publisher, and political philosopher.
- Born: 17 January 1706, Milk Street, Boston, Massachusetts, United States
- Died: 17 April 1790, Philadelphia, Pennsylvania, United States



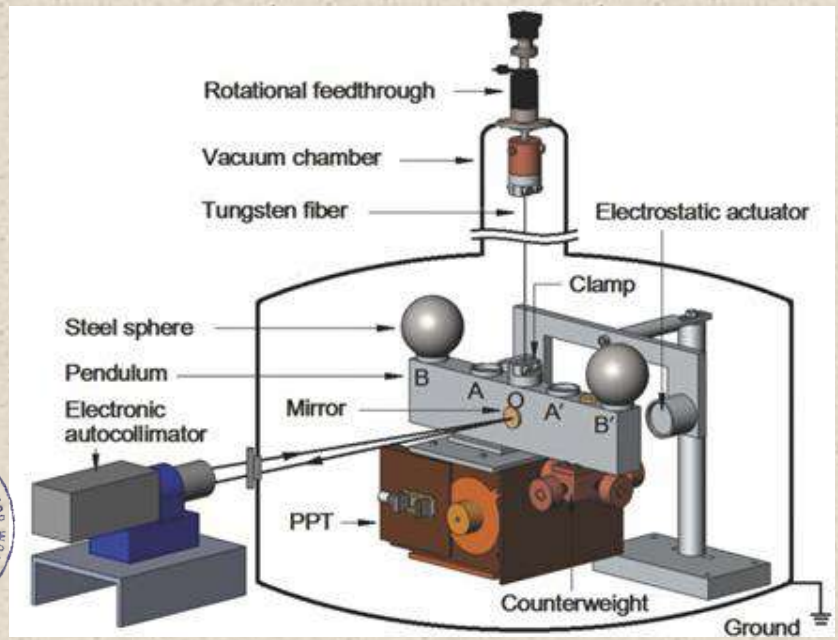
Contributions

- Invented many useful items- Franklin stove, bifocals, lightning rod, swim flippers and glass harmonica.
- Never patented anything.
- After retiring and serving from militia, his love of electricity began to show through electric discoveries
- Major contributions are :

1. Lightning was electricity.
2. Creation of words like positive, negative and battery.
3. Lightning rod or KITE Experiment of 1752

Charles-Augustin de Coulomb (1736-1806)

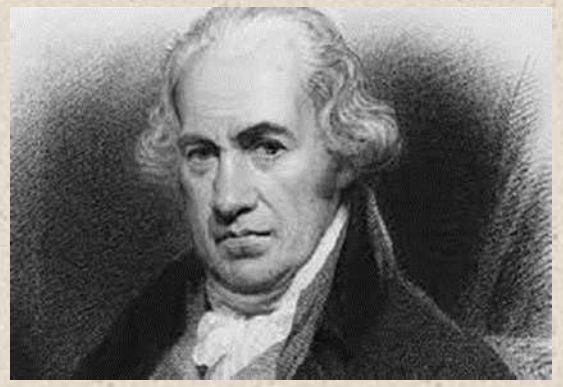
- French officer, engineer, and physicist. He is best known as the eponymous discoverer of what is now called Coulomb's law, the description of the electrostatic force of attraction and repulsion. He also did important work on friction.
- Born: 14 June 1736, Angoulême, France
- Died: 23 August 1806, Paris, France
- Nationality: French

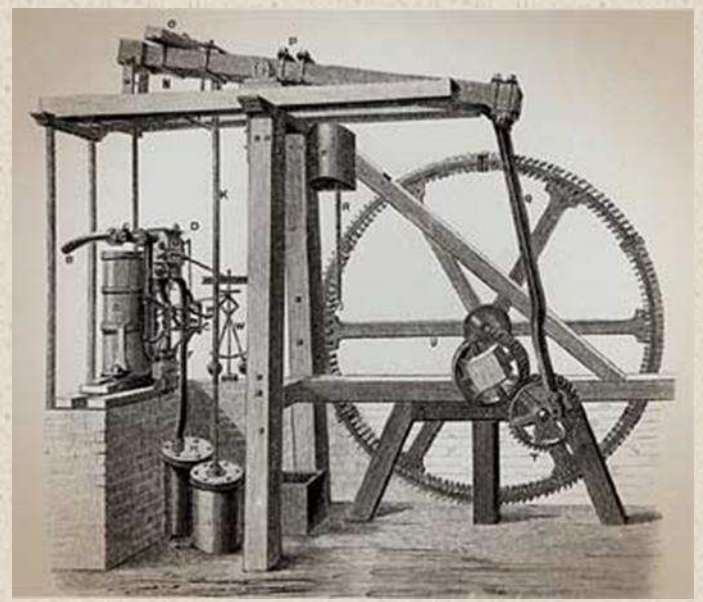


Contributions

- Coulomb’s main contributions were in the fields of electricity, magnetism, applied mechanics, friction studies, and torsion.
- Introduced Coulomb’s Law

James Watt (1736-1819)

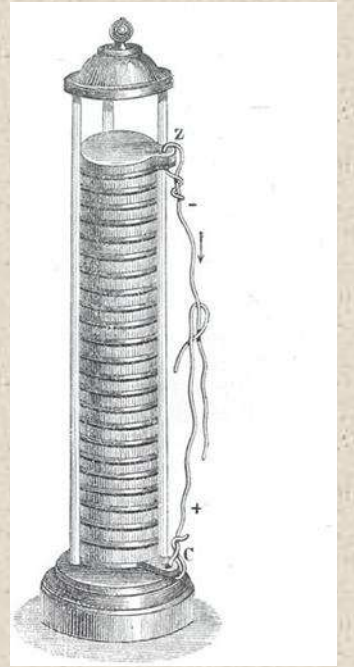




- Scottish inventor, mechanical engineer, and chemist.
- Born: 19 January 1736, Greenock, United Kingdom
- Died: 25 August 1819, Heath field Hall
- Nationality: British, Scottish

Contributions

- Developed the concept of horsepower.
- Invented the copy mill rotatory engine, double-action engine and steam indicator.
- "Watt" the unit of power named after him.
- Improved the technology of steam engine thus giving industrial revolution a huge momentum.



Alessandro Volta (1745-1827)

- Italian physicist and chemist
- Born: 18 February 1745, Como, Italy
- Died: 5 March 1827, Como, Italy
- Nationality: Italian
- Pioneer of electricity and power
- Inventor of the electric battery and the discoverer of methane.

Contributions

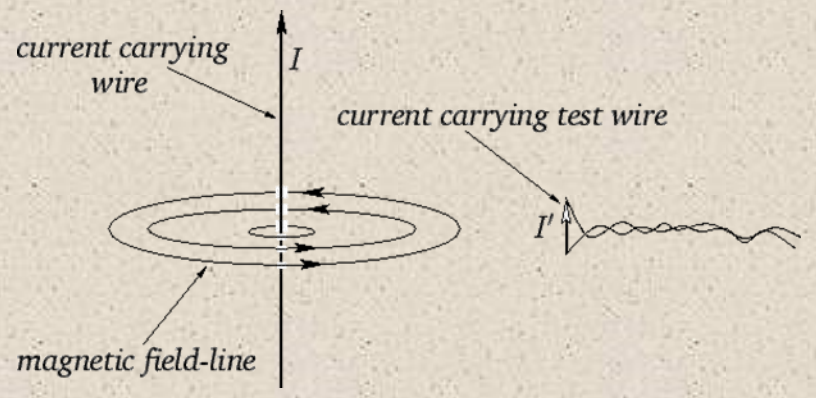
In 1774 he invented electrophorus, a device that produced charges of static electricity.
He also invented eudiometer, to explode the gases inside.
Invented the first electric battery voltaic pile, which consists of copper and zinc plates separated by disc of paper. Attached to the top and bottom of the pile was a copper wire. When volta closed the circuit, electricity flowed through the pile.

Andre-Marie Ampère (1775-1836)

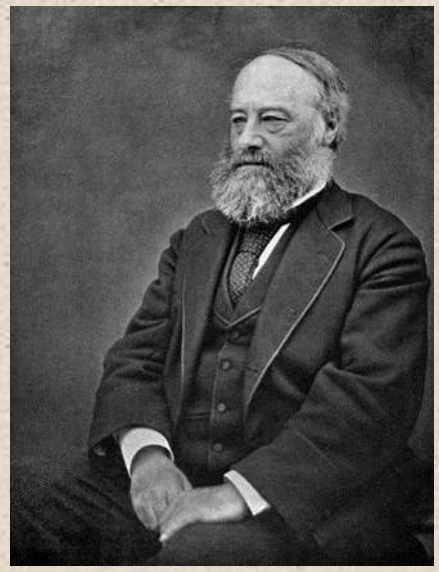
- French physicist and mathematician.
- Born: 20 January 1775, Lyon, France
- Died: 10 June 1836, Marseille, France
- Nationality: French
- Place of burial: Montmartre Cemetery, Paris, France

Contributions

- Discovered the magnetic effect of a coil with a current a “solenoid”
- Introduce the terms ‘electrostatics’, ‘electrodynamics’, ‘electromotive force’, ‘tension’, ‘galvanometer’, ‘electric current’
- Ampere proposed taken for the direction of direct electric current the one which is positive electricity moves.

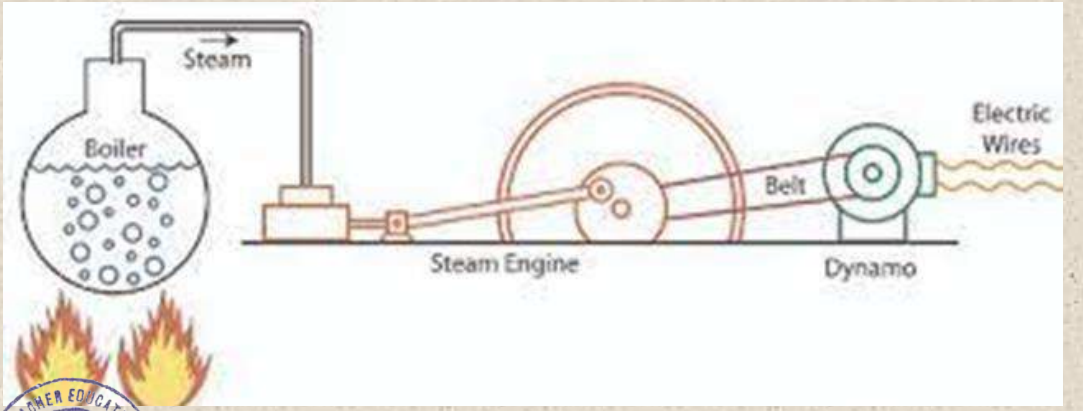


James Prescott Joule (1818-1889)

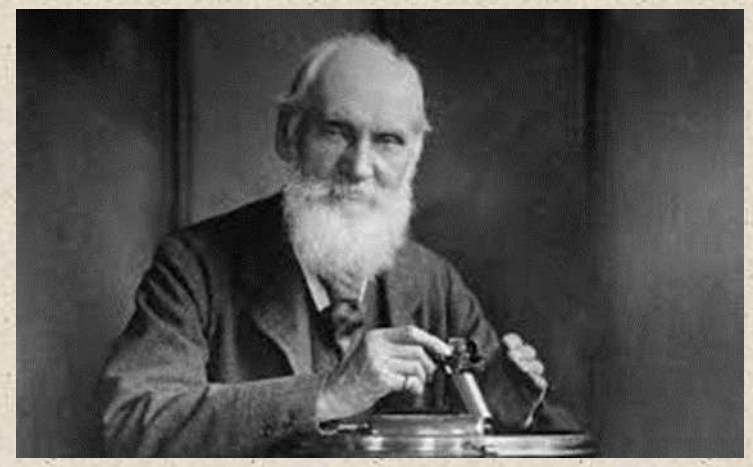


- English physicist, mathematician and brewer, born in Salford, Lancashire.
- Born: 24 December 1818, Salford, United Kingdom
- Died: 11 October 1889, Sale, United Kingdom
- Education: The University of Edinburgh (1871), University of Oxford (1860), Trinity College Dublin (1857)
- Awards: Copley Medal, Royal Medal
- Nationality: British, English

Contributions

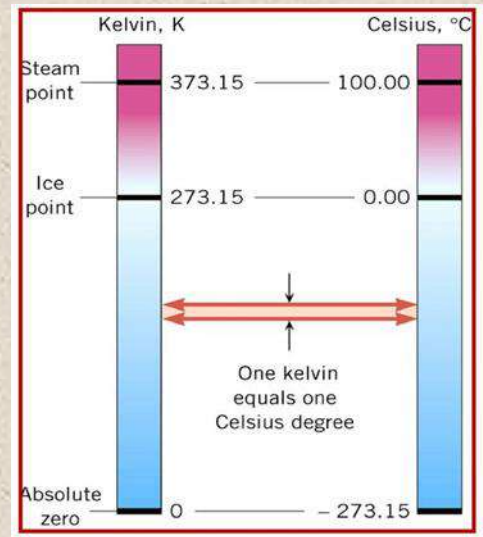


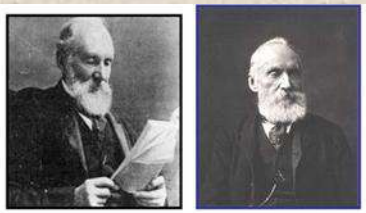
- On 1845 he was able to demonstrate in a paddle-wheel experiment which involves the shaft and paddles being driven by a falling weight suspended from a pulley, that the same amount of work, however done always produced the same amount of heat. This enabled Joule to conclude that heat is a form of energy. The mechanical equivalent of heat is constant and is represented by the symbol J



William Thomson, 1st Baron Kelvin(1824-1907)

- British mathematician, mathematical physicist and engineer.
- Born: 26 June 1824, Belfast, United Kingdom
- Died: 17 December 1907, Largs, United Kingdom
- Full name: William Thomson
- Awards: Copley Medal 1883, Matteucci Medal 1876, Royal Medal 1856, John Fritz Medal 1905, Albert Medal 1879, Royal Society Bakerian Medal 1856, Smith's Prize for Examination Performance 1845,Poncelet Prize 1873.



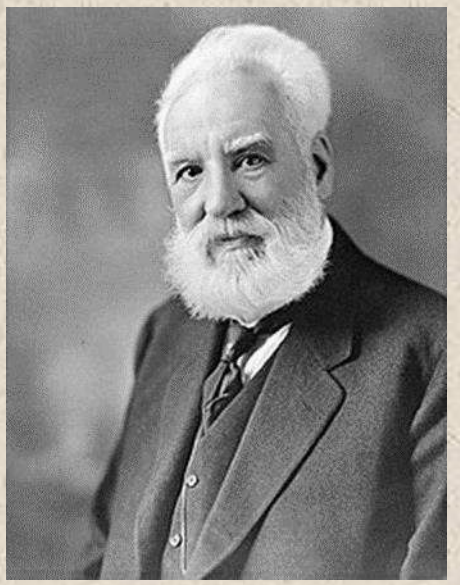


Kelvin
Temperature Scale

$$T = T_c + 273.15$$

Contributions

- Published 661 scientific papers
- Held 70 patents.
- Supervised the laying of first transatlantic cable
- Helped Pierre and Marie curie for the discovery of radium.
- First to make the detailed analysis on ocean tides.

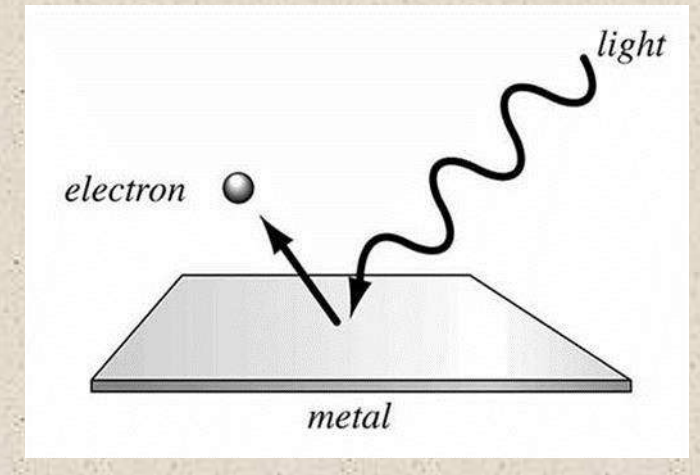


Alexander Graham Bell (1847-1922)

- Scottish-born inventor, scientist and engineer who is credited with patenting the first practical telephone.
- Born: 3 March 1847, Edinburgh, United Kingdom
- Died: 2 August 1922, Beinn Bhreagh
- Spouse: Mabel Gardiner Hubbard (m. 1877–1922)
- Nationality: American, Canadian, Scottish

Contributions

- Bell developed his first invention at age 14. The simple agricultural device served the purpose of removing wheat husks and involved a nail brush and paddle connected into a rotary-brushing wheel, which greatly reduced the time and labor required to husk wheat.
- Developed harmonic telegraph.
- Invented metal detector, hydrofoil boat.



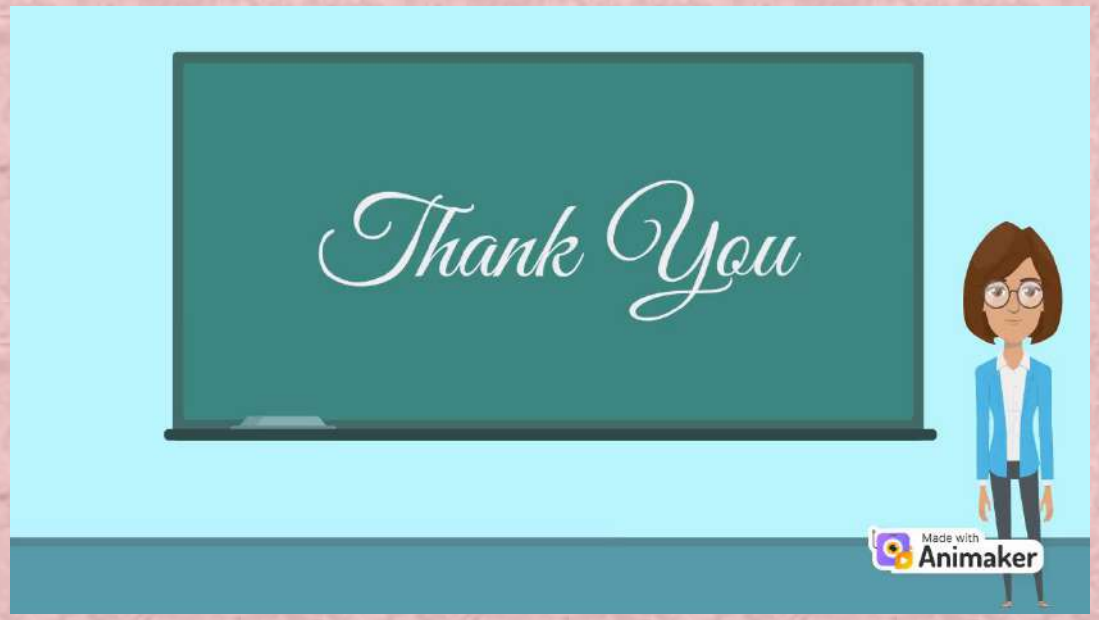
Heinrich Hertz (1857-1894)

- German physicist who first conclusively proved the existence of the electromagnetic waves predicted by James Clerk Maxwell's equations of electromagnetism.
- Born: 22 February 1857, Hamburg, Germany
- Died: 1 January 1894, Bonn, Germany
- Full name: Heinrich Rudolf Hertz
- Education: Humboldt University of Berlin (1878–1880), MORE
- Awards: Rumford Medal

Contributions

- He proved that electric current has negligible mass.
- He compare Maxwell's Theory with other competing theories.
- Discovered radio waves.
- Proved Maxwell's electromagnetic theory of light.
- Laid foundations for modern communication technology.
- First who discover photoelectric effect.

CONCLUSION



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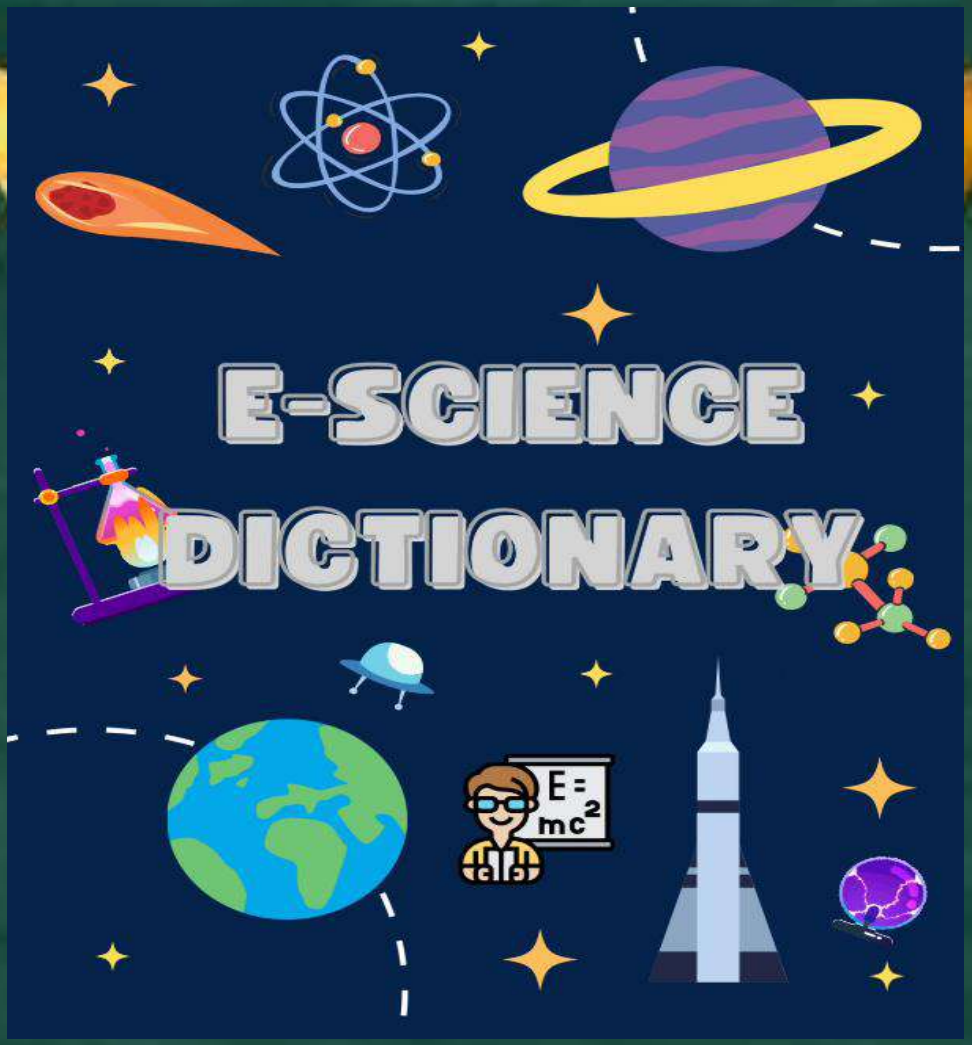


AGATHA CYRIAC
FIRST YEAR
PHYSICAL SCIENCE

E- SCIENCE DICTIONARY

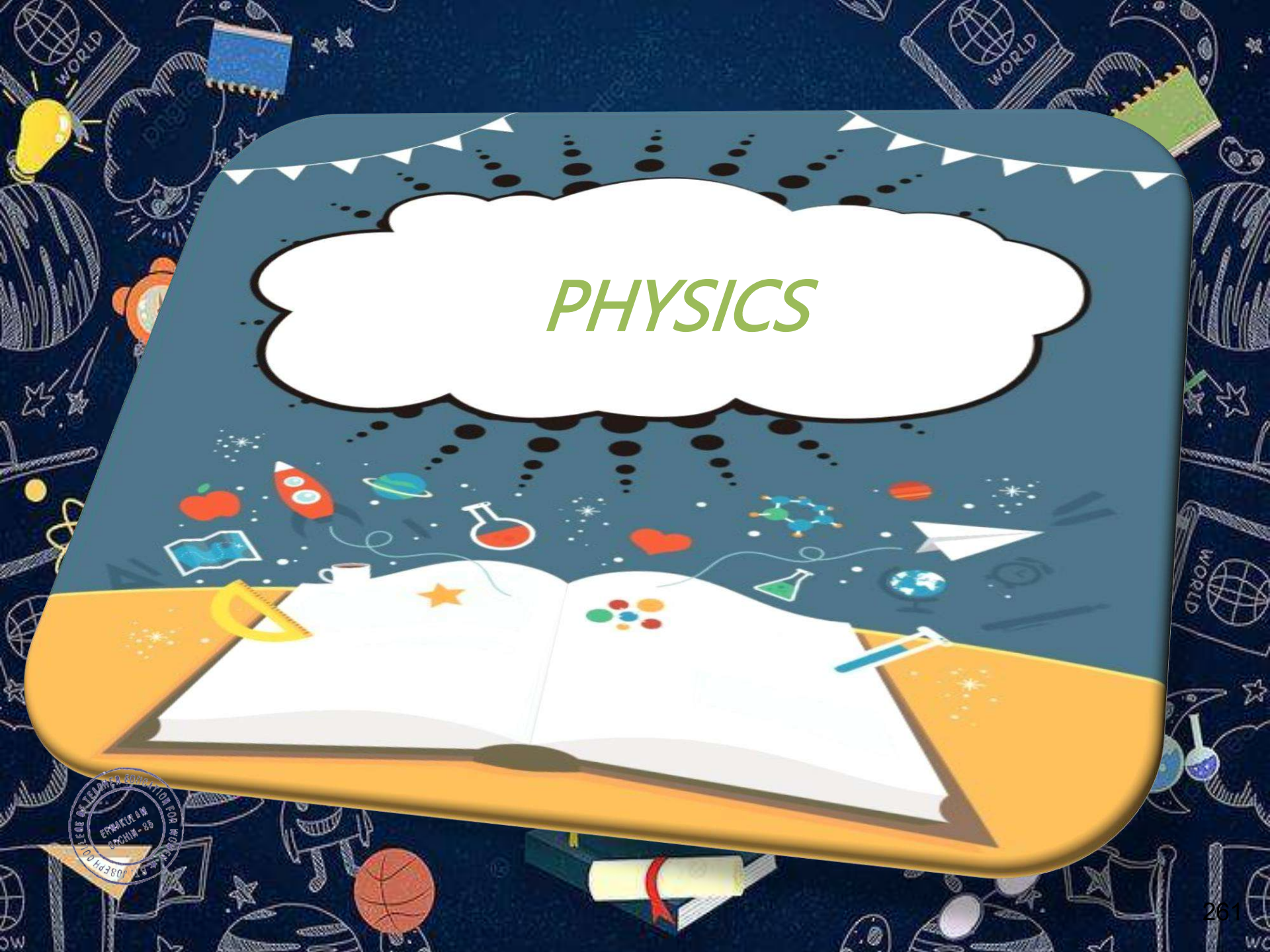
PREFACE

This e- science dictionary has been developed for the IX^th grade students. It consists of 52 words in total – 26 words from the physics chapters and 26 words from the chemistry chapters . There are a couple of words which has been introduced to improve the additional knowledge of the students. This e- science dictionary comes with an additional feature that is, it is an audiobook! By clicking the audio button near each word, students will be able to learn the correct prenonciation and definition of each word. This e- science dictionary also provides the noun, adjectives, or verb forms of the word.

Enjoy learning!

INDEX

INTRODUCTION


PHYSICS

A

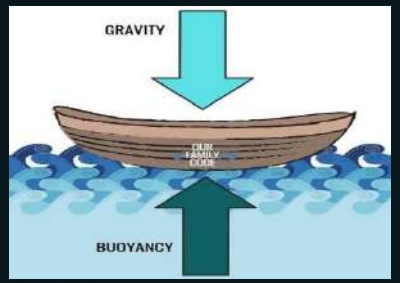
Amplitude
Noun: amplitude

/ˈamplɪtjuːd/
The maximum extent of a vibration or oscillation, measured from the position of equilibrium.

B

Buoyancy
Noun:buoyancy

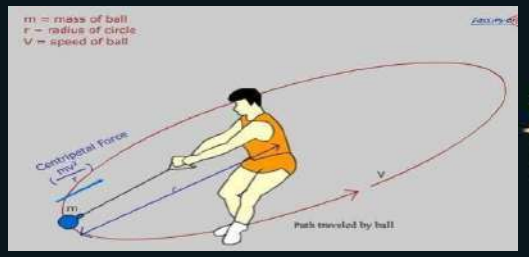
/ˈbɔɪənsi/
The ability or tendency of something to float in water or other fluid.
Adj. Buoyant.



C

Centripetal
Adjective: centripetal

/ˌsɛntrɪˈpiːt(ə)l,sɛnˈtrɪpɪt(ə)l/
Moving or tending to move towards a centre.



D

Decibel

Noun: decibel

/ˈdɛsɪbɛl/

A unit used to measure the intensity of a sound or the power level of an electrical signal by comparing it with a given level on a logarithmic scale.

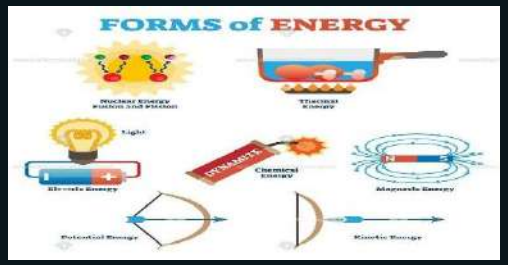
E

Energy

Noun: energy

/ˈɛnədʒi/

The ability to do work.



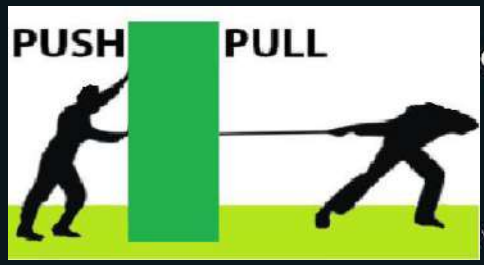
F

Force

Noun: force

/fɔːs/

An influence tending to change the motion of a body or produce motion or stress in a stationary body.



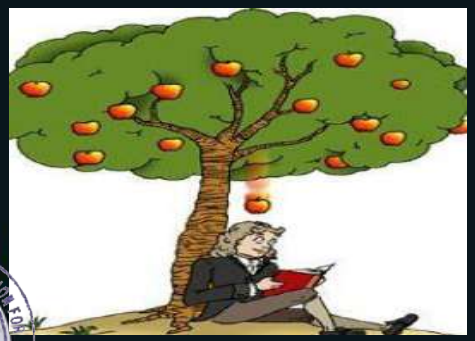
G

Gravity

Noun: gravity

/ˈgravɪti/

The force that attracts a body towards the centre of the earth, or towards any other physical body having mass.



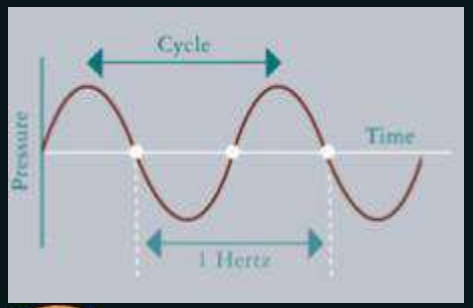
H

Hertz

Noun: hertz

/həːts/

The SI unit of frequency, equal to one cycle per second.



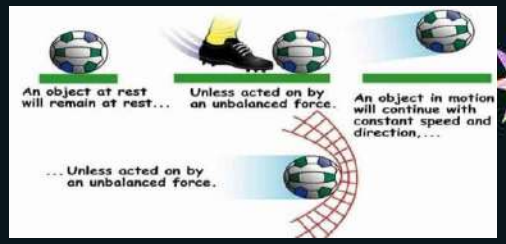
I

Inertia

Noun: inertia

/ɪˈnəːʃə/

A property of matter by which it continues in its existing state of rest or uniform motion in a straight line, unless that state is changed by an external force.



J

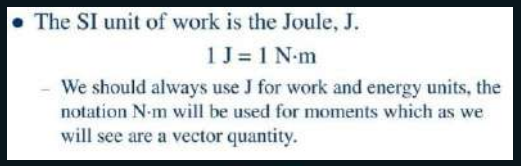
Joule

Noun: joule

plural noun: joules

/dʒuːl/

The SI unit of work or energy, equal to the work done by a force of one newton when its point of application moves one metre in the direction of action of the force, equivalent to one 3600th of a watt-hour.



K

Kinetic energy

Noun: Kinetic energy

Energy which a body possesses by virtue of being in motion.

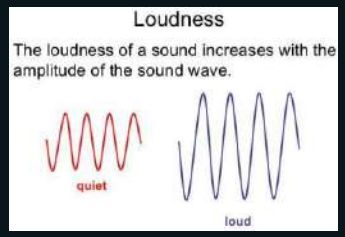
L

Loudness

Noun: loudness

Adj. Loud

Is a measure of the response of the ear to the sound.

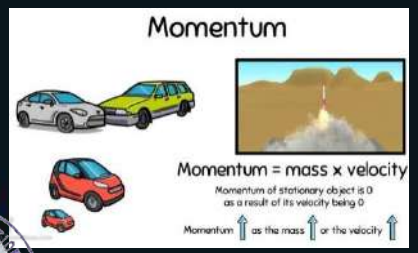


M

Momentum

Noun: momentum
Pl. Momenta

/mə(ʊ)ˈmɛntəm/
The quantity of motion of a moving body, measured as a product of its mass and velocity.

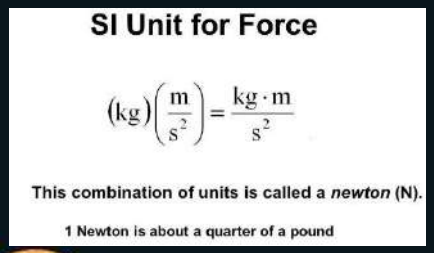


N

Newton

Noun: Newton

/ˈnjuːt(ə)n/
The SI unit of force. It is equal to the force that would give a mass of one kilogram an acceleration of one metre per second, and is equivalent to 100,000 dynes.

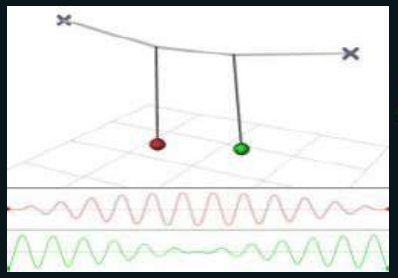


O

Oscillation

Noun: oscillation
V. Oscillate
Adjs. Oscillating

/ˌɒsɪˈleɪʃn/
Movement back and forth in a regular rhythm.



P

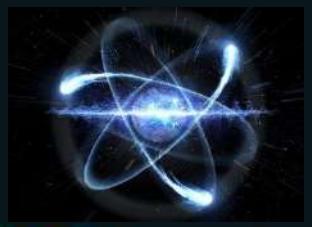
Potential energy
Noun: potential energy

The energy possessed by a body by virtue of its position relative to others, stresses within itself, electric charge, and other factors.

Q

Quantum
Noun: quantum

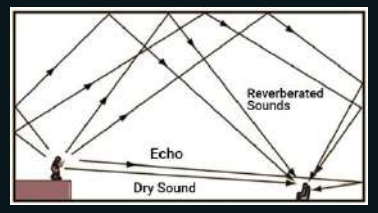
/ˈkwɒntəm/
A discrete quantity of energy proportional in magnitude to the frequency of the radiation it represents.



R

Reverberation
Noun:reverberation
V. Reverberate
Adj. reverberant

/rɪˌvəːbəˈreɪʃn/
Prolongation of a sound; resonance.

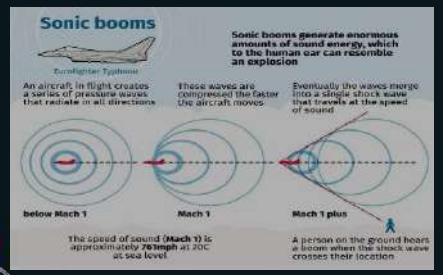


S

Sonic boom

Noun: sonic boom

A loud explosive noise caused by the shock wave from an aircraft or other object travelling faster than the speed of sound.



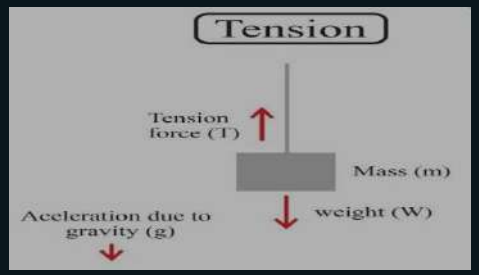
T

Tension

Noun: tension

/ˈtɛnʃ(ə)n/

A strained state or condition resulting from forceTensions act in opposition to each other.



U

Ultrasound

Noun: ultrasound

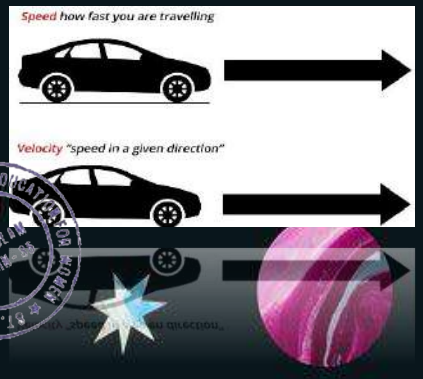
/ˈʌltrəsaʊnd/

Sound or other vibrations having an ultrasonic frequency, particularly as used in medical imaging.

V

Velocity
Noun: velocity

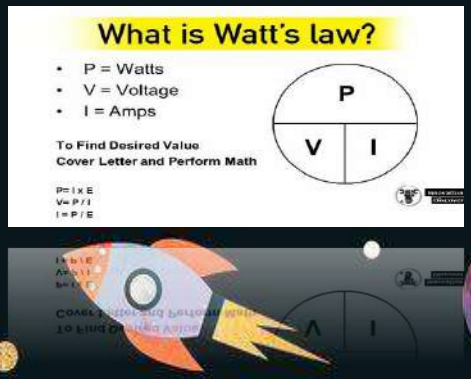
/vɪˈlɒsɪti/
The speed of something in a given direction.



W

Watt
Noun: watt

/wɒt/
The SI unit of power, equivalent to one joule per second, corresponding to the rate of consumption of energy in an electric circuit where the potential difference is one volt and the current one ampere.



X

X-ray
Noun: x-ray

/ˈɛksreɪ/
An electromagnetic wave of high energy and very short wavelength, which is able to pass through many materials opaque to light.

Y

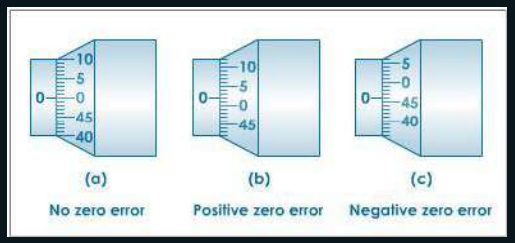
Young's modulus

Noun: Young's modulus

unpunctuated: Youngs modulus

/jʌŋz/

A measure of elasticity, equal to the ratio of the stress acting on a substance to the strain produced.

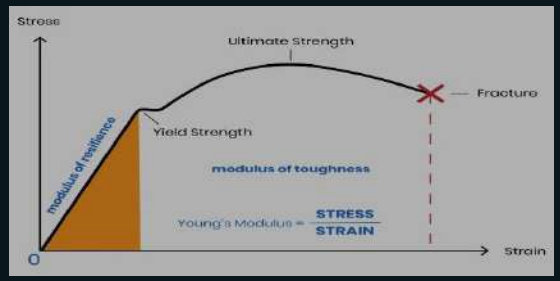


Z

Zero error

Noun: zero error

It is a type of error in which an instrument gives a reading when the true reading at that time is zero.



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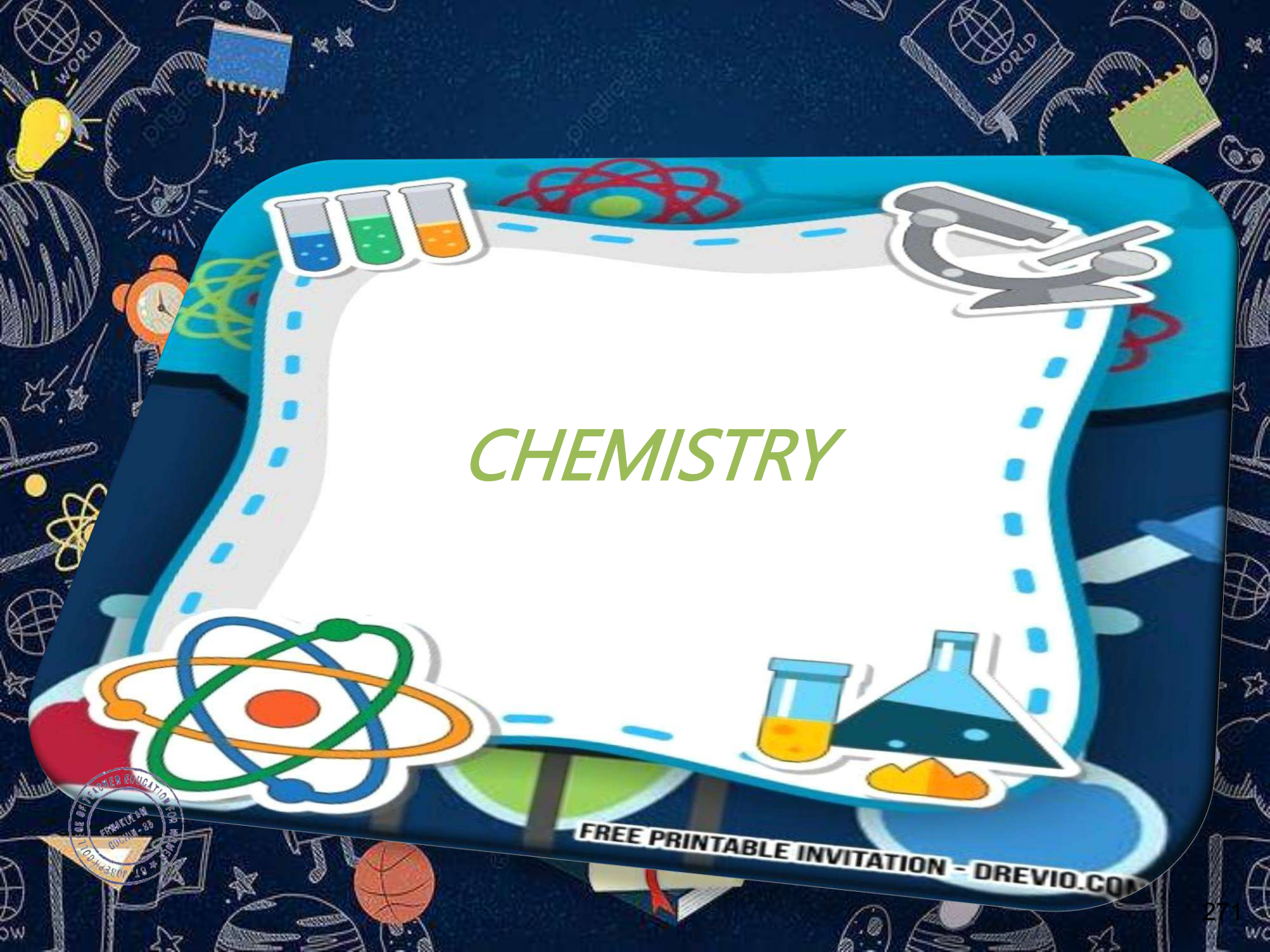
CHEMISTRY
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A

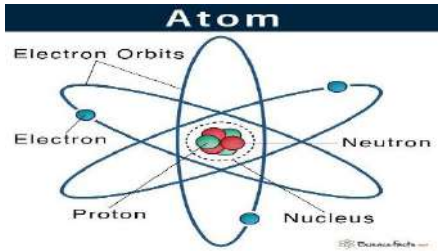
Atom

Noun: atom

Plural noun: atoms

/ˈatəm/

The smallest particle of a chemical element that can exist.



B

Beta particle

Noun: beta particle

Plural noun: beta particles

A fast-moving electron emitted by radioactive decay of substances

C

Colloid

Noun: colloid

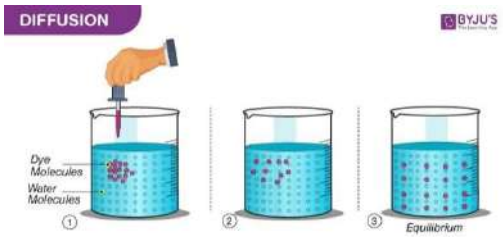
/ˈkɒlɔɪd/

A homogeneous non-crystalline substance consisting of large molecules or ultramicroscopic particles of one substance dispersed through a second substance.

D

Diffusion
Noun: diffusion

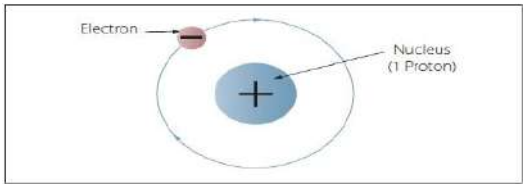
/dɪˈfjuːʒ(ə)n/
The intermingling of substances by the natural movement of their particles.



E

Electron
Noun : electron

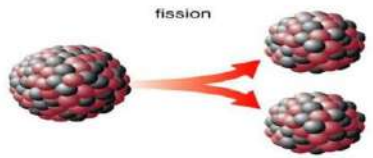
/ɪˈlɛktrɒn/
A stable subatomic particle with a charge of negative electricity, found in all atoms and acting as the primary carrier of electricity in solids.



F

Fission
Noun: fission

/ˈfɪʃ(ə)n/
Division or splitting into two or more parts.

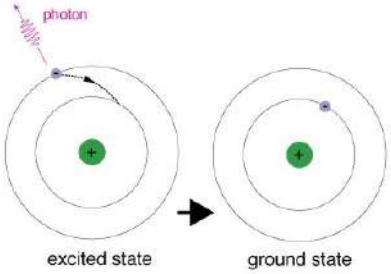


G

Ground state

Noun: ground state

The lowest energy state of an atom or other particle.



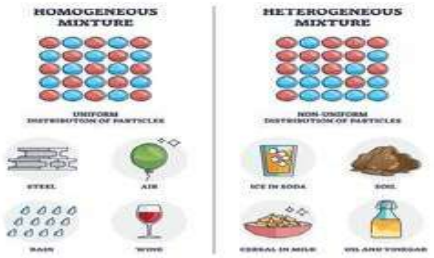
H

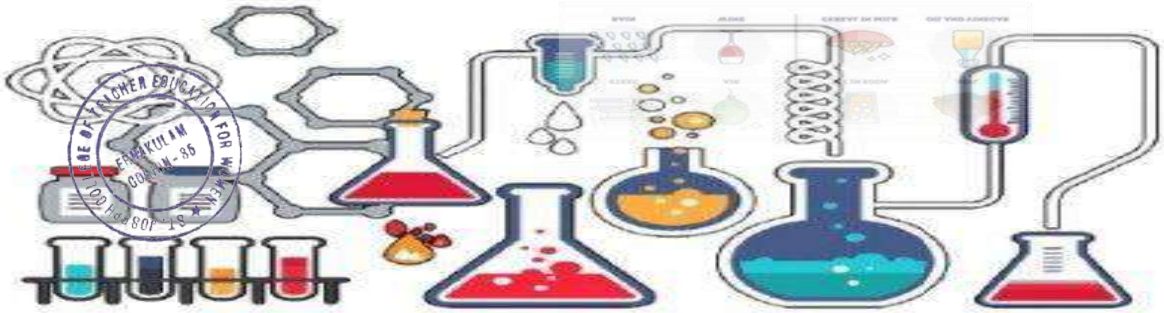
Heterogeneous

Adj: heterogeneous

/ˌhɛt(ə)rə(ʊ)ˈdʒiːnɪəs/

Of or denoting a process involving substances in different phases (solid, liquid, or gaseous).





I

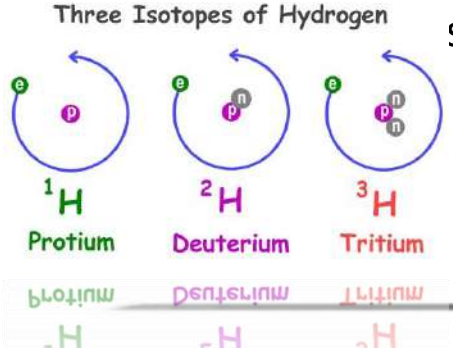
Isotope

Noun: isotope

Plural noun: isotopes

/ˈʌɪsətəʊp/

Is one of two or more species of atoms of a chemical element with the same atomic number and position in the periodic table and nearly identical chemical behavior but with different atomic masses.



J

Jodium or Jod

Jodium is the Latin name for the element iodine.Also known as: iodine, iodes, iode

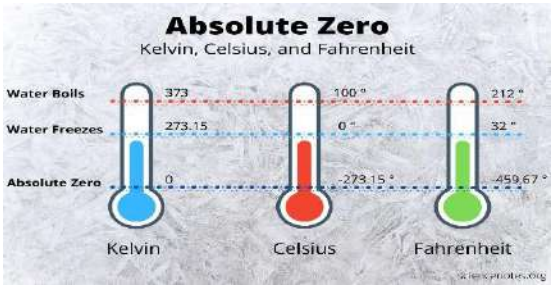
K

Kelvin

Noun: Kelvin

/ˈkɛlvɪn/

The SI base unit of thermodynamic temperature



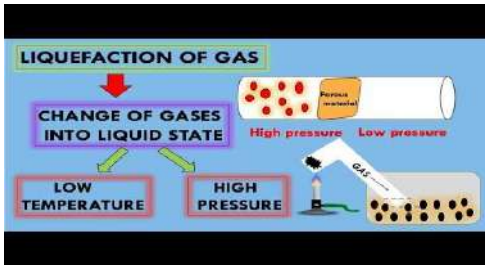
L

Liquefaction

Noun: liquefaction

/lɪkwɪˈfakʃ(ə)n/

The process of making something, especially a gas, liquid.



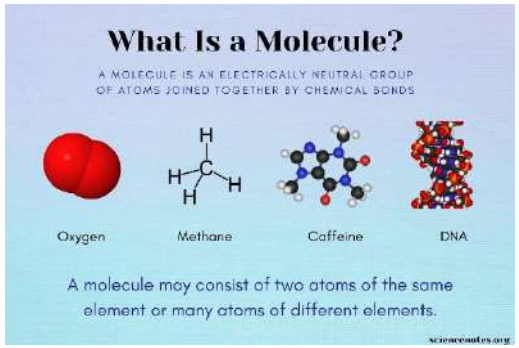
M

Molecule

Noun: molecule

/ˈmɒlɪkjuːl/

A group of atoms bonded together, representing the smallest fundamental unit of a chemical compound that can take part in a chemical reaction.



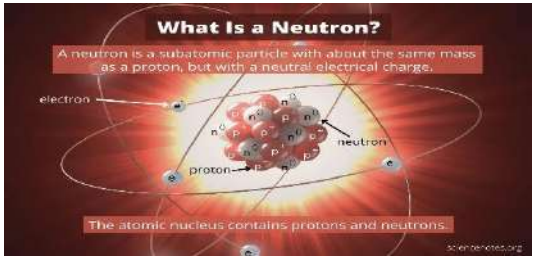
N

Neutron

Noun: neutron

/ˈnjuːtrɒn/

A subatomic particle of about the same mass as a proton but without an electric charge, present in all atomic nuclei except those of ordinary hydrogen.



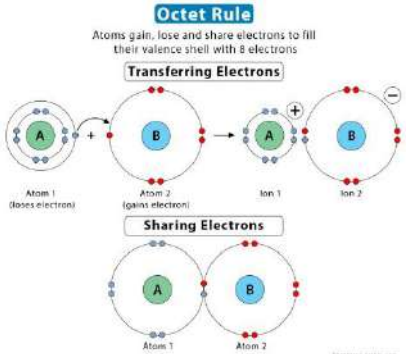
O

Octet

Noun: octet

/ɒkˈtɛt/

A stable group of eight electrons occupying a single shell in an atom.



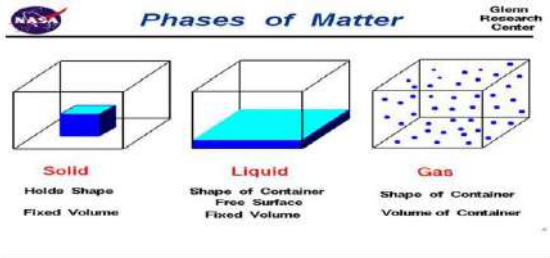
P

Phase

Noun: phase

/feɪz/

A distinct and homogeneous form of matter (i.e. a particular solid, liquid, or gas) separated by its surface from other forms.



Q

Quicklime

Noun: quicklime

/ˈkwɪklʌɪm/

Awhite caustic alkaline substance consisting of calcium oxide, which is obtained by heating limestone and which combines with water with the production of much heat; lime.

R

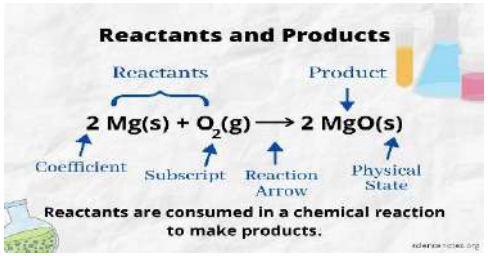
Reactant

Noun: reactant

Plural noun: reactants

/rɪˈakt(ə)nt/

A substance that takes part in and undergoes change during a reaction.



S

Sublimation

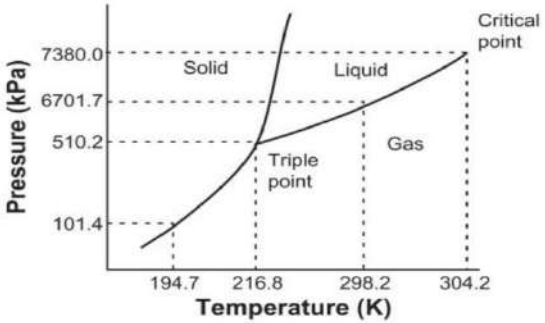
Sublimation is the transition of a substance directly from the solid to the gas state, without passing through the liquid state.

T

Triple point

Noun: triple point

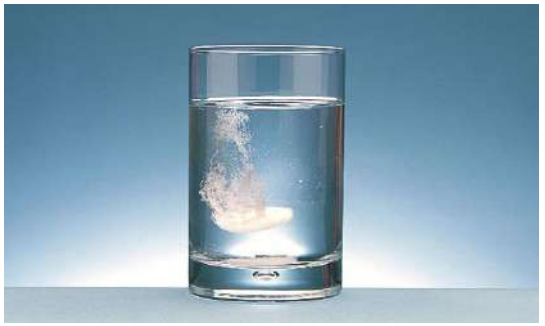
The temperature and pressure at which the solid, liquid, and vapour phases of a pure substance can coexist in equilibrium.



U

Universal Solvent

A chemical that dissolves most substances. While water is often called the universal solvent, most nonpolar molecules are insoluble in it.



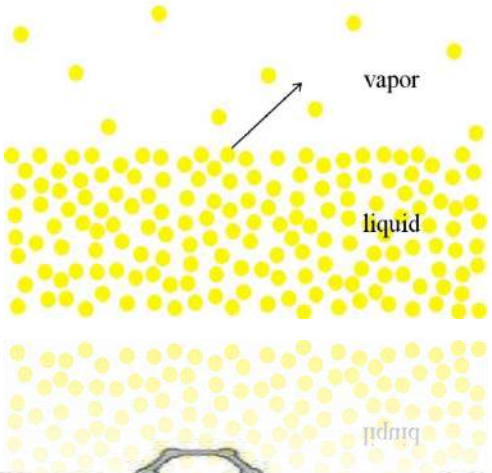
V

Volatile

djective: volatile

/ˈvɒlətʌɪl/

A substance that readily vaporizes at normal temperature.



W

Wismuth

Wismuth is an old name for the element bismuth.

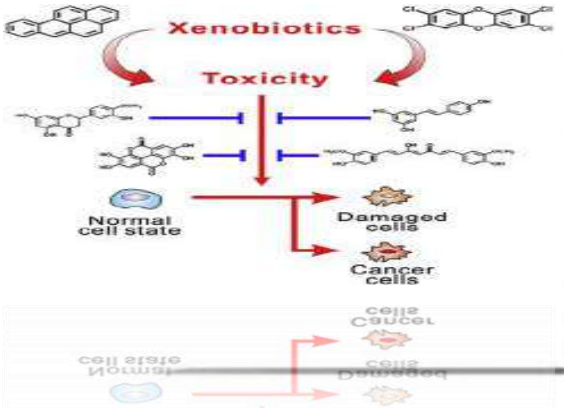
X

Xenobiotic

Adjective:xenobiotic

/ˌzɛnə(ʊ)bʌɪˈɒtɪk/

Relating to or denoting a substance, typically a synthetic chemical, that is foreign to the body or to an ecological system.



Y

Yellowcake

Noun: yellowcake

/ˈjɛlə(ʊ)keɪk/

Impure uranium oxide obtained during processing of uranium ore.

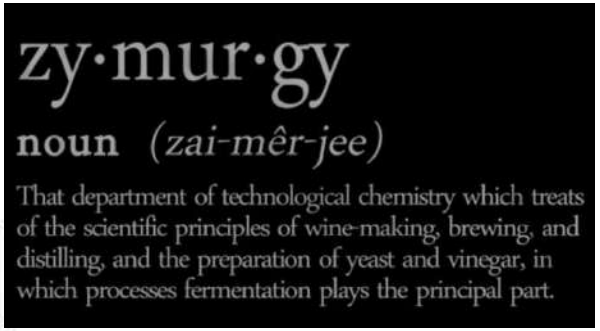
Z

Zymurgy

Noun: zymurgy

/ˈzʌɪməːdʒi/

The study or practice of fermentation in brewing, winemaking, or distilling



THANK YOU!

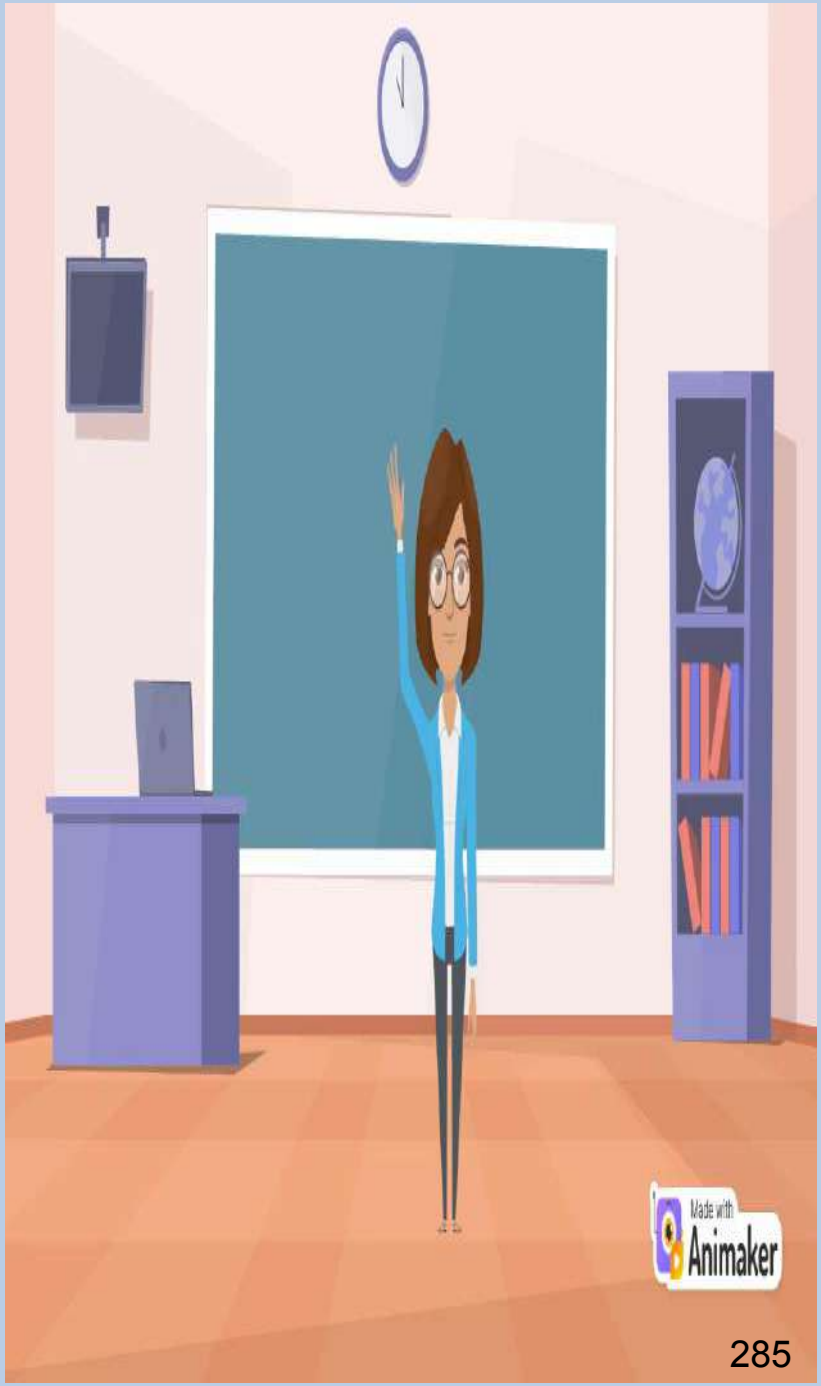
ALICE JOSEPH

Digitally signed by ALICE JOSEPH
Date: 2024.02.02 20:02:17 +05'30'

UNIT BOOK

ST. JOSEPH COLLEGE OF TEACHER EDUCATION FOR WOMEN, ERNAKULAM

Submitted By
ASHNA K J
PHYSICAL SCIENCE(2022-24)



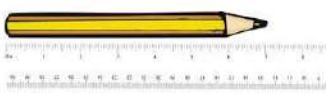
FUNDAMENTAL QUANTITIES

The physical quantities which do not depend on any other physical quantities for their measurements

FUNDAMENTAL UNITS

Fundamental units are all those units which are independent of any other unit

7 FUNDAMENTAL QUANTITIES

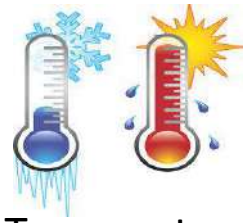


Length

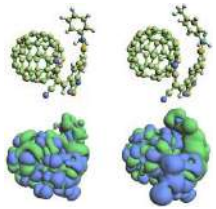
Mass

Time

Electric current



Temperature



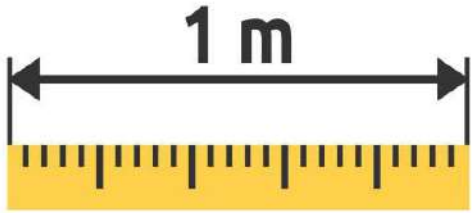
Amount of substances

Luminous intensity

Fundamental Quantities

No.	Quantities	unit
1.	Length	meter [m]
2.	Mass	kilogram [kg]
3.	Time	second [s]
4.	Electric current	ampere [A]
5.	Temperature	kelvin [K]
6.	Amount of substance	mole [mol]
7.	Luminous intensity	candela { cd }

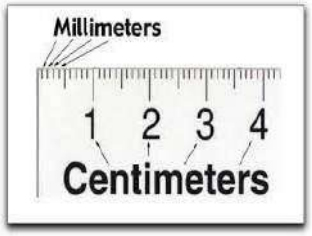
(1) LENGTH



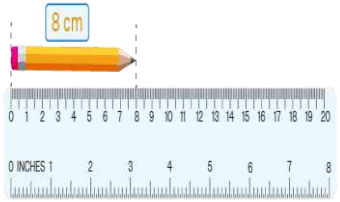
SI unit= metre
Symbol= m

*Other units of Length

- millimetre (mm)
- centimetre (cm)
- Kilometre(km



1mm=0.001m



1cm=10mm

1m=100cm

I kilometer (km)

1km=1000m

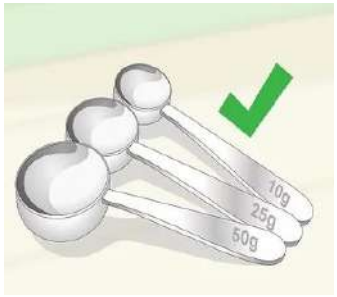
(2) MASS

SI unit= kilogram
Symbol=kg

***Other units of Mass**

- Milligram (mg)
- Gram (g)
- Tonne(t)

1mg=0.001g



1g=1000mg

1kg=1000g

1 tonne=1000kg

(3) TIME

SI unit= second
Symbol= s

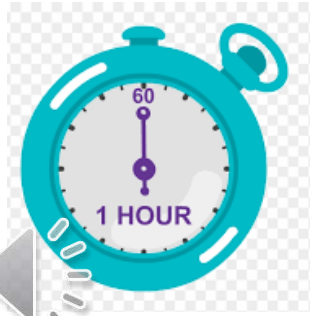
*** Other units of time**

- Millisecond (msec)
- Minute (min)
- Hour (h)

1 msec= 0.001 s

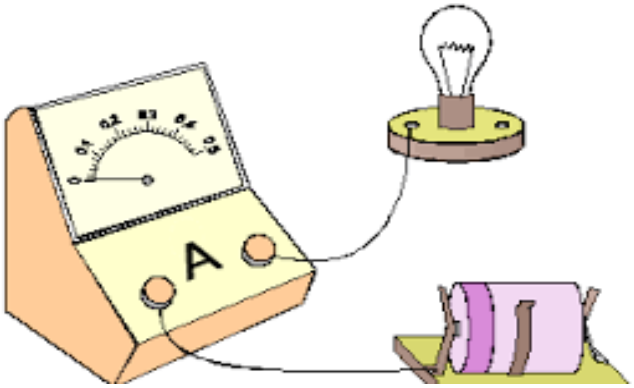
1s=1000msec

1 min=60s



1h=60min

(4) Electric Current



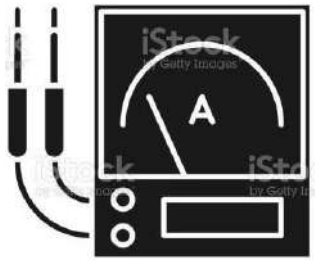
SI unit= ampere
Symbol=A

*** Other units of Electric current**

- Microampere(μA)
- Milliampere(mA)
- Kiloampere(kA)

$1\mu A=10^{-6}A$

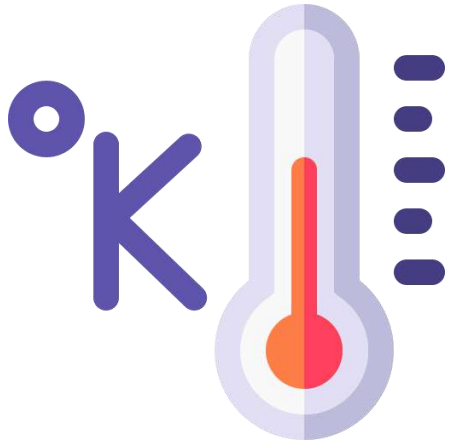
$1mA=10^{-3}A$



$1A=1000mA$

$1kA=10^{3}A$

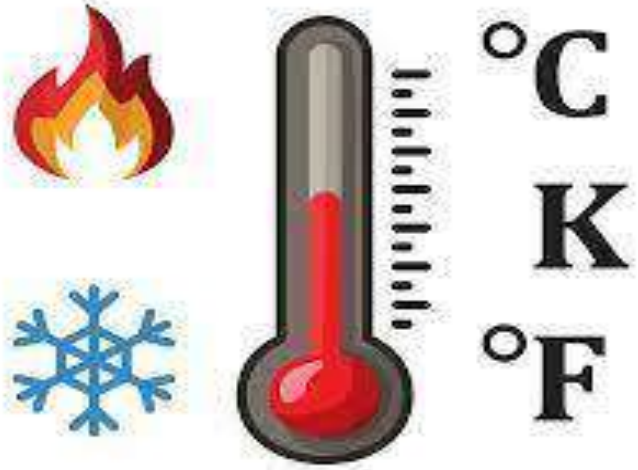
(5) TEMPERATURE



SI unit= Kelvin
Symbol=K

*** Other units of temperature**

- Fahrenheit (°F)
- Celsius (°C)



Unit conversion

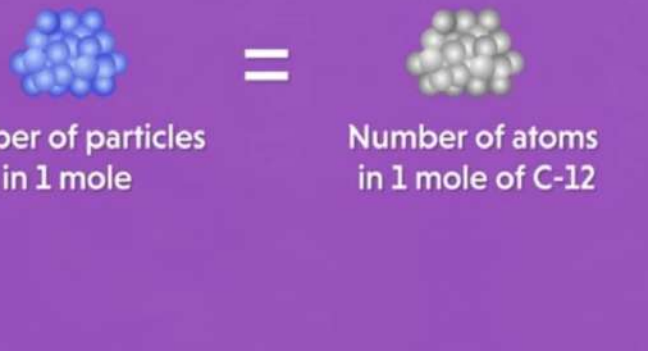
$$\frac{C}{5}=\frac{F-32}{9}=\frac{K-273}{5}$$

(6) AMOUNT OF SUBSTANCE

1 mole =
6.022×10^{23}
Avogadro's Number

Amount of substance that contains the same number of atoms/molecules/particles as there are atoms in 12 grams of carbon-12

SI unit=mole
Symbol=mol



(7) LUMINOUS INTENSITY

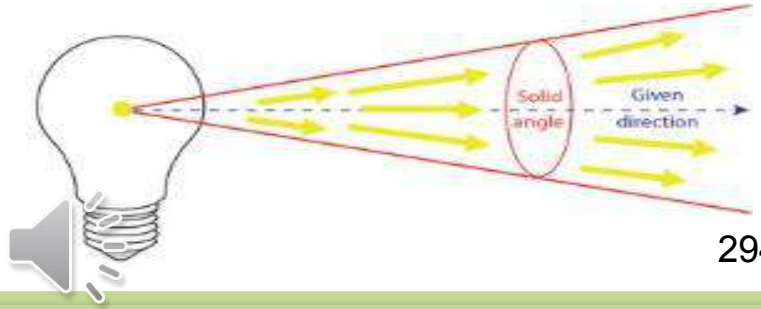
CANDELA

SI unit=candela
Symbol=cd

LUMINOUS INTENSITY

Luminous intensity is the luminous power or the quantity of visible light emitted by a light source in a given direction per unit solid angle.

Luminous power per unit solid angle emitted by a light source in a particular direction



DERIVED QUANTITIES

The quantities derived from the fundamental quantities are referred to as derived quantities.

DERIVED UNITS

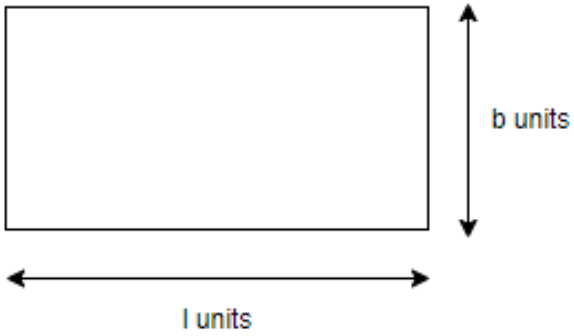
Any unit derived from one of the seven fundamental units is defined as derived units.

sciencenotes.org

Derived Units

Quantity	Name	Symbol	Base Units
Area	square meter	A	m^2
Volume	cubic meter	V	m^3
Density	kilogram per cubic meter	ρ	kg/m^3
Speed	meters per second	v	m/s
Acceleration	meters per second squared	a	m/s^2
Pressure	pascal	Pa	$kg\,m^{-1}s^{-2}$
Force	newton	N	$kg\,m\,s^{-2}$
Energy	joule	J	$kg\,m^2\,s^{-2}$
Frequency	hertz	Hz	s^{-1}
Power	watt	W	$kg\,m^2\,s^{-3}$
Voltage	volt	V	$kg\,m^2\,s^{-3}A^{-1}$
Charge	coulomb	C	A s

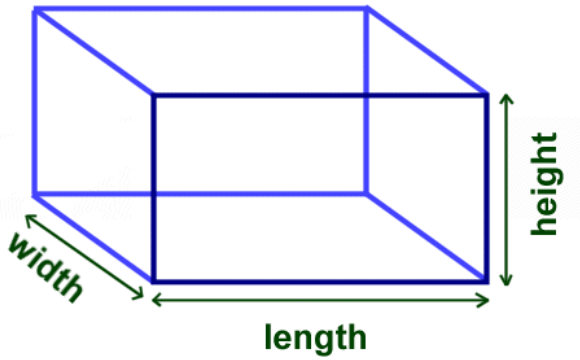
AREA



Area = l×b
Unit of l=m
Unit of b=m
Unit of Area=m×m=m^2

SI unit=square meter
Symbol=m^2

VOLUME



Volume =l×b×h
Unit of l=m
Unit of b=m
Unit of h=m
Unit of area=m^3

SI unit=cubic meter
Symbol=m^3

SPEED

Speed=$\frac{distance}{time}$

Unit of distance=m

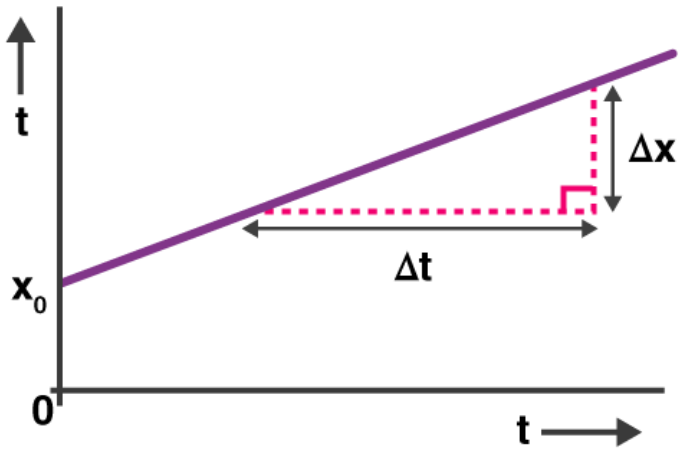
Unit of time=s

Unit of speed=$^{m}/_{s}$

SI unit=metre per second

Symbol=$^{m}/_{s}$

VELOCITY



Velocity=$\frac{displacement}{change\ in\ time}$

Unit of displacement=m

Unit of time=s

Unit of velocity=$^{m}/_{s}$

SI unit=metre per second

Symbol=$^{m}/_{s}$

ACCELERATION

Acceleration=$\frac{change\ in\ velocity}{change\ in\ time}$

Unit of velocity=$^{m}/_{s}$

Unit of time=s

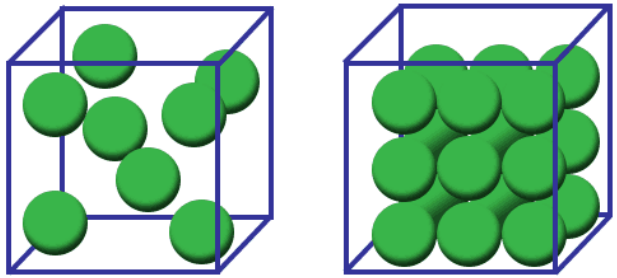
Unit of acceleration=$\frac{^{m}/_{s}}{s}=^{m}/_{s^2}$

SI unit=metre per second square

Symbol=$^{m}/_{s^2}$

DENSITY

Density



Density=$\frac{mass}{volume}$

Unit of mass=kg

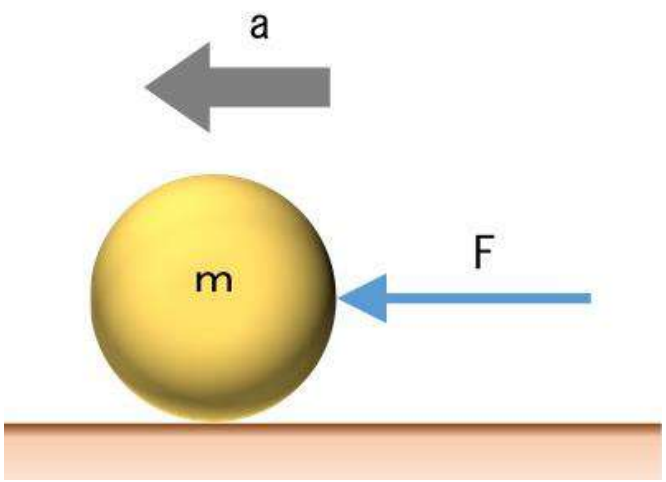
Unit of volume=m^3

Unit of density=$^{kg}/_{m^3}$

SI unit=kilogram per metre cube

Symbol=$^{kg}/_{m^3}$

FORCE



Force=mass×acceleration
Unit of mass=kg
Unit of acceleration=$^{m}/_{s^2}$
Unit of force=kg×$^{m}/_{s^2}$=Newton

SI unit=Newton
Symbol=N

PRESSURE

Pressure=$\frac{force}{area}$
Unit of force=N
Unit of area=m^2
Unit of pressure=$^{N}/_{m^2}$=Pascal

SI unit=Pascal
Symbol=Pa

FREQUENCY

Frequency is the number of oscillations produced in one second.

Frequency=$\frac{1}{T}$

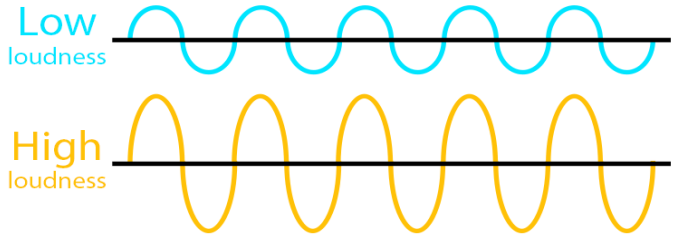
Unit of Time=s

Unit of frequency=$\frac{1}{s}$=Hertz

SI unit=Hertz

Symbol=Hz

LOUDNESS



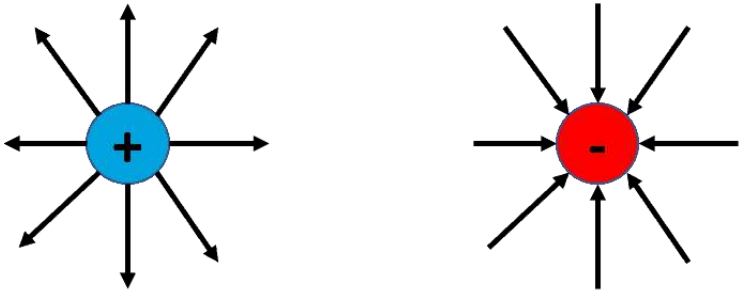
loudness

The attribute of a sound that determines the magnitude of the auditory sensation produced and that primarily depends on the amplitude of the sound wave involved.

SI unit=decibel

Symbol=dB

ELECTRIC CHARGE



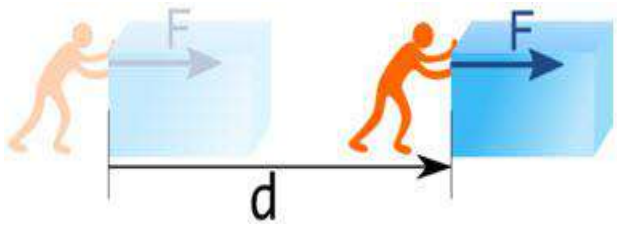
Positive Charge **Negative Charge**

Electric charge is the property of subatomic particles that causes it to experience a force when placed in an electric and magnetic field.

Electric charge,q=It
Unit of I=Ampere
Unit of t=s
Unit of electric charge=As=Coulomb

SI unit=Coulomb
Symbol=C

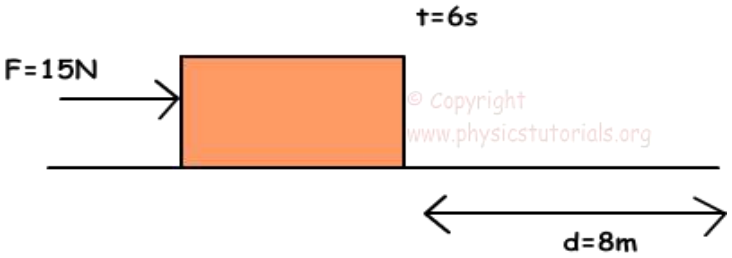
WORK



Work=Force×displacement
Unit of force=N
Unit of displacement=m
Unit of work=Nm=Joule

SI unit=Joule
Symbol=J

POWER



Power=$\frac{work}{time}$

Unit of work=J

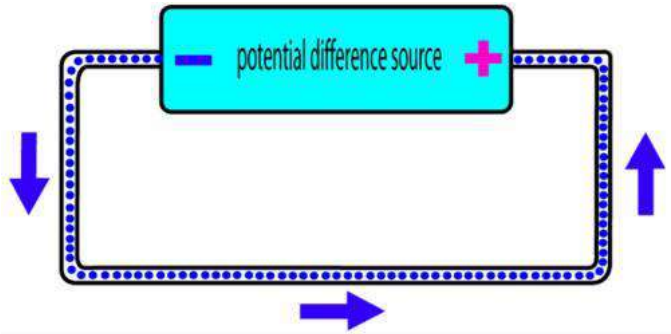
Unit of time=s

Unit of power=$^{J}/_{s}$=Watt

SI unit=Watt

Symbol=W

POTENTIAL DIFFERENCE



Potential difference=$\frac{work\ done}{charge}$

Unit of work=J

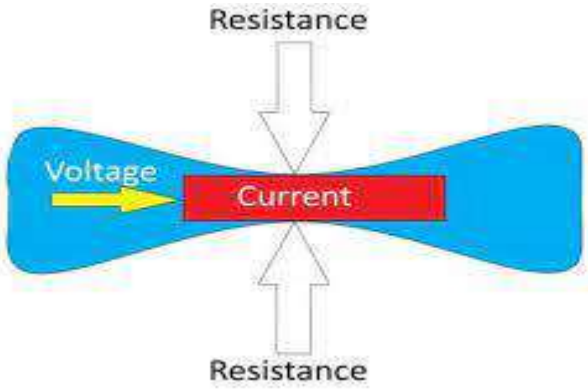
Unit of charge=C

Unit of potential difference=$^{J}/_{C}$=Volt

SI unit=Volt

Symbol=V

RESISTANCE



$R=\frac{V}{I}$

Unit of V=V

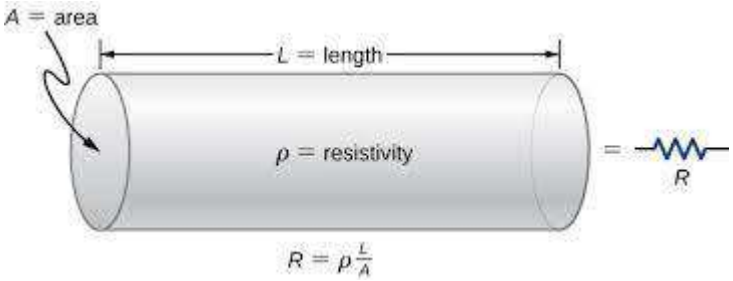
Unit of I=A

Unit of R=$^{V}/_{A}$=Ohm

SI unit=Ohm

Symbol=Ω

RESISTIVITY



$R=\rho\frac{l}{A}$

$P=\frac{RA}{l}$

Unit of resistance=Ω

Unit of area=m^2

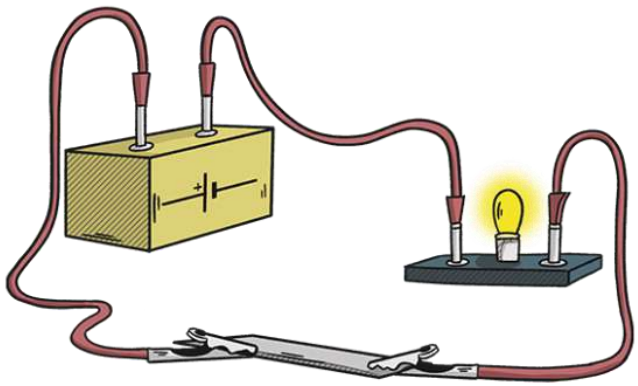
Unit of length=m

Unit of resistivity,ρ=Ωm

SI unit=Ohm metre

Symbol=Ωm

CONDUCTIVITY



A material's conductivity is the extent that it allows an electric current to flow through it.

Conductivity=$\frac{1}{\rho}$

Unit of resistivity=Ωm

Unit of conductivity=$\Omega^{-1}m^{-1}$

SI unit=ohm inverse metre inverse

Symbol=$\Omega^{-1}m^{-1}$

CAPACITANCE

Capacitance is the capability of a material object or device to store electric charge.

Capacitance,C=$\frac{Q}{V}$

Unit of Q=C

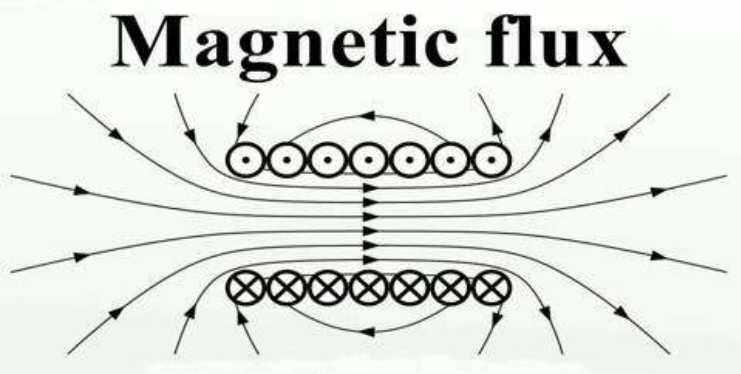
Unit of V=V

Unit of capacitance=$\frac{C}{V}$=Farad

SI unit=Farad

Symbol=F

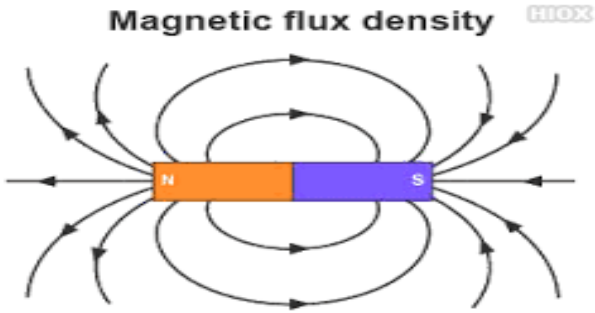
MAGNETIC FLUX



Quantity of magnetic field linked to a surface area is known as magnetic flux (φ).

SI unit=Weber
Symbol=Wb

MAGNETIC FLUX DENSITY



The number of lines of force passing through a unit area of material is known as magnetic flux density(B).

$B=\frac{\varphi}{A}$

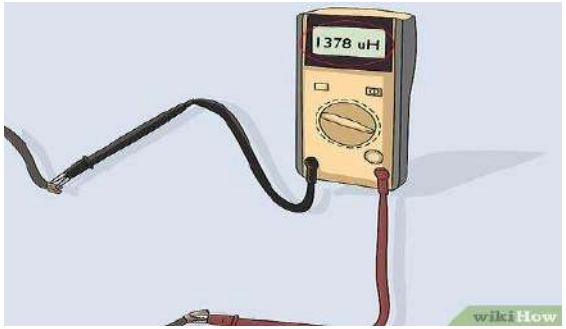
Unit of ϕ=Wb

Unit of A=m^2

Unit of B=$^{Wb}/_{m^2}$=Tesla

SI unit=Tesla
Symbol=T

INDUCTANCE



The tendency of an electrical conductor to oppose a change in the electrical current flowing through it

Inductance, L=$\frac{\emptyset}{I}$

Unit ofϕ=Wb

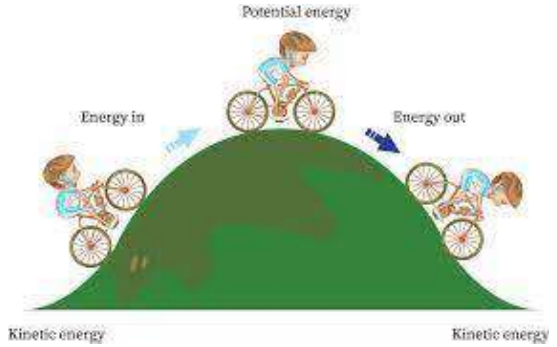
Unit of I=A

Unit of L=$^{Wb}/_{A}$=Henry

SI unit=Henry

Symbol=H

ENERGY



The capacity for doing work.

Kinetic energy=$\frac{1}{2}mv^2$

Unit of mass=kg

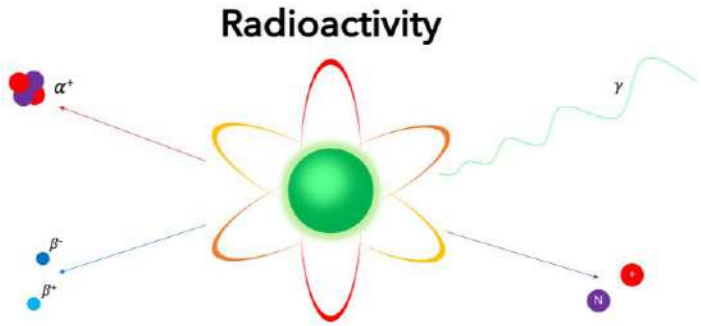
Unit of velocity=$^{m}/_{s}$

Unit of energy=kg$^{m}/_{s}$=Joule

SI unit=Joule

Symbol=J

RADIOACTIVITY



The emission of ionizing radiation or particles caused by the spontaneous disintegration of atomic nuclei.

SI unit= Becquerel
Symbol=Bq

I becquerel= 1 radioactive decay per second

Dear learners...
I hope you find this unit book useful in your learning

ALICE JOSEPH

Digitally signed by ALICE JOSEPH
Date: 2024.02.02 20:03:51 +05'30'

Akshaya K S
1st B.ED. Physical Science
St. Joseph College Of Teacher Education For Women , Ernakulam

WORKBOOK

INDEX

This workbook is meant for 8 Std students of State syllabus.This deals with the Chapters 11 (Force and Pressure) and Chapter 12 (Friction) and will serve as the supporting for learning the content.

By working through this workbook, the students are able to

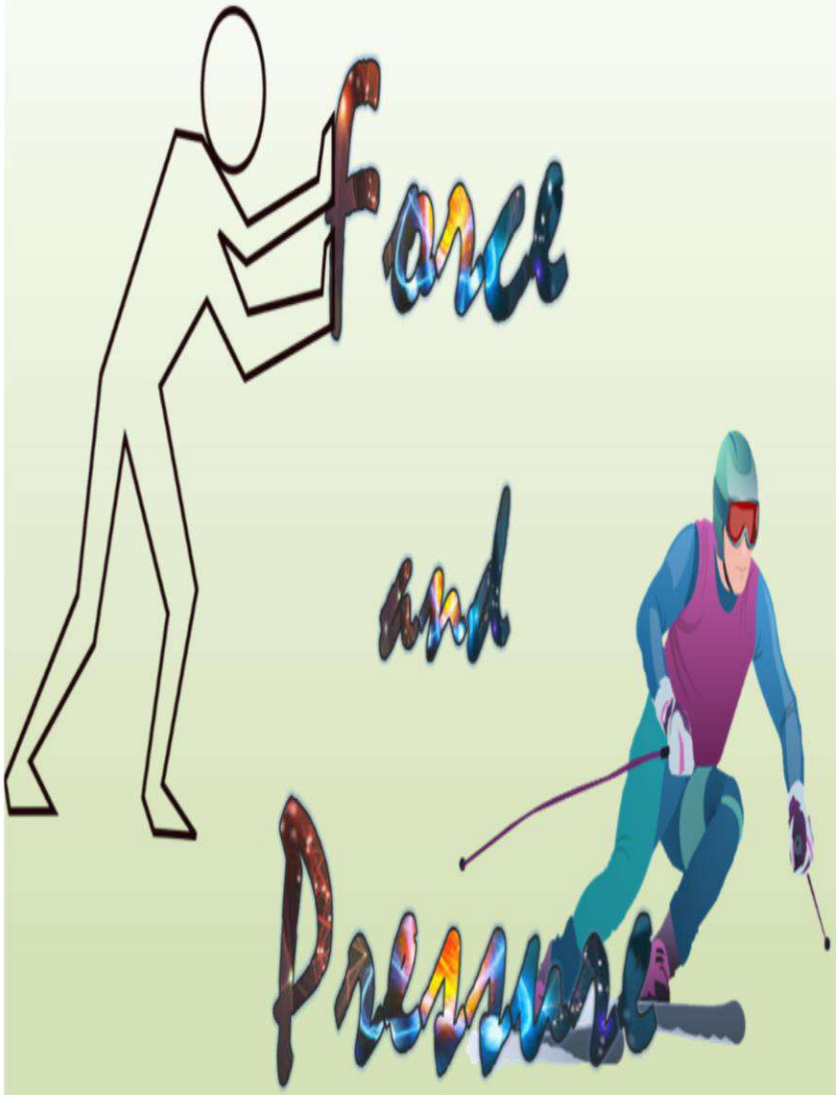
1.Develop problem solving skills in the topic of Force and Pressure, and Friction.

2.Apply the principle for required situation in the topic of Force and Pressure, Friction.

3.Design experiment in the topic of Force and Pressure, Friction.

4.Develop interest in the topic of Force and Pressure, Friction.


Workbook for class 8
Exploring knowledge
11-12 Chapters
By AKSHAYA K S



WORKSHEET 1

FILL IN THE BLANKS

1.Forces that work on an object at rest are …… forces.

a.Uniform b.Nonuniform c.Balanced d.Unbalanced

2……..is used to exert force.

a.Energy b.Pressure c.Strength d.Power

3.The invisible attraction force that earth exerts on all sorts of matter is called ……. Force.

a.Nuclear b.Electrical c.Kinetic d.Gravitational

4…… is defined as the force exerted per unit area.

a.Thrust b.Pressure c.Pull d.Push

5.The …… Of an object is the measure of force of gravity produced on it.

a.Mass b.Volume c.Weight d.Quantity

WORKSHEET 2

MATCH THE FOLLOWING

A	B
1.Force	a.Contact force
2.Pressure	b.Measure of gravity on object
3.Friction	c.Force per unit area
4.Gravity	d.Push and pull
5.Weight	e.Action at a distance force

WORKSHEET 3
SHORT ANSWER QUESTIONS

1.Which force is responsible for downward movement of a parachutes? Will he come down with the same speed without the parachute?

……

……

2.Two thermocol balls held close to each other move away from each other. When they are released, name the force which might be responsible for this phenomenon. Explain.

……

……

3.How does an applied force changes the speed of an object?

……

……

4.What are the effects of force on an object?

……

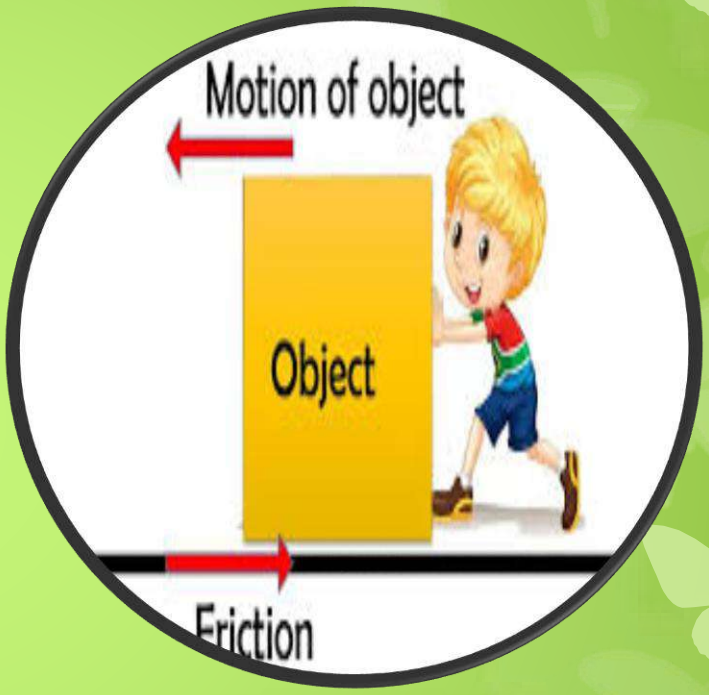
……

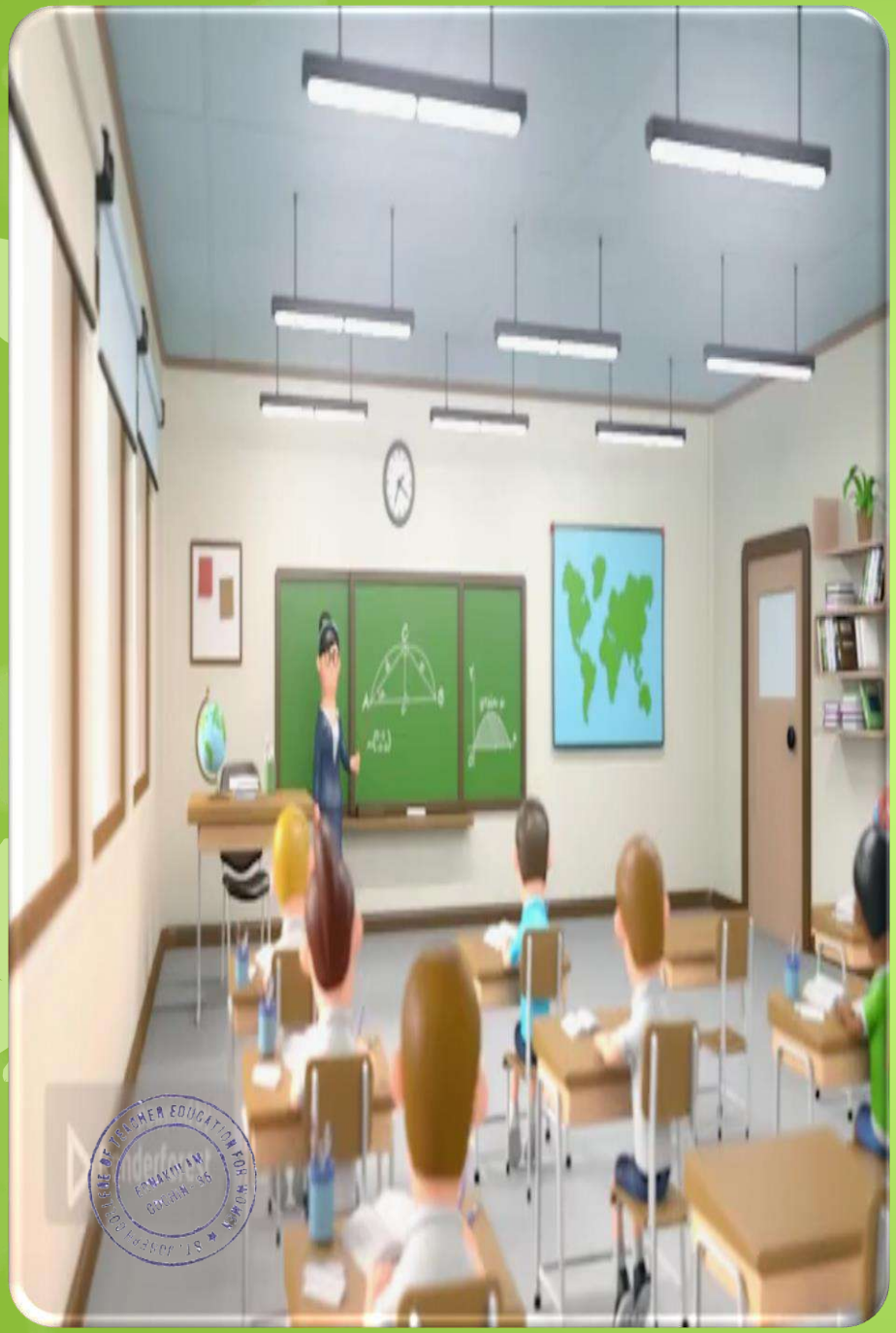
5.An archer shoots an arrow in the air horizontally. However, after moving some distance, the arrow falls to the ground. Name the initial force that sets the arrow in motion. Explain why the arrow ultimately falls down.

……

……


FRICTION


Motion of object
Object
Friction



WORKSHEET 1

TRUE OR FALSE

1.Friction opposes the motion between the surfaces in contact with each other.

Ans:

2.Friction is independent on the nature of surfaces.

Ans:

3.Friction produces heat.

Ans:

4.Sliding friction is lesser than static friction.

Ans:

5.Sprinkling of powder on carrom board increases friction.

Ans:

WORKSHEET 2
MULTIPLE CHOICE QUESTIONS

1.Friction is a
(a) non-contact force (b) contact force
(c) magnetic force (d) electrostatic force
Ans:

2.Which of the following produces least friction?
(a) Sliding friction (b) Rolling friction
(c) Composite friction (d) Static friction
Ans:

3.Friction always
(a) opposes the motion (b) helps the motion
(c) both (a) and (b) (d) none of these
Ans:

4.Friction can be reduced by using
(a) oil (b) grease
(c) powder (d) all of these
Ans:

5.Static friction is less than
(a) sliding friction (b) rolling friction
(c) both (a) and (b) (d) none of these
Ans:

WORKSHEET 3
SHORT ANSWER QUESTIONS

1.Suppose your writing desk is tilted a little. A book kept on it starts sliding down. Show the direction of frictional force acting on it.

……

……

2. You spill a bucket of soapy water on a marble floor accidentally. Would it make it easier or more difficult for you to walk on the floor? Why?

……

……

3. Explain why sportsmen use shoes with spikes.

……

……

4. Iqbal has to push a lighter box and Seema has to push a similar heavier box on the same floor. Who will have to apply a larger force and why?

……

……

5. Explain why objects moving in fluids must have special shapes.

……

……

THANK YOU

EXPLORING
KNOWLEDGE

ALICE
JOSEPH

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St. Joseph College of Teacher Education for Women Ernakulam

SCIENCE IN EVERYDAY LIFE

Submitted by,

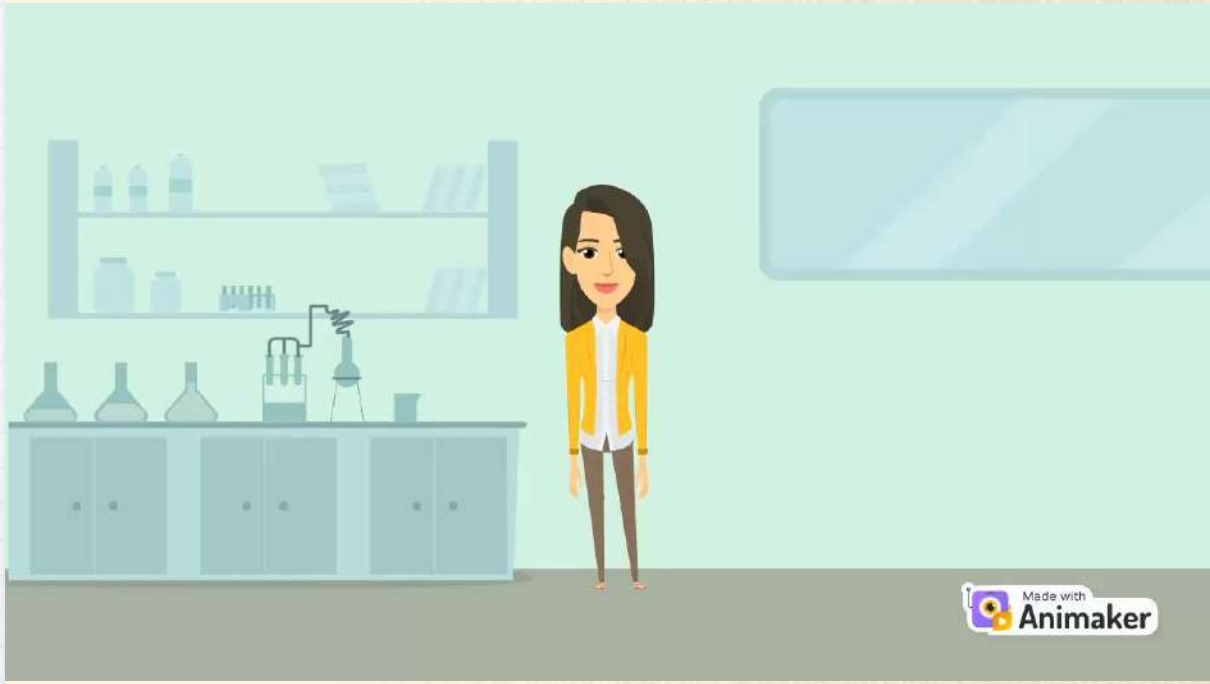
ANN SARA V ALIAS

SCIENCE IN EVERYDAY LIFE

CONTENTS

Welcome..

1. CORROSION



CORROSION OF METALS

It is a natural process in which a metal is converted to a more chemically stable form, such as oxide, hydroxide, or sulphide which leads to the gradual destruction of the material.

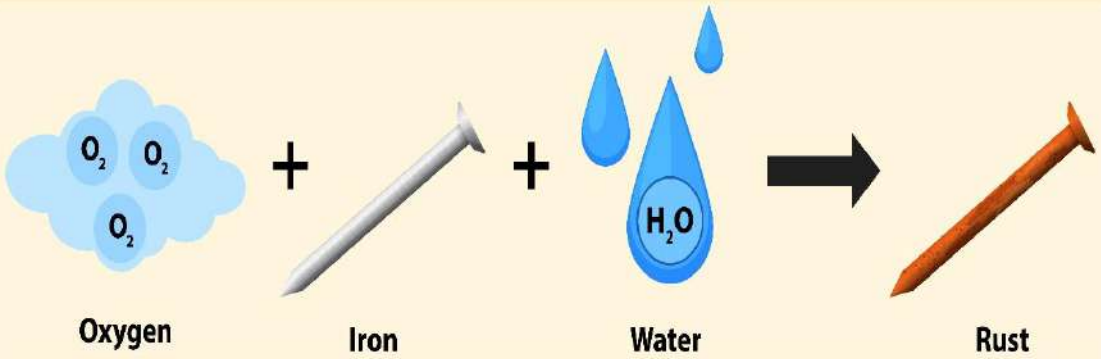
Eg: 1) Rusting of iron

2) Green coating on copper

3) Blackening of silver

Let’s discover rusting in detail

PROCESS OF RUSTING



$$O_2 + Fe + H_2O \rightarrow Fe_2O_3H_2O$$

Let’s do an experiment

Methods to prevent rusting

1) Painting

2) Adding oil or grease

3) Galvanizing

2. CAPILLARY RISE

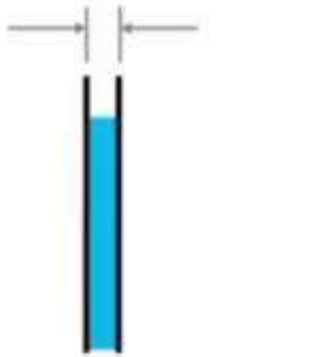
CAPILLARITY

The phenomenon in which liquid spontaneously rises or falls in a narrow space such as a thin tube or in the voids of porous materials.

Eg: Kerosene rising through wick, walls getting wet in rainy season, land ploughing in summer etc.

Have a look at the video

Have a look at the science behind it..



Points to be noted..

- Attraction between molecules of the same type is called cohesion
- Attraction between molecules of different type is called adhesion
- Capillary rise occurs when adhesive force is greater than the cohesive force
- When cohesive force is greater than adhesive force, capillary fall take place
- Capillary rise increases with decrease in diameter

3. NEWTON'S THIRD LAW OF MOTION

NEWTON'S THIRD LAW OF MOTION

- To every action, there is an equal and opposite reaction.
- Action and reaction are forces that are experienced on different objects at the same time.
- When two bodies interact, the force acting on one can be taken as ACTION and the opposite force acting on the second is the REACTION.

Take a look at this video

EXAMPLES

Launching of rockets

Gun firing

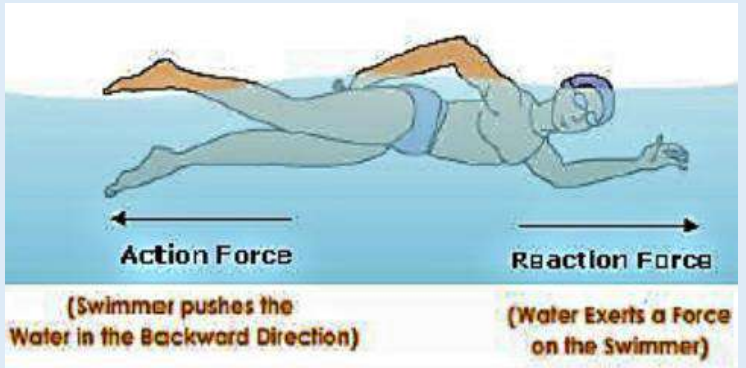
Walking

Let's summarize..

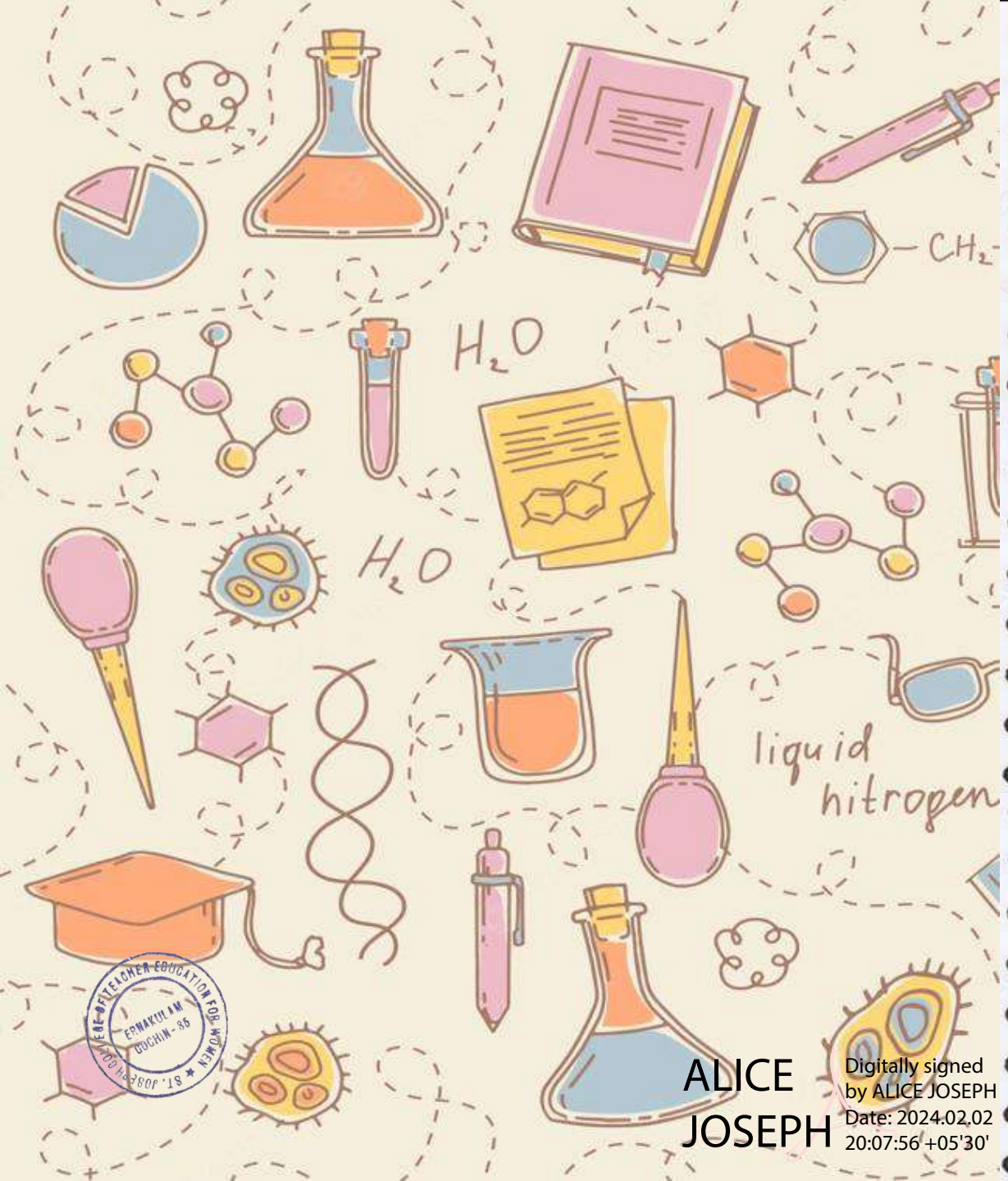
1. Corrosion

2. Capillary rise

3. Newton's third law of motion



THANK YOU !



E- FORMULA BOOK

ARUNIMA C.H
PHYSICAL SCIENCE

PHYSICS FORMULA BOOK CLASS 8TH AND 9TH

Relative density of a substance

$$= \frac{density\ of\ sustance}{density\ of\ water}$$

Eg:

Relative density of a kerosene

$$= \frac{density\ of\ kerosene}{density\ of\ water} = \frac{810\ kg/m^3}{1000\ kg/m^3}$$

$$= .81$$

Displacement (s)

Total change in the position of the object along with the direction of motion

Formula

$$s = d_2 - d_1$$

d_1 = initial position
d_2 = final position

Velocity (u)

Displacement of a body in a unit time

Formula

$$\frac{displacement}{time}$$

$$= u = \frac{s}{t}$$

s=displacement
u = velocity
t=time

Acceleration(a)

Acceleration is the rate of change of the velocity of an object with respect to time.

Formula

$$a = \frac{change\ in\ velocity}{time}$$

$$a = \frac{v-u}{t}$$

a=acceleration
u=initial velocity
v=final velocity

Pascal's Law

Pascal's law says that pressure applied to an enclosed fluid will be transmitted without a change in magnitude to every point of the fluid and the walls of the container. The pressure at any point in the fluid is equal in all directions .

Formula

$$F = PA$$

$$P = \frac{F}{A}$$

F=Force
P=Pressure
A=Area

Equations of motion

Equations of motion are equations that describe the behavior of a physical system in terms of its motion as a function of time. There are 3 equations of motion

Formula

$$v = u + at \ldots\ldots (1)$$

$$s = ut + \frac{1}{2}at^2 \ldots (2)$$

$$v^2 = u^2 + 2as .. (3)$$

(1) Velocity – Time relation
(2) Position – Time relation
(3) Position – Velocity relation

Momentum(p)

Momentum is a characteristic property of moving objects. It is measured as the product of mass of the body and velocity

Formula

$$momentum = mass \times velocity$$

$$p = m \times v$$

Newton's Second Law of Motion

The rate of change of momentum of a Body is directly proportional to the Unbalanced external force acting on it .

Formula

$$F \propto \frac{m(v-u)}{t}$$

$$F \propto ma$$

$$F = kma$$

$$F = ma$$

k=1

F=force

v-u=a=acceleration

m=mass

t=time

Impulse

Impulsive force is a very large force Acting for a very short time .

Formula

$$impulse = Force \times time$$
$$= F \times t$$
$$= m\frac{(v-u)}{t} \times t$$
$$= mv - mu$$
$$= change\ in\ final\ and\ initial\ momentum$$

This is called impulse – momentum principle

Newton's Third Law of Motion

To every action there is an equal and opposite reaction

Action and reaction are forces
If action is force applied by body A on Body B ……..(F_{AB})
Then reaction is the force applied by Body B on body A……..(F_{BA})

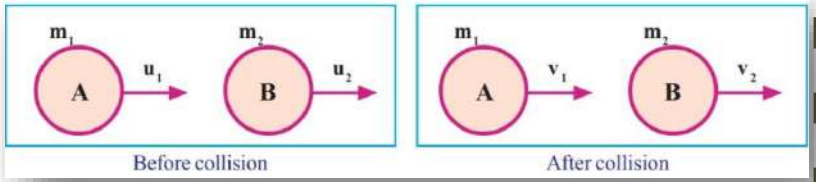
Formula

According to law

$$F_{AB} = -F_{BA}$$

Law of conservation of Momentum

In the absence of an external force , the Total momentum of a system is a Constant



Formula

$$F = \frac{m(v-u)}{t}$$

$$F_{AB} = m_1 \frac{(v_1-u_1)}{t} \qquad F_{BA} = m_2 \frac{(v_2-u_2)}{t}$$

According to third law of newton

$$F_{AB} = -F_{BA}$$

$$m_1 \frac{(v_1-u_1)}{t} = -m_2 \frac{(v_2-u_2)}{t}$$

$$m_1v_1 - m_1u_1 = m_2v_2 - m_2u_2$$

$$m_1v_1 + m_1v_1 = m_1u_1 + m_2u_2$$

Total momentum after collision is equal To total momentum before collision

$$m_1v_1 + m_1v_1 = m_1u_1 + m_2u_2$$

Centripetal force (F_c)and Centripetal acceleration (a_c)

The acceleration experienced by an object in a circular motion , along The radius , towards the centre of the circle , is known as centripetal acceleration . The force that creates a centripetal acceleration is called Centripetal force. Centripetal acceleration and centripetal force are directed towards the centre .

Formula

Centripetal force , $(F_C) = \frac{mv^2}{r}$

Centripetal acceleration , $(a_c) = \frac{v^2}{r}$

m = mass
v = velocity
r = radius of circle

Universal Law of Gravitation

All bodies in the universe attract each other. The force of mutual attraction between the two bodies is directly proportional to the product of their masses and inversely proportional to square of the distance between them.

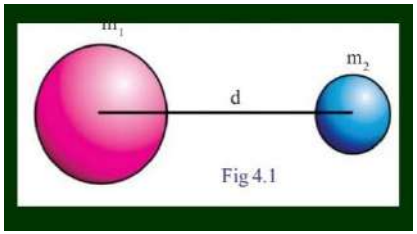


Fig 4.1

If two bodies of mass m_1 and m_2 are separated by a distance d
Then

Formula

$$F \propto m_1 m_2$$
$$F \propto \frac{1}{d^2}$$
$$F \propto \frac{m_1 m_2}{d^2}$$
$$F = G\frac{m_1 m_2}{d^2}$$

G = gravitational constant
$= 6.67 \times 10^{-11} Nm^2/Kg^2$

Orbital velocity

Orbital velocity is the velocity at which a planet revolves around the other Sun Through the orbit

Formula

$$v = \frac{2\pi r}{T}$$

$2\pi r$ = *circumference of orbit*
T = Time = Orbital period

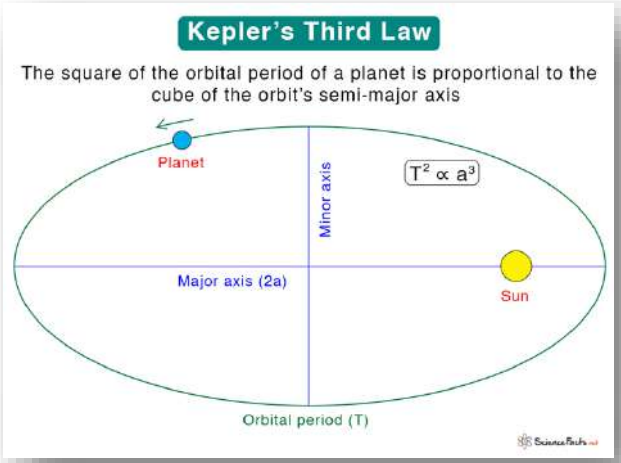
Kepler's Third Law

The cube of mean distance (r) of a Planet from the Sun is directly proportional to the square of its orbital period (T)

Formula

$$r^3 \propto T^2$$

$$ie.\ \frac{r^3}{T^2} = constant$$



Force of gravity

If mass of earth is M , R its radius and m the mass of an object placed on the earth , then attractive force between them is

Formula

$$F = G\frac{Mm}{R^2}$$

Acceleration due to gravity (g)

Objects are accelerated towards the earth due to the force of attraction of earth . This acceleration is known as acceleration due to gravity

Formula

$$F = G\frac{Mm}{R^2}$$

$$mg = G\frac{Mm}{R^2}$$

$$g = G\frac{M}{R^2}$$

$$g = \frac{6.7 \times 10^{-11} Nm^2 kg^{-2} \times 6 \times 10^{24} kg}{(6.4 \times 10^6)^2}$$

$$= 9.8 \frac{m}{s^2}$$

mg = weight of the body

Work

If a force of 'F' newton is applied continuously on a body and the undergoes a displacement of 's' metre in the direction of the force, then the work done by the applied Force is

Formula

$$W = F\,s$$

When a body is raised to a height h , the work done against the gravitational force is

Formula

$$W = mgh$$

m= mass
h = height
g = acceleration due to gravity
F= force
s = displacement
W= work done

Force

when a body tends to modify or change the state by an external cause, it is called Force

Formula

$$F = m \times a$$

m=mass
a=acceleration

Density

Mass per unit volume of a substance

Formula

$$Density = \frac{mass}{valume}$$

Speed

Distance travelled in unit time

Formula

$$Speed = \frac{distance}{time}$$

Average Speed

Formula

$$\textbf{Average speed} = \frac{\textbf{total distance travelled}}{\textbf{time taken to travel the distance}}$$

Energy

Energy is the capacity to do work

Kinetic Energy(K)

The energy possessed by a body by virtue of its motion

Formula

$$K = \frac{1}{2}mv^2$$

$$K = \frac{1}{2}\frac{m^2v^2}{m}$$

$$K = \frac{1}{2}\frac{P^2}{m}$$

P= momentum= mv
m= mass
v= velocity

Work Energy Principle

Workdone =Change in Kinetic Energy

Formula

$$W = \frac{1}{2}mv^2 - \frac{1}{2}mu^2$$

u= initial velocity
v= final velocity

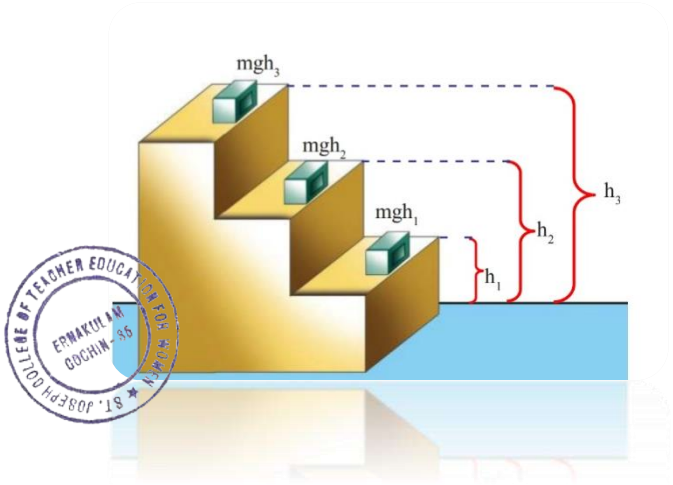
Potential Energy(U)

Energy possessed by a body by virtue of its position .

Formula

$$U = mgh$$

m= mass
g = acceleration due to gravity
h= height



Power

Workdone per unit time or rate of doing work is power

Formula

$$Power = \frac{work}{time}$$

$$P = \frac{W}{t}$$

Electric Current

It is the flow of electric charges

Formula

$$I = \frac{Quantity\ of\ charge}{Time\ taken}$$

$$I = \frac{Q}{t}$$

Q = quantity of charge
t = time taken

Ohm's Law

When temperature remains constant, the current through a conductor is directly proportional to the potential difference between its ends . In other words the ratio of potential difference to the current is a constant

Formula

$$V \propto I$$

$$\frac{V}{I} = a\ constant$$

$\frac{V}{I} = R$ = Resistance (Ω *(spelled as ohm)*)

Resistance is the measure of opposition to current flow in an electric circuit

V = Potential difference
I = Electric current

Resistivity (ρ)

Resistivity of a substance is the resistance of the conductor of unit length and unit area of cross-section. The resistivity of a substance is a constant at a fixed temperature . But it will be different for different materials.

Resistance of a conductor increases with increase in length (l) of the conductor and decreases with increase in the area of cross-section(A)

Formula

$$R \propto l$$

$$R \propto \frac{1}{A}$$

$$R = constant \times \frac{l}{A}$$

$$R = \rho \times \frac{l}{A}$$

$$\rho = \frac{RA}{l}$$

$$at\ A = 1\ and\ l = 1$$

$$\rho = R$$

Conductivity(σ)

The conductivity of a conductor is the reciprocal of its resistivity .

Formula

$$\sigma = \frac{1}{\rho}$$

Period(T)

Period of a wave is the time taken
For a particle in a medium to make
One complete vibration.

Frequency(f)

Frequency is the number of vibrations
In one second.

Formula

$$f = \frac{1}{T}$$

Wave Length(λ)

Wave length is the distance travelled by a wave in a time of one period(T)

Speed of a Wave(v)

Speed of a wave is the distance travelled by the wave in one second.

Formula

$$v = \frac{\lambda}{T}$$

$$= \frac{1}{T} \times \lambda$$

$$= f\lambda$$

Pressure(P)

The total normal force experienced by a surface is thrust

Thrust per unit area is pressure

Formula

$$Pressure = \frac{Thrust}{Area}$$

$$P = \frac{F}{A}$$

Focal Length(f)

Distance from pole of a mirror to its principal focus is the focal length

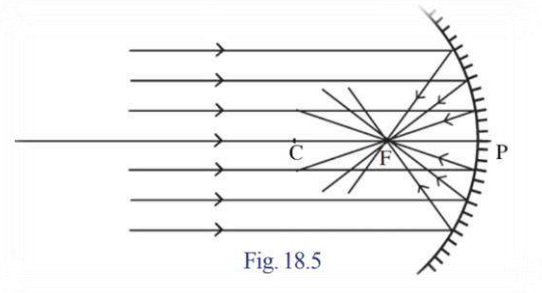


Fig. 18.5

In the above figure it is PF

PF =f

For spherical mirror

$$f = \frac{radius\ of\ curvature}{2}$$

$$f = \frac{R}{2}$$

Magnification(m)

It is the ration of height of the image to height of the object .

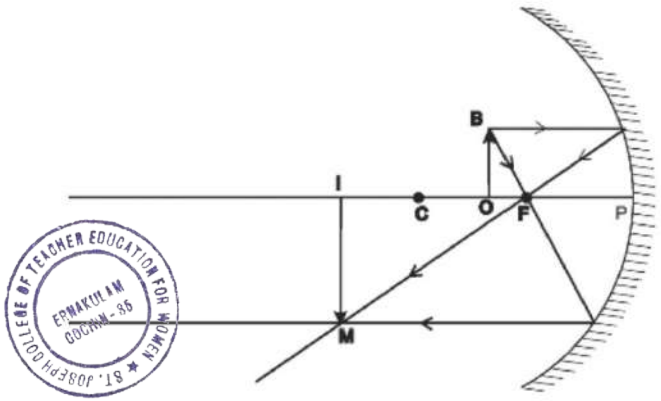
It is the number that indicates how many times the size of the object is the size of the image .

Formula

$$m = \frac{height\ of\ image}{height\ of\ object}$$

$$m = \frac{IM}{OB}$$

$$m = \frac{h_I}{h_O}$$



CHEMISTRY FORMULA BOOK CLASS 8TH AND 9TH

Symbols of all elements in periodic table

Name of the Element	Symbol of the Element	Atomic Number
Hydrogen	H	1
Helium	He	2
Lithium	Li	3
Beryllium	Be	4
Boron	B	5
Carbon	C	6
Nitrogen	N	7
Oxygen	O	8
Fluorine	F	9
Neon	Ne	10
Sodium	Na	11
Magnesium	Mg	12
Aluminium	Al	13
Silicon	Si	14
Phosphorus	P	15
Sulfur	S	16
Chlorine	Cl	17
Argon	Ar	18
Potassium	K	19
Calcium	Ca	20
Scandium	Sc	21
Titanium	Ti	22
Vanadium	V	23
Chromium	Cr	24
Manganese	Mn	25
Iron	Fe	26
Cobalt	Co	27
Nickel	Ni	28
Copper	Cu	29
Zinc	Zn	30
Gallium	Ga	31
Germanium	Ge	32
Arsenic	As	33
Selenium	Se	34
Bromine	Br	35
Krypton	Kr	36
Rubidium	Rb	37
Strontium	Sr	38
Yttrium	Y	39
Zirconium	Zr	40
Niobium	Nb	41
Molybdenum	Mo	42
Technetium	Tc	43
Ruthenium	Ru	44
Rhodium	Rh	45
Palladium	Pd	46
Silver	Ag	47
Cadmium	Cd	48
Indium	In	49
Tin	Sn	50
Antimony	Sb	51
Tellurium	Te	52
Iodine	I	53
Xenon	Xe	54
Cesium	Cs	55
Barium	Ba	56
Lanthanum	La	57
Cerium	Ce	58
Praseodymium	Pr	59
Neodymium	Nd	60
Promethium	Pm	61
Samarium	Sm	62
Europium	Eu	63
Gadolinium	Gd	64
Terbium	Tb	65
Dysprosium	Dy	66
Holmium	Ho	67
Erbium	Er	68
Thulium	Tm	69
Ytterbium	Yb	70
Lutetium	Lu	71
Hafnium	Hf	72
Tantalum	Ta	73
Tungsten	W	74
Rhenium	Re	75
Osmium	Os	76
Iridium	Ir	77
Platinum	Pt	78
Gold	Au	79
Mercury	Hg	80

Thallium	Tl	81
Lead	Pb	82
Bismuth	Bi	83
Polonium	Po	84
Astatine	At	85
Radon	Rn	86
Francium	Fr	87
Radium	Ra	88
Actinium	Ac	89
Thorium	Th	90
Protactinium	Pa	91
Uranium	U	92
Neptunium	Np	93
Plutonium	Pu	94
Americium	Am	95
Curium	Cm	96
Berkelium	Bk	97
Californium	Cf	98
Einsteinium	Es	99
Fermium	Fm	100
Mendelevium	Md	101
Nobelium	No	102
Lawrencium	Lr	103
Rutherfordium	Rf	104
Dubnium	Db	105
Seaborgium	Sg	106
Bohrium	Bh	107
Hassium	Hs	108
Meitnerium	Mt	109
Darmstadtium	Ds	110
Roentgenium	Rg	111
Copernicium	Cn	112
Nihonium	Nh	113
Flerovium	Fl	114
Moscovium	Mc	115
Livermorium	Lv	116
Tennessine	Ts	117
Oganesson	Og	118

Maximum number of electrons that can be accommodated in a given shell of an atom

Formula

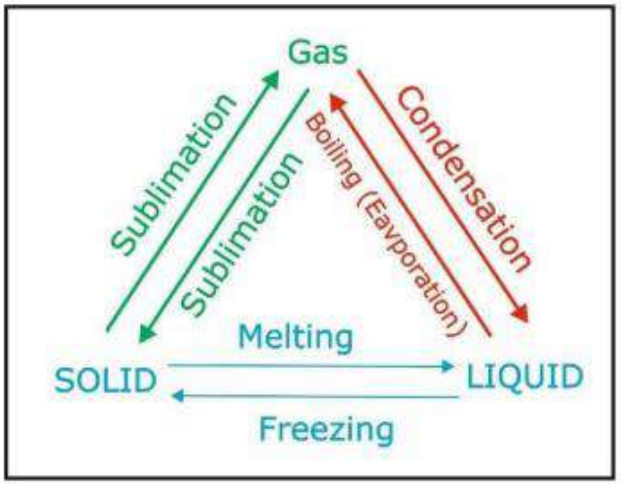
$$2n^2$$

Shell name	Shell number (n)	Number of electrons ($2n^2$)
K	1	2
L	2	8
M	3	18

Etc….

n = shell number

Change of state



Some common chemical formulas

NaCl	Sodium chloride
H_2O	Water
$C_6H_{12}O_6$	Glucose
C_2H_6O	Alcohol
$CaSO_4$	Sulfate Group
H_2S	Hydrogen Sulfide
NaCl	Salt
O_2	Oxygen
C_2H_6O	Ethanol
$C_9H_8O_4$	Aspirin
HCl	Hydrochloric Acid
$Zn(NO_3)_2$	Zinc
CO	Carbon Monoxide
NaOH	Sodium Hydroxide
NaCN	Sodium Cyanide
$Ca(CN)_2$	Calcium Cyanide

$C_2H_4O_2$	Vinegar
NH_3	Ammonia
MgCl2	Magnesium Chloride
$C_2H_4O_2$	Acetic Acid
C_4H_{10}	Butane
NO_3^-	Nitrate
CuO	Copper Oxide
N_2	Nitrogen
CO_2	Carbon Dioxide
H_2SO_4	Sulfuric Acid
CH_4	Methane
$C_{12}H_{22}O_{11}$	Sucrose
C_3H_8	Propane
$NaHCO_3$	Baking Soda
LiCl	Lithium chloride
F_2	Fluoride
H_2O_2	Peroxide
$C_8H_{10}N_4O_2$	Caffeine
NaCl	Sodium Chloride

Some common acids

Name	Chemical formula
Hydrochloric acid	HCl
Nitric acid	HNO_3
Phosphoric acid	H_3PO_4
Sulfuric acid	H_2SO_4
Acetic acid	CH_3COOH

Some common bases

Name	Chemical formula
Calcium hydroxide	$Ca(OH)_2$
Sodium hydroxide	$NaOH$
Sodium hydrogen carbonate	$NaHCO_3$
Magnesium hydroxide	$Mg(OH)_2$
Ammonia	NH_3

Some common salts

Chemical name	Common name	Chemical formula
Calcium oxychloride	Bleaching powder	$CaOCl_2$
Sodium carbonate decahydrate	Washing soda	$Na_2CO_3.10H_2O$
Sodium hydrogen carbonate	Baking soda	$NaHCO_3$
Sodium Chloride	Common salt	$NaCl$

HOPE YOU ALL ENJOYED LEARNING

ALICE JOSEPH

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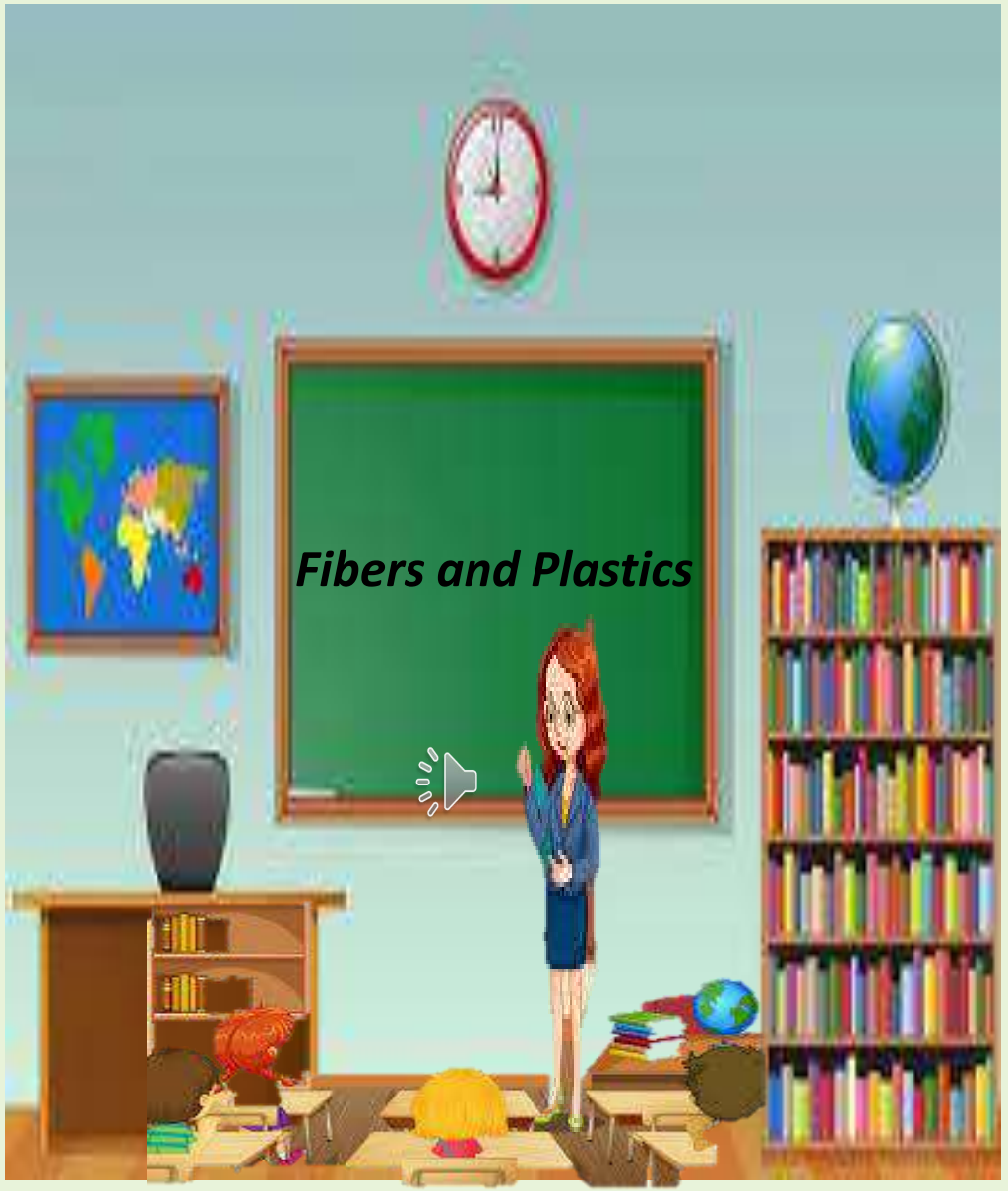
ST. JOSEPH COLLEGE OF TEACHER EDUCATION FOR WOMEN ERNAKULAM

DIYA N C
PHYSICAL SCIENCE

GUIDE BOOK

SUBMITTED BY
DIYA N C
FIRST YEAR PHYSICAL SCIENCE

Let Us Start……



Defnition:-

POLYMER

They are macromolecules formed by the combination of large number of simple molecules(monomers).

Natural Fibers

They are naturally occurring fibers that humans derive from plants or animals

Synthetic Fibers

Fibres that are made or created by humans are Known as synthetic fibres

Plastics

Plastics are polymers having properties different from those of fibers .These are substances that changed the very face of human life .

plastics are synthetic polymers.Diferent types of plastics are used for manufacturing a number of products from household utensils to artificial heart valves.

Thermoplastics

Plastics, which gets deformed easily on heating and can be bent easily are known as Thermoplastics.

Thermosetting plastics

Plastics, which when moulded once, can not be softened by heating.

Biodegradable and Non-Biodegradable Materials

A material that decomposes through natural process is biodegradable .

Materials that are not easily decomposed by natural processes is termed as non-biodegradable.

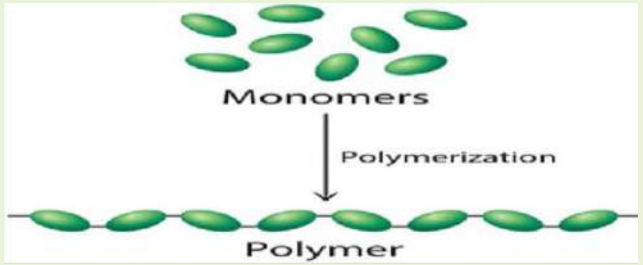
Environmental Effects on plastic

Plastic takes several years to decompose, it is not environmental friendly.It cause pollution.

The burning process in the synthetic material is quite slow and it does not get completely burnt easily. And it releases lots of poisonous fumes into the atmosphere causing air pollution in the process.

Experiments And Examples:-

Polymers (eg):- Molecules like glucose and aminoacids are monomers . Starch and protein are respectively the polymers formed from them.



Thermoplastic and Thermosetting plastic (exp):-

Natural and Synthetic Fibers (eg):-

Questions and Answer:-

- *Polymers are macromolecules formed by the combination of many monomers.*

a) How are polymers classified?

b) Classify the following?

Cotton,Wool,Nylon,Silk, Terylene, Jute, Polyester

a) On the basis of its formation as natural and manmade.

On the basis of structure as linear, branched chain, cross linked chain.

On the basis of process as addition polymer and condensation polymer.

On the basis of molecular strength as fibers and plastics.

b) Natural:- Cotton, Wool, Silk, Jute.

Man made :- Nylon, Terylene, Polyester.

❑ Some monomers and polymers are given in the

MONOMER	POLYMER
Ethene	polyethene
Propene	polypropene
Styrene	polystyrene
Vinyl Chloride	Poly Vinyl Chloride

a) What is meant by the terms monomer and polymer?

b) What is the common system of nomenclature of polymers? Analyse the table and find out.

a) Monomer- A Simple molecule with a definite structure.

Polymer- Large molecule formed by the combination of many monomers

b) Add the prefix 'poly' to monomer molecule.

❑ Natural fibers and synthetic fibers are used in the field of textile manufacturing.

a) Compare their merits and demerits and tabulate.

b) Which of these clothes is most suited for the following situations? Give reason.

i. While cooking in the kitchen

ii. To wear during summer

MERITS	DEMERITS
Comfortable to wear	Less available
Natural	Costly
Suitable for any climate	Colour fades
Organic decomposition take place	Not long lasting
It will not harm the body	Forms reases easily

b) Clothes using natural fibers

i) Does not catch fire.

ii) More air circulation , absorbs the sweat.

❑ You known what thermoplastic and thermosetting plastics are.

a) Which of these plastics cannot be recycled?

b) You might have noticed that those who collect old plastics do not accept certain type of plastic articles . What are they? What may be the reason for this?

a) Thermosetting plastic.

b) Thermosetting plastic- because they cannot be recycled.

- *Some argue that plastics are to be completely banned as they cause environmental pollution .what is your view?*

Without plastic ,we cannot manage daily life. Control the use of plastic , avoid disposable plastic products and use thermoplastic materials.

- *The School science club has decided to conduct a propaganda for creating awareness about pollution due to plastics . Prepare some posters for this.*

i)Avoid disposable plastic products use glass, ceramic utensils or natural substances

ii) Don't dump plastic materials in soil.

iii)Use paper or natural materials for decorations.

- *What suggestions can you propose to relies the concept of 'plastic waste – free school'? List your findings.*

Let us practice 4R's to reduce the use of plastics to the maximum extent as well as to avoid the pollution caused by plastic.

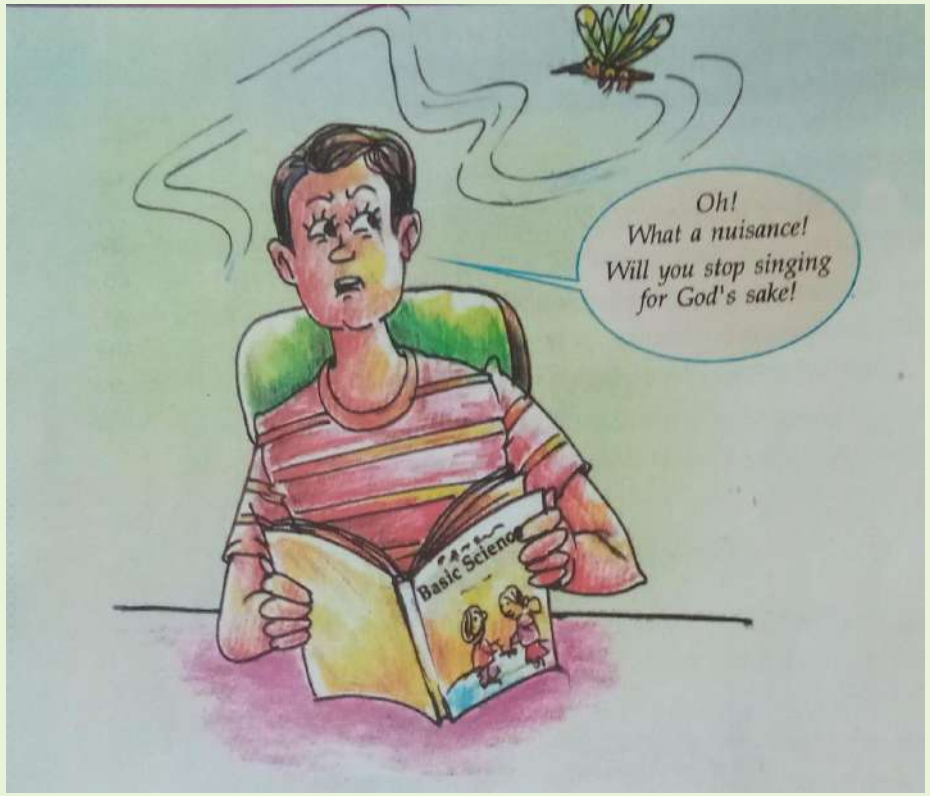
Reduce-plastics

Reuse – plastics

Refuse – plastics

Recycle –plastics

……



SOUND

Sound:-

Sound is a form of energy is familiar to us and necessary for communication .
To experience three components are essential: Source of sound, medium and the ear.

Source of sound:-

The sources that produces sound is called sources of sound . we can classify the sources of sound into Two:- Natural Source of sound and manmade sources of sound
Sound is produced by the vibration of object. The object produces sound is called the source of sound.

Natural frequency :-

When a body is set into vibration it vibrates with particular frequency of its own this frequency is called natural frequency.

Pitch and Loudness:-

The sharpness of sound heard is called pitch and it depends on frequency of sound.
Loudness is the measure of audibility of a person and this depends mainly on frequency of sound and the sensory ability of the ear.

Propagation of sound :-

A medium is necessary for sound to propagate. Sound is propagated not only through air but also through other substances . Loss of hearing is a disability of ear. The people having damage to ear by birth effect many difficulties for communicatio.., for ability to speak etc.

Limit of audibility:-

We cannot hear sound of all frequencies. We can hear the sound of frequency less than 20Hz and 20000Hz. Sounds with frequency less than 20Hz are called infrasonic and that greater than 20000Hz are called ultrasonic. Ultrasonic sounds are used in instrument sonar and in medical field.

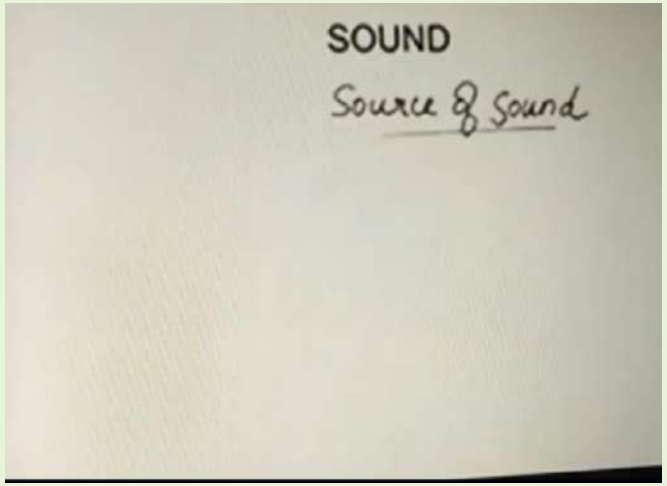
Noise pollution:-

Noise effects not only ear but mental, emotional level and physical problems. Reduce the use of air horns , use silencers in vehicles, planting tress etc

Are some ways to reduce noise pollution.

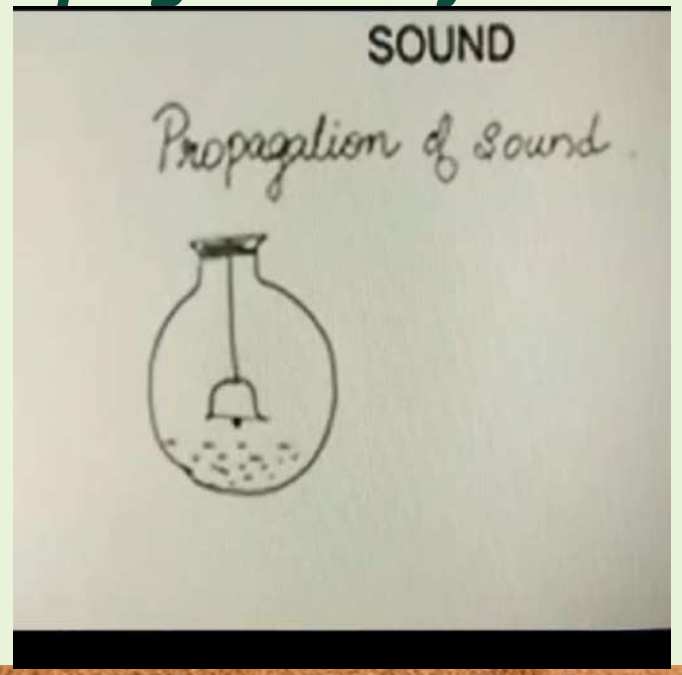
Experiments and examples:-

Source of sound :



Natural frequency:

Propagation of sound:



For easy learning

1)The sharpness of sound is……

Pitch

2) What are the characterstics of sound.

loudness,pitch

3)What is loudness?

It is the sensation of hearing on human being.

4) What is the range of audibility of human beings?

20Hz to 20kHz

5) What are infrasonic and ultrasonics?

Sound of frequency less than 20Hz is infrasonics

Sound of frequency higher than 20 kHz is ultrasonics.

6) Due to the vibration of ……in flute , Sound is produced.

Air

7) Loudness is measured in ……unit

Decibell

Questions:-

1) If a turning fork vibrates 480 times in one seconds , what would be its natural frequency ?

Natural frequency-480Hz

2) If a simple pendulum oscillates 10 times in 10 second, what would be its frequency?

Frequency, $f = n/t = 10/10 = 1$ Hz.

3) What are the factors influence natural frequency of a body?

Length , surface area , area of cross section , tension and nature of the material.

4) The frequency of certain turning forks are given below. Find out which among these have the highest and the smallest pitches.

(256 Hz , 512 Hz , 480 Hz, 288 Hz)

Highest pitch : 512 Hz ,Lowest pitch : 256 Hz

5) In the source of sound given below , vibration in which produce main part produces sound?

a. Chenda b. flute c. vocal cord

b. Chenda – diaphragm b. flute – air c. vocal cord – larynx

6) Design an activity to prove that sound can be propagated even through solid substances.

Using a string and trays of matchboxes , a toyphone can be made.

7) ' Bats can catch prey even in the dark '. Do you agree with this statement? Explain your inference.

Agree with this statement.

Bats produce ultrasonic waves while flying. By analyzing the waves reflected from the obstacles, it can easily catch its prey.

8) How do human beings contribute to noise pollution ?

Sound of vehicles , sound of air horn , loud speaker , Fire works etc. are contributed by human beings and these cause sound pollution.

9) Which unit represents loudness?

(Hz , m/s ,dB , W)

dB

.....

Thank you……

ALICE JOSEPH

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PROJECT BOOK

SUBMITTED BY
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FIRST YEAR B.Ed.
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ST JOSEPH COLLEGE OF TEACHER EDUCATION FOR WOMEN, ERNAKULAM

PROJECT BOOK

ANILA SHAJU
FIRST YEAR B.Ed. PHYSICAL SCIENCE

1

CERTIFICATE

This is to certify that “(student name)” student of class -10 has successfully completed his physics project on (topic) Under the guidance of Mr/Ms_____

Internal Examiner External Examiner

ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my physics teacher “--------” for their able guidance and support in completing my project.

I would also like to extend my gratitude to the Principal Sir”----------” for providing me all the facility that was required.

Date : Student Name

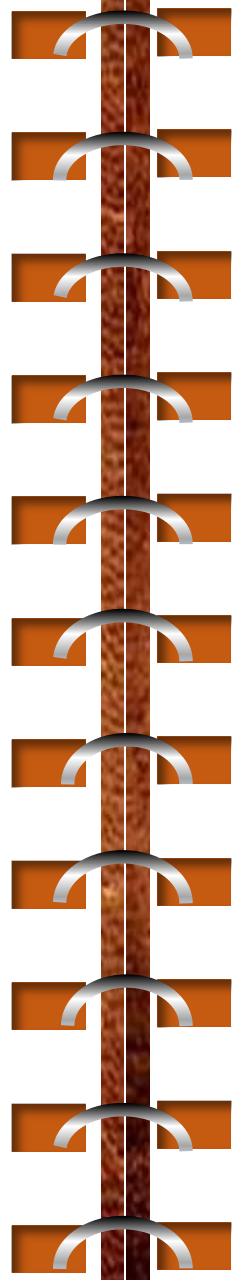
preface

I am presenting a project on the topic “---------- “in subject physics.
I tried my best to make this project wonderful.
I hope u like the project.

INDEX

LIST OF TABLES

LIST OF FIGURE



PHYSICS PROJECT

OHM'S LAW

INTRODUCTION

Ohm’s law is one of the most popular and important laws that help us define the relationship between voltage, current and resistance. The law was first established by a German physicist named Georg Simon Ohm and was the most important theory that described the quantitative characteristics of the physics of electricity.

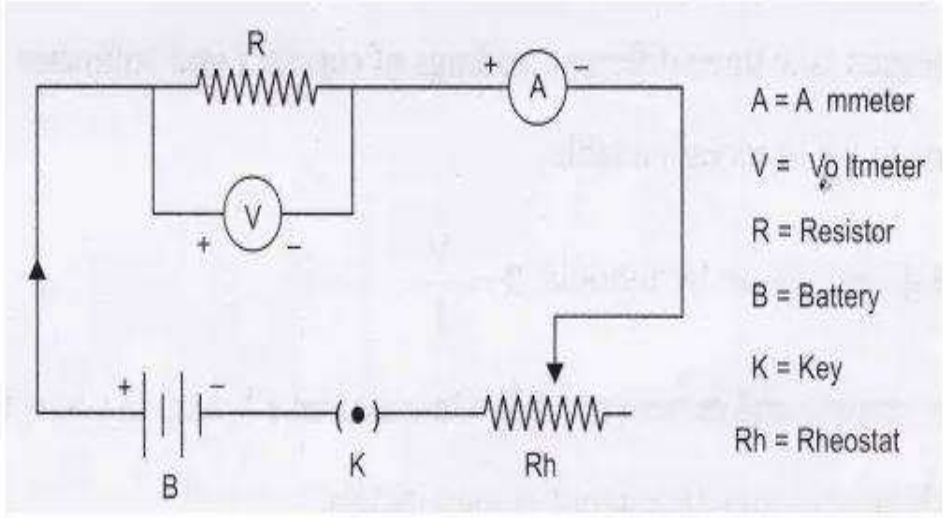
Ohm’s law can be also be considered as an empirical law. It can be used in developing conclusions or in reasoning while conducting many experiments especially in showing that current for some materials is approximately proportional to the electric field.

NEED AND SIGNIFICANCE

Ohm's Law is identified as V = I x R, where V is the voltage, I is the current and R is the resistance (in Ohms). The formula may be shown as I = V / R and R = V / I.

Provided that the resistance and current, can determine voltage very easily using the formulation V = I x R. It is seen from the equation that if either the current or the resistance is raised in a circuit (while the other is unchanged), the voltage will also have to increase.

CIRCUIT DIAGRAM



EXPERIMENT DESIGNING

AIM

To study the dependence of potential difference (V) across a resistor on the current (I) passing through it and determine its resistance. Also plot a graph between V and I.

THEORY

Ohm's Law: The potential difference, V across the ends of a given metallic wire in an electric circuit is directly proportional to the current flowing through it, provided its temperature is the same. This is Ohm's law.

$V \propto I$

∴ $V = IR$, (Here R = Constant for the given metallic wire)

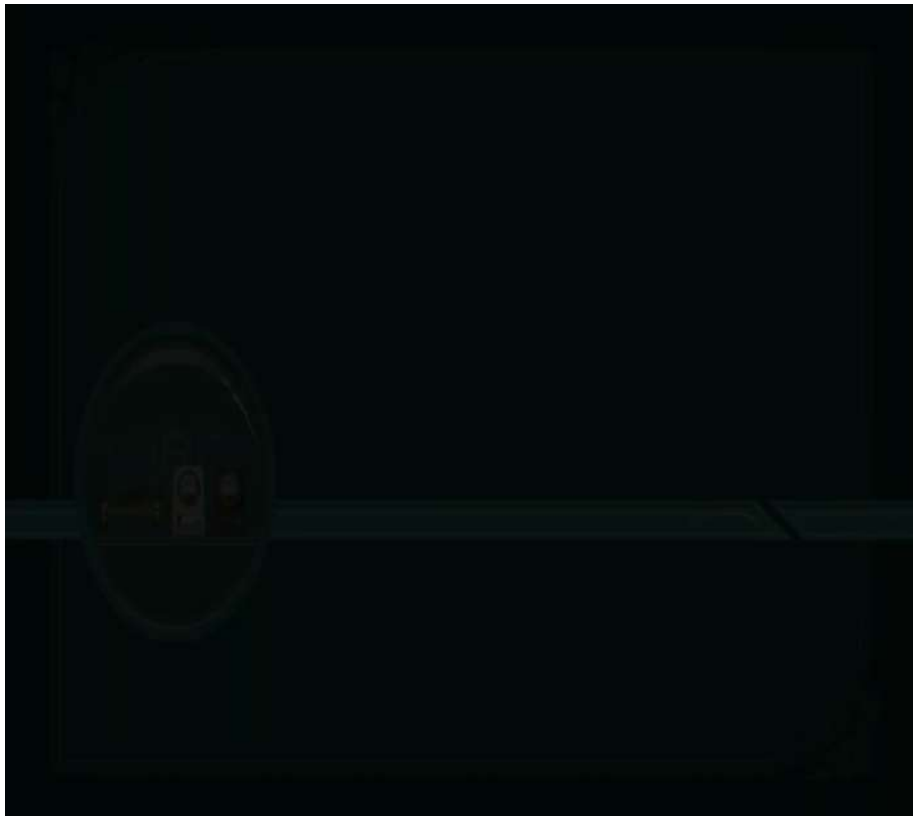
- The SI unit of resistance is Ohm (Ω).
- R=V/I
- **One Ohm:** If the potential difference across the ends of a conductor is 1 volt and the current flowing through it is 1 ampere, then the resistance of the conductor R is 1 ohm.

- **One Ohm:** If the potential difference across the ends of a conductor is 1 volt and the current flowing through it is 1 ampere, then the resistance of the conductor R is 1 ohm

$$1\ \text{Ohm} = \frac{1\ \text{Volt}}{1\ \text{Ampere}}$$

HYPOTHESIS

The higher the voltage, then the higher current, meaning that the voltage is directly proportional to the current



MATERIAL REQUIRED

- A battery,
- An insulated copper wire (cut into 10 pieces)
- A key
- An ammeter
- A voltmeter
- A rheostat
- A resistor
- A piece of sand paper.

PROCEDURE

1) Keep the devices as shown in the circuit diagram.
2) Connect them with the connecting wires and keep the key open.
3) Positive terminal of the battery is connected to the positive terminal of the ammeter.
4) Check the +ve and -ve terminals of voltmeter before connecting it in the circuit.
5) Once the circuit is connected, insert the key and check the rheostat, adjust its slider and see whether the ammeter and voltmeter readings are shown.
6) By using the slider of rheostat take three different readings of current 1 and voltmeter V.
7) Record your observations in the observation table.
8) Calculate resistance of a given resistor by formula R=V/I.
9) Plot a graph of voltmeter reading and current reading. On x axis take V and on y axis take I.
10) Resistance increases with increase in temperature of pure metals.

OBSERVATION AND CALCULATION

A. Least count of ammeter and voltmeter

S. No.		Ammeter (A)	Voltmeter (V)
1.	Range	0 – 0.5 A	0-0.1 V
2.	Least Count	0.01 A	0.01 V
3.	Zero Error (e)	0	0
4.	Zero Correction	0	0

PRECAUTIONS

1. The connecting wires should be thick copper wires and the insulation of their ends should be removed using the sand paper.
2. Connections should be tight otherwise some external resistance may introduce in the circuit.
3. Connections should be made as per the circuit. Before closing the circuit show the connections to the teacher to take the readings.
4. The ammeter should be connected in series with the resister such that the current enters at the positive terminal and leaves at the negative terminal of the ammeter.

B. For reading of ammeter and voltmeter

S. No.	Current in Ampere (I) (Ammeter Reading)		Potential difference in Volts (V) (Voltmeter Reading)		Resistance in Ohms R = V/I(Ω)
	Observed	Corrected	Observed	Corrected	
1.	0	0.02	0	0.04	R_1 =2 Ω
2.	0	0.03	0	0.06	R_2 = 2 Ω
3.	0	0.04	0	0.08	R_3 = 2Ω

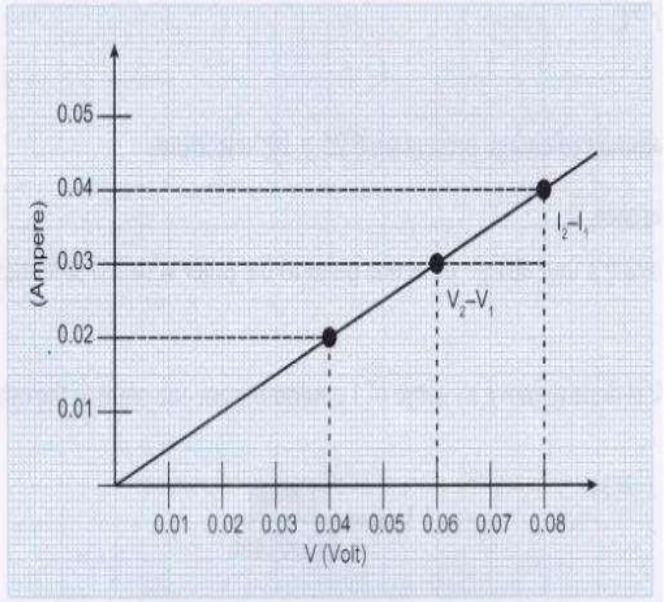
5. Voltmeter should always be connected in parallel to resistor.

6. Calculate the least count of voltmeter and ammeter correctly.

7. The pointers of the ammeter and voltmeter should be at zero mark when no current flows through the circuit.

8. Current should be passed through the circuit for a short time while taking observations; otherwise current would cause unnecessary heating in the circuit. Heating may change the resistance of resisters.

$$\therefore \text{ Mean value of } R = \frac{R_1 + R_2 + R_3}{3} = \frac{2+2+2}{3} = 2\Omega$$



Graph between current and voltage

RESULT

1.The value of R is found to be same and constant in all three readings.

2.The resistance of a resistor is ratio of potential difference V and current I.

3.The graph of V and I is a straight line. This shows that $V \propto I$. This verifies Ohm's law.

BIBLIOGRAPHY

1)https://en.wikipedia.org/wiki/Ohm's_law

2)https://www.toppr.com/guides/physics/electricity/ohms-law-and-resistan

CHEMISTRY PROJECT

BOILING POINT OF WATER

INTRODUCTION

Water can boil, raise temperature or decrease air pressure, in two ways. At sea level, it is the pressure of air that causes water to boil at 100oC. Water can boil at a much lower temperature in vacuum, where there's no air. That is, if not for the skin that keeps the blood pressurized, body temperature would be sufficient to cause the blood to boil with water. At low air pressure the water boils significantly below 100 **oC** at temperatures.

The boiling point of water is the temperature at which the liquid water vapor pressure is equal to the pressure surrounding the body, and the body transforms into a vapour. The boiling point is the temperature for a particular liquid to boil at

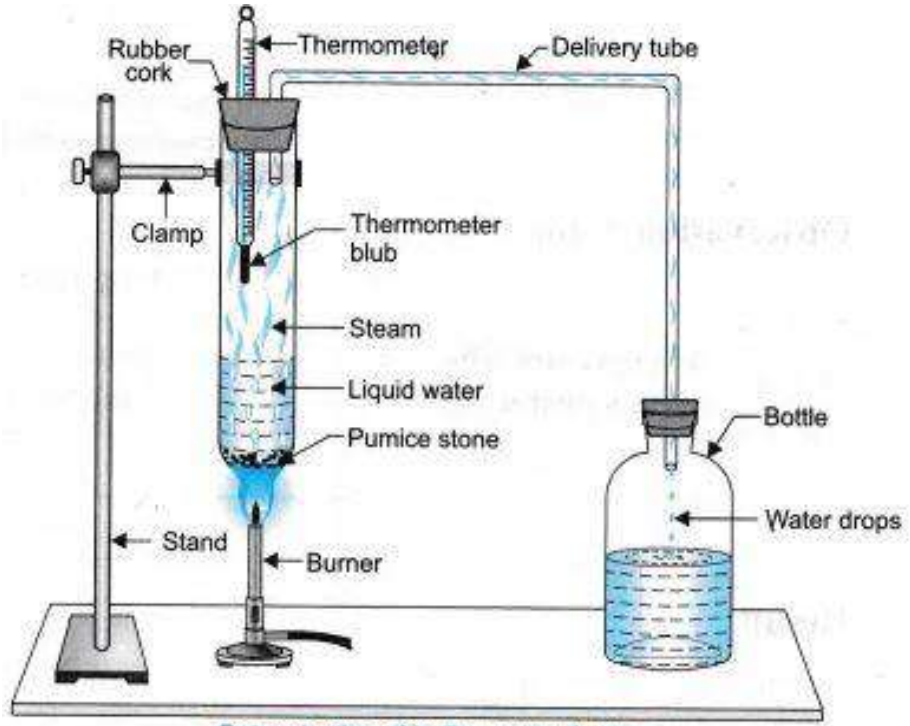
NEED AND SIGNIFICANCE

The boiling point of a liquid depends on temperature, atmospheric pressure, and the vapor pressure of the liquid. When the atmospheric pressure is equal to the vapor pressure of the liquid, boiling will begin.

The boiling point is the temperature at which a material changes from a liquid to a gas (boils)

knowing melting and boiling points for substances can aid in production, manipulation, molding, and setting of products. It can also be useful in knowing safety information.

EXPERIMENTAL SETUP



Determination of boiling point of water.

EXPERIMENT SETUP

AIM

To determine the boiling point of water.

Theory

1. **Boiling Point:** The temperature at which the liquid boils and changes into gaseous state at the atmospheric pressure is called boiling point. For example, water boils at 100°C to form water vapour (at 76 cm pressure).

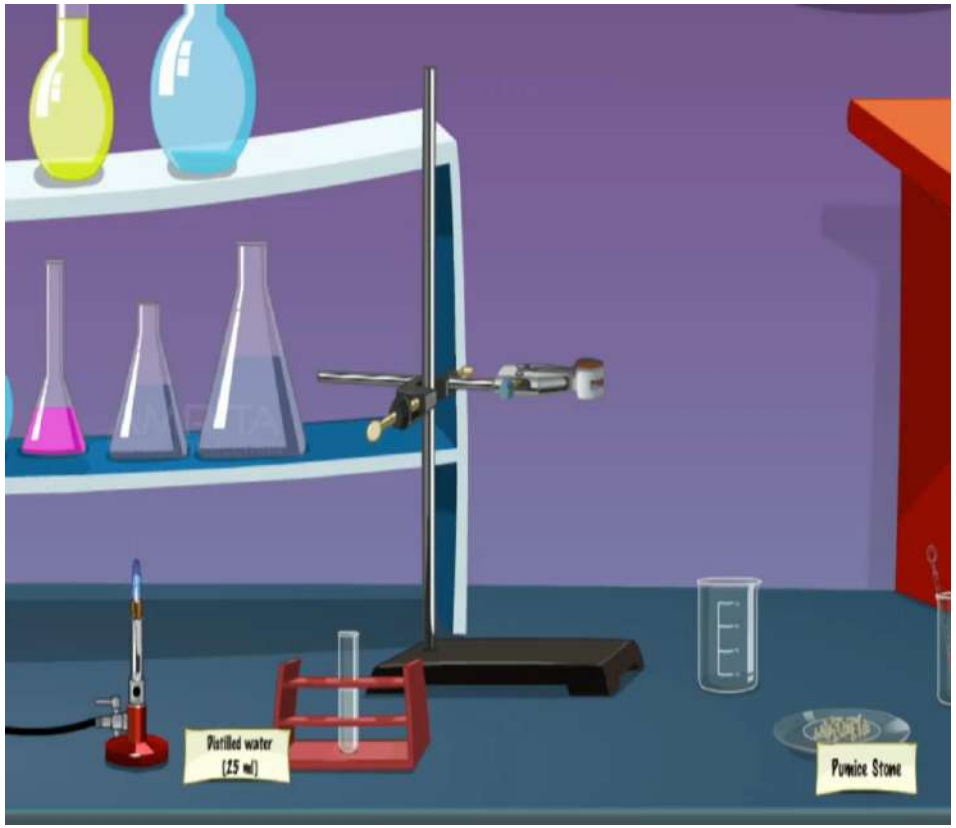
2. **Latent Heat of Vaporisation:** The heat energy absorbed by water when it changed its phase to steam, this hidden heat is called latent heat of vaporisation

HYPOTHESIS

If the salt concentration increases then the boiling point of water will increase

MATERIAL REQUIRED

1) Delivery tube
2) Thermometer
3) Pieces of pumice stone
4) Burner
5) Rubber cork with two bores
6) Boiling tube
7) Distilled water
8) 250ml beaker
9) Iron stand with clump



PROCEDURE

1.Take 25-30 ml of water in a boiling tube and add few pumice stones to it.

2.Clamp the boiling tube on iron stand with two holed cork, in one hole fix the thermometer and in the other one fix the delivery tube.

3.Place the thermometer above the water in the flask as shown in the figure and record its temperature.

4.Place a burner under the boiling tube.

5.Read the temperature and record it in the given observation table till the water boils. Record the reading after the time interval of 1 minute.

OBSEVATION

S.No	Temperature when water start boiling(t1°C)	Temperature when water continues to boil till constant(t2°C)	Boiling point of water(t1+t2)/2°C
1	99.8	100	99.9
2	100	100	100

PRECAUTIONS

- Choose a better quality thermometer whose graduated scale is clearly readable.
- Record the temperature in whole numbers.
- While reading the thermometer the eye level should be parallel with mercury level.
- Dip only the bulb of thermometer into water/ice.
- Thermometer should not touch the walls of beaker or boiling tube.

Result

1.Boiling Point of water is 100 °C.

2.Once the boiling point is attained the temperature reading on thermometer does not change for sometime.

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THANK YOU

ST.JOSEPH COLLEGE OF TEACHER EDUCATION FOR WOMEN, ERNAKULAM

SUBMITTED BY

TREESA TANIYA P A

PHYSICAL SCIENCE

E- CONTENT

CLASS VIII

CHEMISTRY

UNIT 17- FIBRES AND PLASTICS

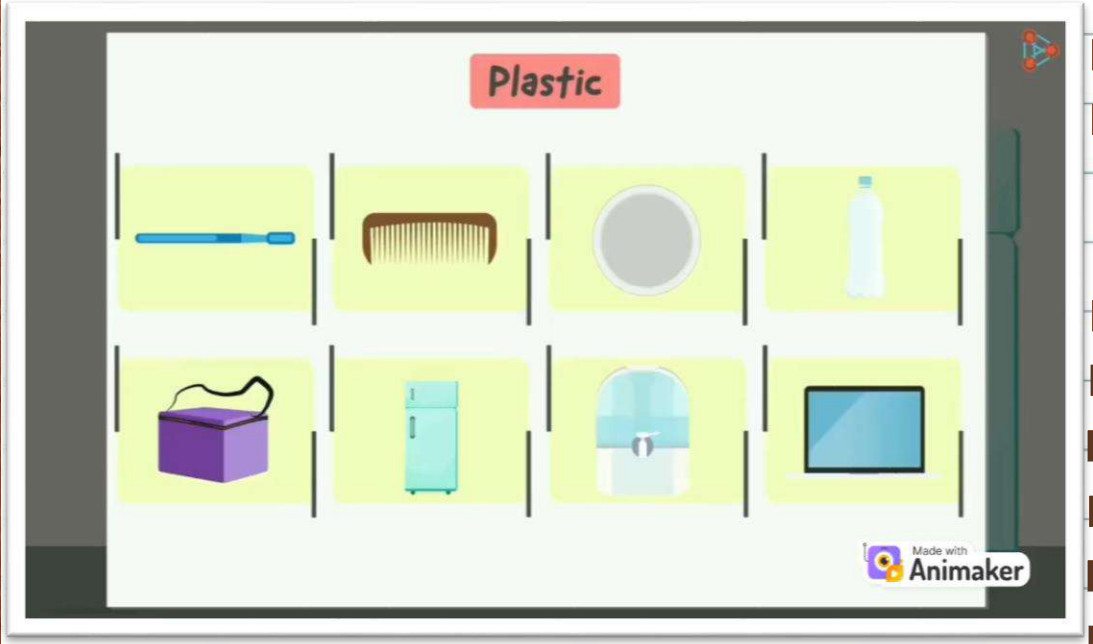
PLASTICS

What are plastics?

Plastics are polymers having properties different from those of fibers. Plastics are synthetic polymers.

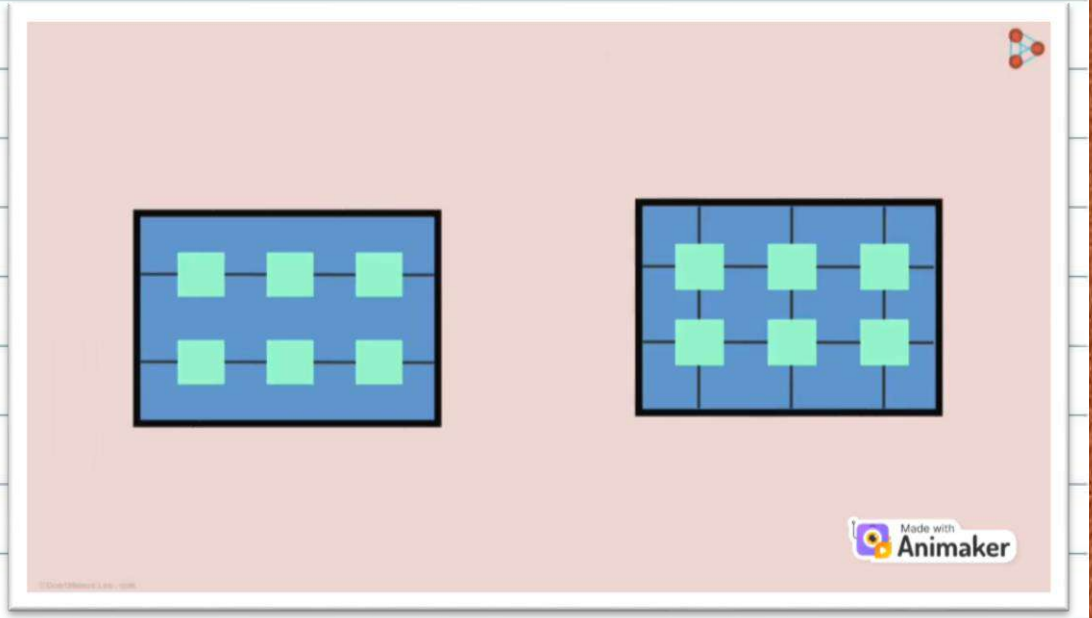
Plastic got its name from the Greek word ‘plastikos’ which means ‘with alterable shape’.

Different types of plastics are used for manufacturing a number of products from household utensils to artificial heart valves.



Plastics with diverse properties have been prepared nowadays making them more useful.

Structure of plastic



Plastics consist of large molecules called polymers.

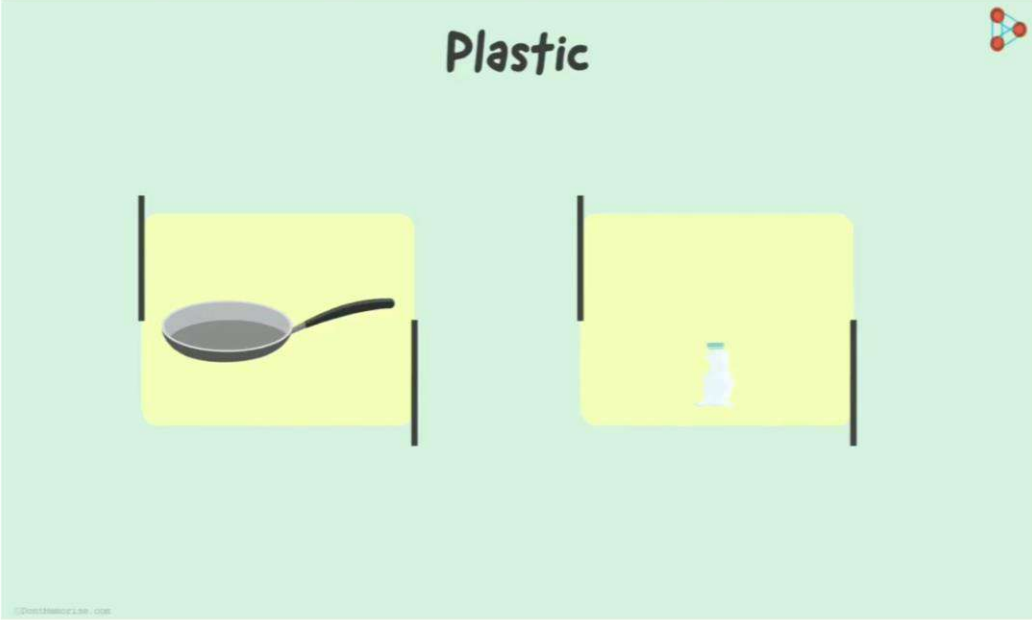
Polymers consist of many identical small particles strung together like a chain and these individual small particles are called monomers.

Classification of plastic

Let us perform an experiment:

Observed the changes? What may be the reason? Let us find out.

The reason…



Thermoplastic & Thermosetting Plastic

Plastics can be classified into two types based on the changes that occur while heating.

Thermoplastic	Thermosetting plastic
Gets softened on heating and hardened on cooling	Remains soft when heated during its manufacture, and gets hardened permanently on cooling
This process can be repeated any number of times.	Once hardened, they cannot be remoulded by heating
Undergo physical change on heating.	On heating undergo chemical change along with physical change.
Examples: PVC, Polythene	Examples: Melamine, Bakelite

ACTIVITY

Categorize the various plastic objects that you come across in your day-to-day life into thermoplastics or thermosetting plastics based on what you learned.

SUMMARY

1. Plastics are synthetic polymers.
2. Plastics consist of large molecules called polymers.
3. Different types of plastics are used for manufacturing a number of products from household utensils to artificial heart valves.
4. The plastic that gets softened on heating and hardened on cooling is thermoplastic. This process can be repeated any number of times.
5. The plastic which remains soft when heated during its manufacture, and gets hardened permanently on cooling is a thermosetting plastic.

CLASS IX

PHYSICS

UNIT 4- GRAVITATION

UNIVERSAL LAW OF GRAVITATION

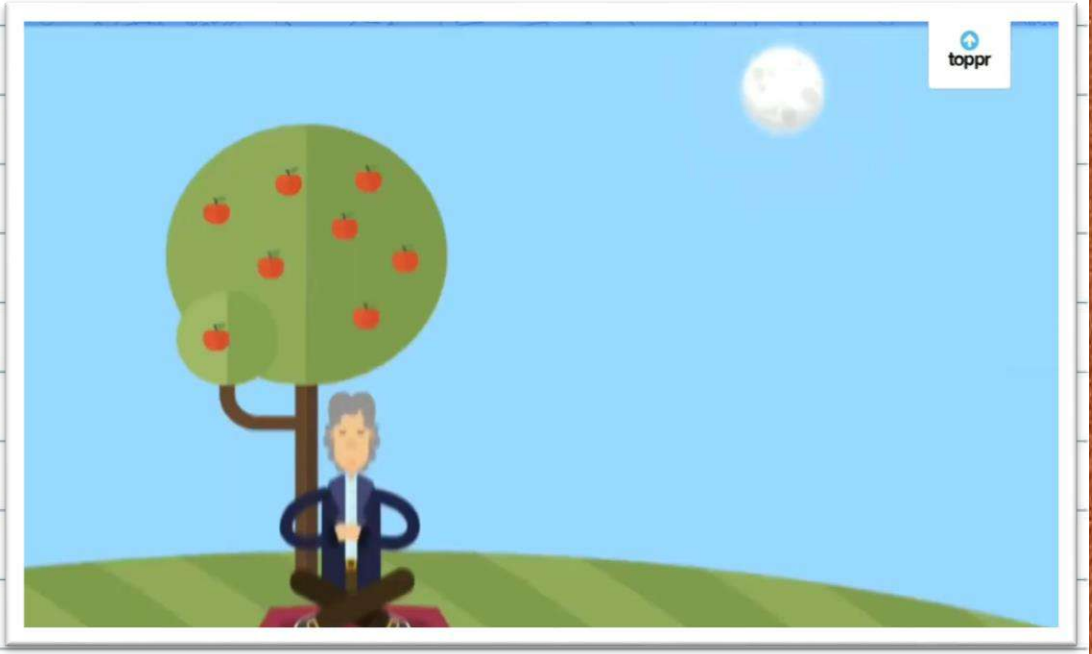
Why does the following happen?

Observe the following video:

The reason…

Now that you know the reason, let us see how it all began.

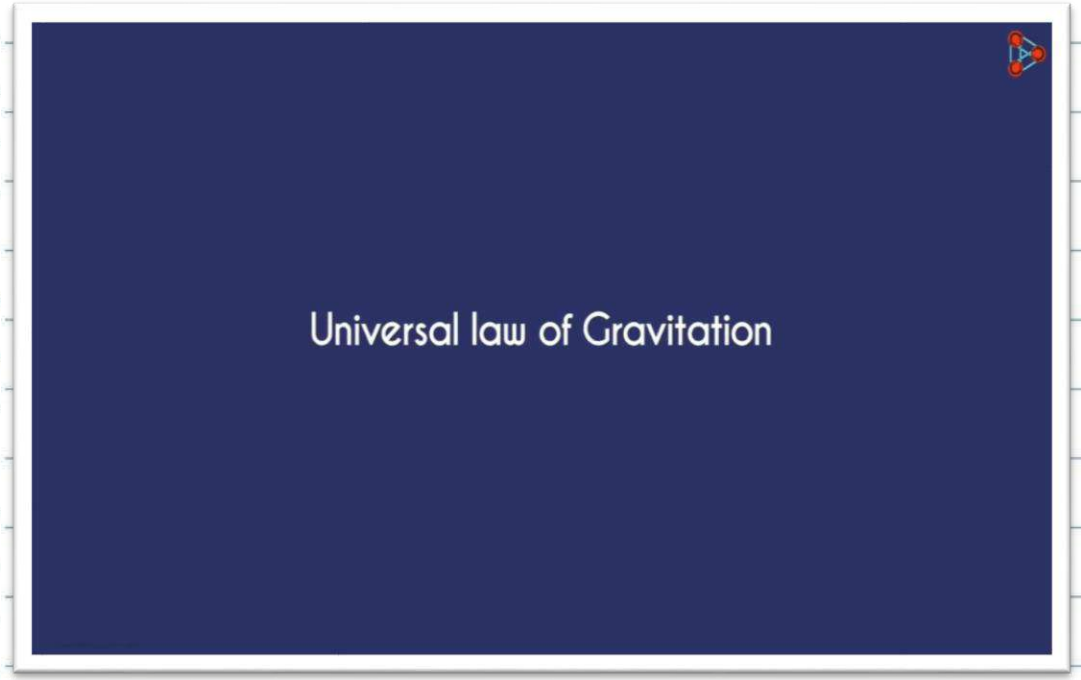
The beginning…



Sir Isaac Newton arrived at the law of gravitation on the basis of the observations made by Kepler, Galileo, etc.

Thereafter, he put forward the universal law of gravitation which is applicable to all bodies in the universe.

Universal Law of Gravitation



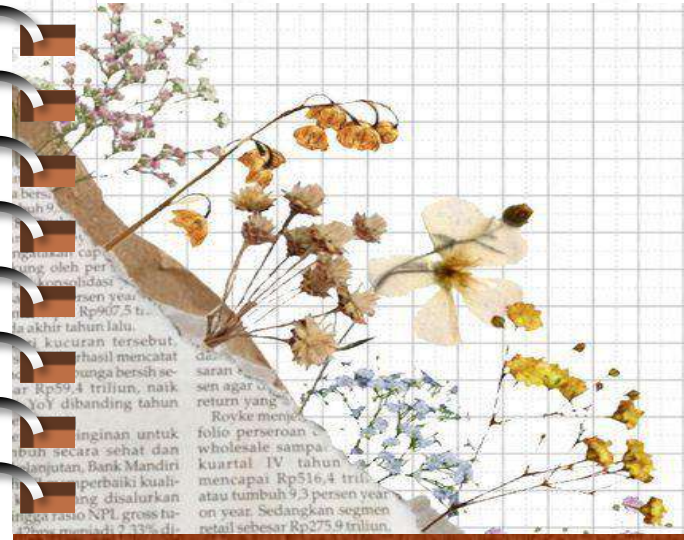
Newton's Universal Law of Gravitation and laws of motion revolutionized the study of physics.

ACTIVITY

State 5 examples where the universal law of gravitation is applied in your daily living.

SUMMARY

1. Gravity is a force that attracts a body towards the center of the earth or any other physical body having mass.
2. Gravitational force is a vector quantity.
3. Sir Isaac Newton arrived at the law of gravitation on the basis of the observations made by Kepler, Galileo, etc.
4. Newton's Universal Law of Gravitation states that every particle attracts every other particle in the universe with a force directly proportional to the product of the masses and inversely proportional to the square of the distance between them.
5. The universal law of gravitation is applicable to all bodies in the universe.



THANK YOU

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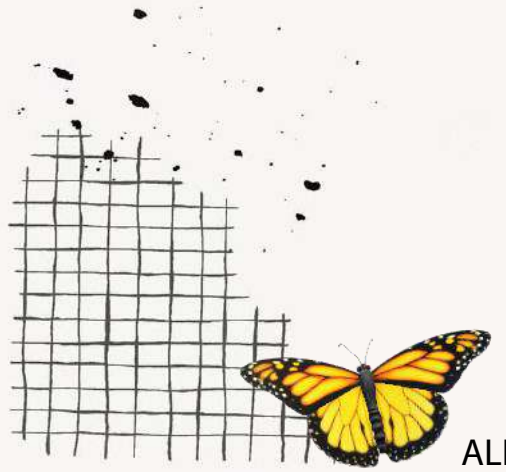
- *https://spaceplace.nasa.gov*
- *https://www.youtube.com*



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WORKSHOP ON BLOG CREATION

Name of the Event	**Workshop on creation of blog**
Objectives	1) To acquaint student teachers with creation of blogs. 2) To understand the relevance of blogs and various online tools in teaching and learning.
Details of Event Coordinators	St. Joseph College of Teacher Education for Women, Ernakulam
Dates	2022-23(18/11/2022 ,28/11/2022),2021-22(9/11/2021),2020-21(5/1/2021),2019-20(22/7/2019),2018-19(23/7/2018)
Beneficiaries	Student Teachers
Event Venue	St. Joseph College of Teacher Education for Women, Ernakulam

Programme Report

Day 1

In the 2022−23 academic year, the college organized an annual workshop aimed at introducing first−year student teachers to create blog. The workshop was led by Mrs. Anu Cleetus, faculty member of the college. The primary goal of this gathering was to acquaint student teachers with the process of creating and managing blogs, particularly in terms of uploading study materials for educational purposes. Additionally, the first session on 2nd November 2022 aimed to enlighten attendees about various online tools and their significance in the realm of teaching and learning.

The resource person delved into the concept of blogs and their potential applications in education. Throughout the workshop, she highlighted the diverse ways in which blogs could be effectively utilized as educational tools. Her detailed guidance on crafting

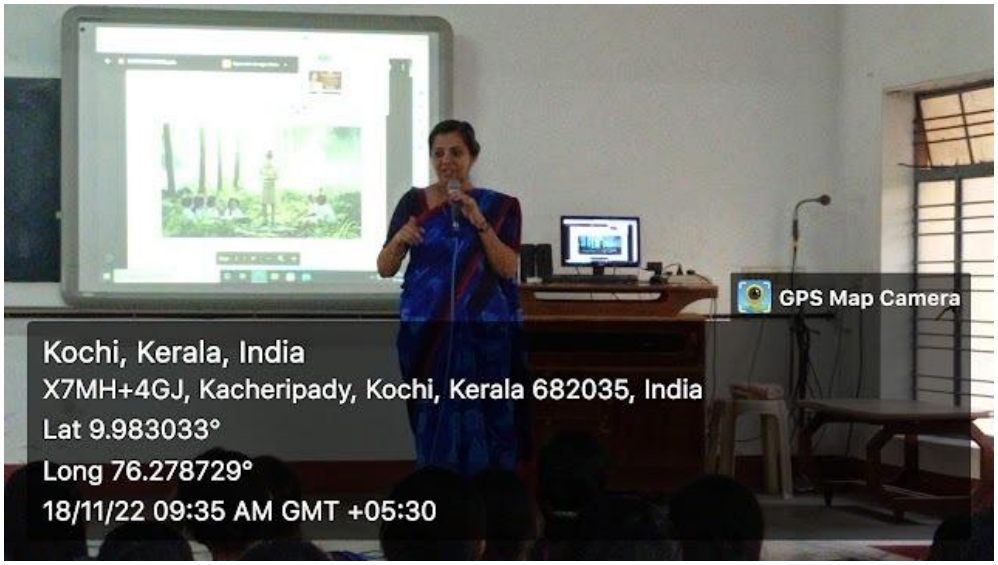
programmed learning materials and the step-by-step process of uploading them to a blog was particularly beneficial for those new to the concept. Furthermore, discussed various tools available for creating blogs and provided a quick demonstration of the blog creation process, rendering the session highly informative and productive. The engagement of student teachers during the workshop was notable as they actively contributed through queries and feedback, making the session interactive and enriching for all participants.

Day 2

On 18th November 2022, Mrs. Anu Cleetus, the designated resource person, conducted a comprehensive step-by-step demonstration on blog creation for the student teachers. This informative session took place in the college's Multi-purpose hall, where all students diligently noted the procedural steps in their notebooks. During the session, students actively engaged by raising questions and concerns regarding blog creation and material uploading. The resource person patiently addressed and resolved all their queries. Moreover, she extended her support beyond the classroom hours, offering additional assistance to any student teacher who required clarification via WhatsApp.

Day 3

Every student teacher accomplished the task of creating and uploading programmed learning materials onto their self-established blogs. As part of the assignment's requirements, each student teacher diligently submitted a physical copy of the learning material, an image capturing the materials as displayed on their respective blogs, and a direct web link leading to their individual blogs. This comprehensive submission, which occurred on 28th November 2022, showcased their successful execution of the project, emphasizing the integration of both digital and tangible elements in their educational initiatives. It underscored their ability to effectively navigate the digital landscape while recognizing the importance of preserving a physical record of their work, ensuring a well-rounded approach to their learning experience.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LET LIGHT BE A
SOURCE OF ENLIGHTENMENT
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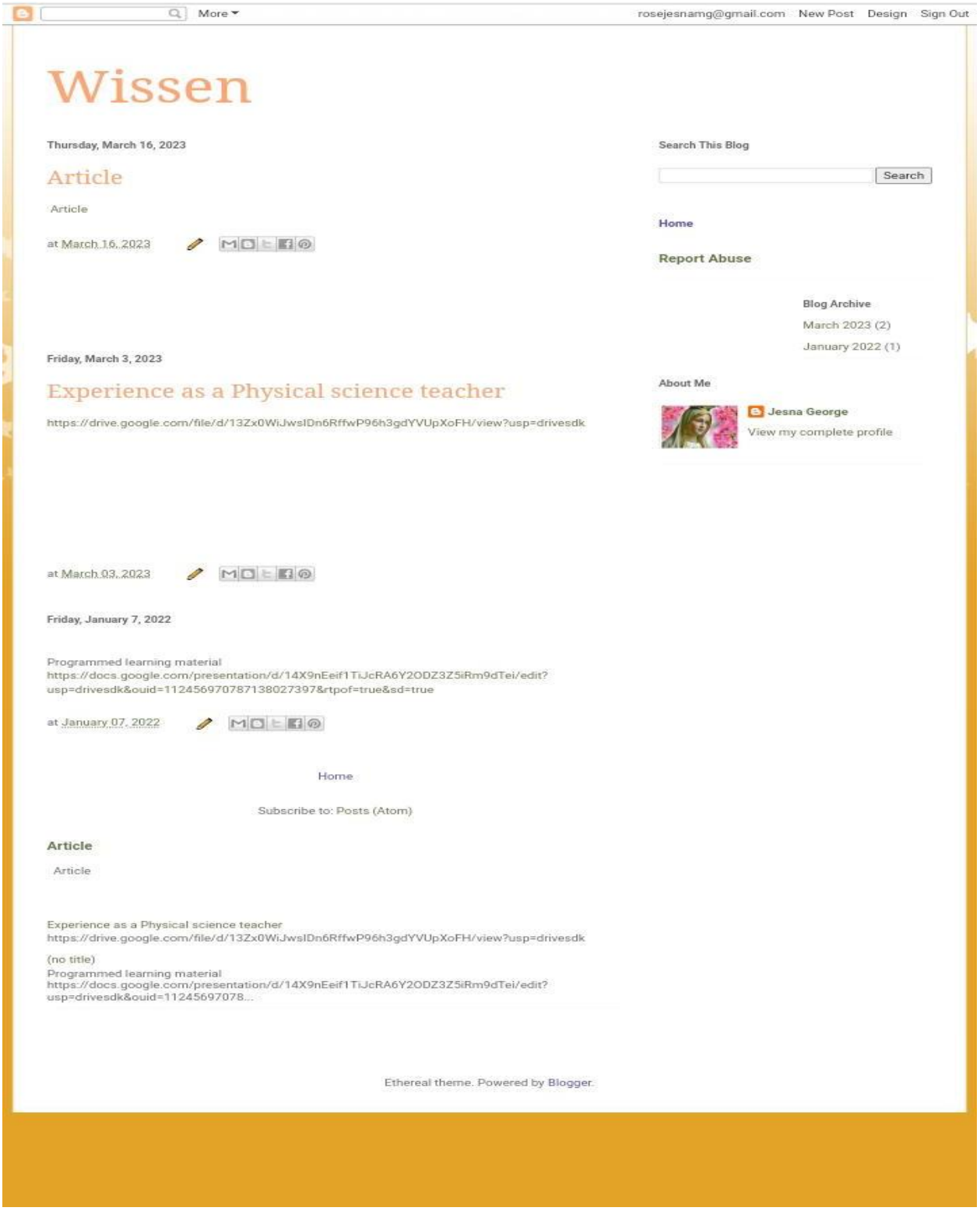
Blog



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11-Workshop on E-Content Awareness -Report

Name of the Event	Workshop on 'E-Content Awareness', 2022
Objectives	1. To raise awareness regarding e-content 2. To enhance the knowledge and expertise of the members 3. To help members acquire specific knowledge and skills
Details of Event Coordinators	IQAC Cell St. Joseph College of Teacher Education for Women, Ernakulam
Details of Resource Person	Mrs. Jeena Jayan UGC Librarian The Cochin College Kochi
Date	09/08/2022
Time	6.00 PM – 7.00 PM
Duration	1 hour
Beneficiaries	Teacher educand - 11
Platform **Meet Link**	Google Meet https://meet.google.com/iav-hzkr-igj

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Programme Report

The IQAC Cell of St. Joseph College of Teacher Education for Women, Ernakulam organized a workshop on 'E-Content Awareness'as part of student Development Programme on 9th August 2022 from 6.00 PM to 7.00 PM via Google Meet. The workshop was organized for teacher educands of St. Joseph College of Teacher Education for Women, Ernakulam. The faculty coordinators of the programme were Dr. Josephine Joseph, IQAC Coordinator and Assistant Professor in Physical Science Education and Ms. Anu Cleetus, Assistant Professor in Education at St. Joseph College of Teacher Education for Women, Ernakulam. The resource person for the workshopwas Mrs. Jeena Jayan, UGC Librarian at The Cochin College in Kochi. A total of 11 educands from St. Joseph College of Teacher Education for Women, Ernakulam participated in the workshop.

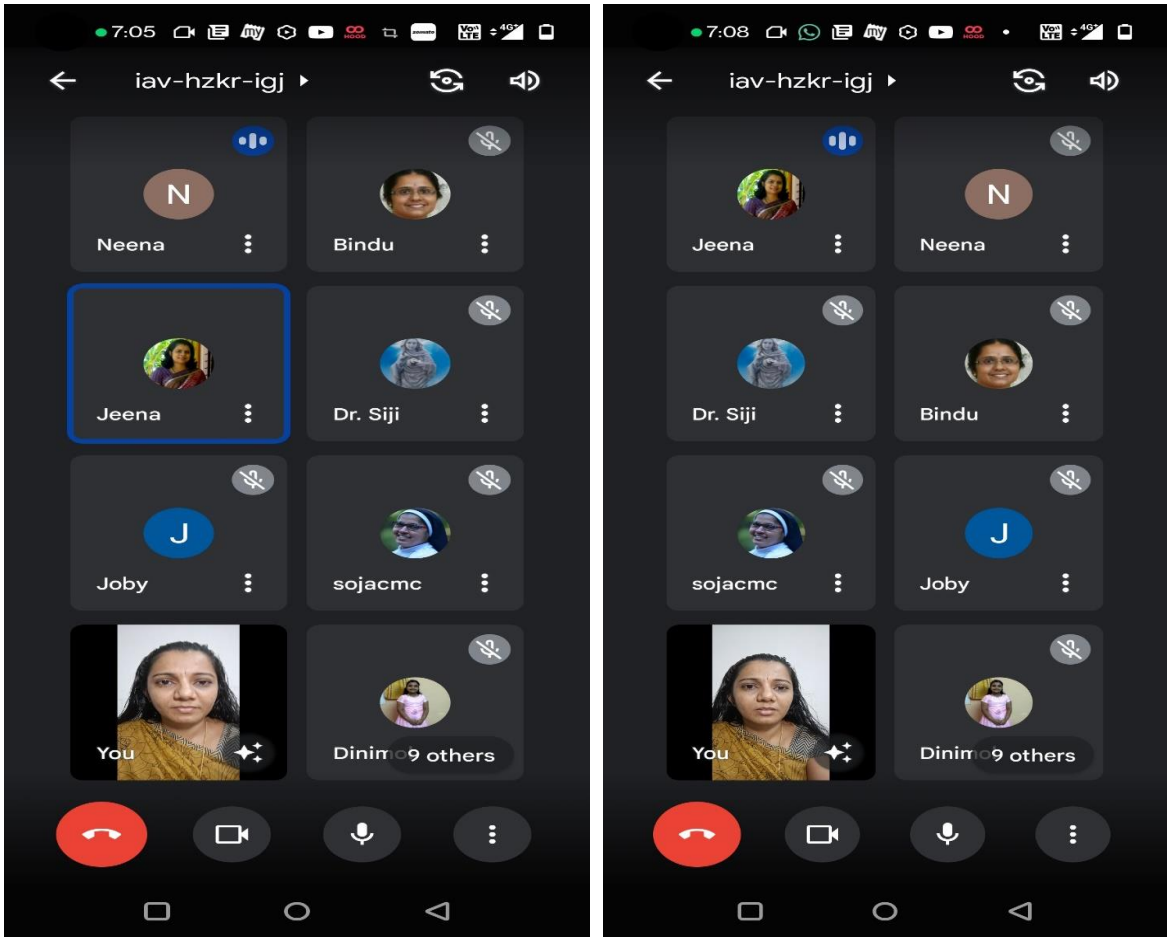
The workshop on 'E-Content Awareness'started exactly at 6.00 PM via Google Meet. Ms. Anu Cleetus, Assistant Professor in Education at St. Joseph College of Teacher Education for Women, Ernakulam hosted the entire workshop meeting. The workshop began with a prayer session lead by Dr. Josephine Joseph, Assistant Professor in Physical Science Education at St. Joseph College of Teacher Education for Women, Ernakulam. The prayer was succeeded by the welcome speech delivered by Dr. Alice Joseph, Principal at St. Joseph College of Teacher Education for Women, Ernakulam. Dr. Alice Joseph officially welcomed the resource person and all the participants to the workshop. She reminded all of the members to utilize the opportunity to enhance their knowledge and competence which would reflect their excellence in theirf unctioning area of the profession. After the welcome address by the Principal, the workshop was initiated by the resource person, Mrs. Jeena Jayan. The resource person enunciated the importance of members being aware of e-content especially in the present era of rapid change and advancements in technology. The workshop covered the basics, relevance, advantages and various forms of e-content. There is a growing pressure on educational systems across the world to use new Information and Communication Technology (ICT) to provide students with the required information and knowledge.In modern knowledge-explosion society, technologies play an important role in the successful transmission of information, the development of creative content, and the inclusion of innovative communication and information.E-content is an extremely effective educational tool. It is the most recent style of teaching that has piqued the interest of students and teachers across all educational systems. It is a valuable resource for the development of a knowledge rich society in which everyone, regardless of gender, religion, cast, creed or region has the

opportunity to create, receive, share, and use knowledge and information for their economic, cultural, social, personal and political development and upliftment. E-content, in its different forms, such as virtual classrooms, web-based learning, mobile-based learning, computer-based learning and digital collaboration successfully serves the virtual learning environment. It is comprised of texts, videos, audio, graphics with visual impressions distributed over the satellite broadcast, internet as well as mobile technologies. E-content enhances the learning experiences by using diverse mediums to visualize and explain abstract concepts. Especially after the covid-19 pandemic stroke the world, the new online learning platforms have emerged and became an essential part of the educational system across the world. E-content would help teachers in coordinating virtual learning effectively and efficiently and for the same, proper awareness regarding e-content and its uses are essential.

The workshop on 'E-Content Awareness turned out to be successful in achieving its objectives. The workshop was effective in raising the awareness of teacher educands regarding e-content. It also helped the faculty members to enhance their knowledge and expertise which would contribute to their excellence in their functioning are in the profession. The workshop provided students with necessary knowledge and skills for the to cater to their pupils and their styles of learning. It was extremely fruitful and beneficial for the students participated in the workshop. The entire workshop winded up at 7.00 PM with the vote of thanks for the programme delivered by Ms. Anu Cleetus, programme coordinator for the workshop and Assistant Professor in Education at St. Joseph College of Teacher Education for Women, Ernakulam.

Photo Gallery

Event poster for the workshop on 'E-Content Awareness'conducted as part of the Faculty Development Programme (FSDP) by the IQAC Cell of St. Joseph College of Teacher Education for Women, Ernakulam on 9th August 2022 via Google Meet



Snippets from the workshop on 'E-Content Awareness'conducted via Google Meet as part of the Faculty Development Programme (FSDP) by the IQAC Cell of St. Joseph College of Teacher Education for Women, Ernakulam on 9th August 2022

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Workshop on 'E-Content Awareness', 2022

Programme Details

Name of the Event	Workshop on 'E-Content Awareness', 2022
Date	09/08/2022
Time	6.00 PM – 7.00 PM
Duration	1 hour
Beneficiaries	Faculty- 18
Platform **Meet Link**	Google Meet https://meet.google.com/iav-hzkr-igj

List of Participants

Teacher educands list:

SL.NO.	NAME OF THE FACULTY	DESIGNATION
1	Ms. Sheeba A.S	Assistant Professor
2	Ms. Rosy Tintu M P	Assistant Professor
3	Bilby Thomas	Teacher Educand
4	Rinta V.S	Teacher Educand
5	Merin J. Kaniyarakam	Teacher Educand
6	Elsa Susan	Teacher Educand
7	Stephy Mendez	Teacher Educand
8	Saniya Kurian	Teacher Educand
9	Akhisha Antony	Teacher Educand
10	Deepa Dinesan	Teacher Educand
11	Sajida Meerasa	Teacher Educand
12	Bivya Sukumar	Teacher Educand
13	Krishna T.D	Teacher Educand

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St. Joseph's College Of Teacher Education For Women, Ernakulam

Submitted By,
Bivya Sukumar
DATED:15/08/2022

Med Science Education

E CONTENT in SCIENCE

PREFACE

The function of education is to give children a desire to learn and to teach them how to use their minds and where to go to acquire facts when their curiosity is aroused. Science is the knowledge that man has gained through the process of experimentation, observation and analysis. Science very efficiently plays the role of being a faithful servant of man. In every walk of life, science is there to serve us. I have great pleasure in presenting this power point presentation on ‘science in everyday life’.

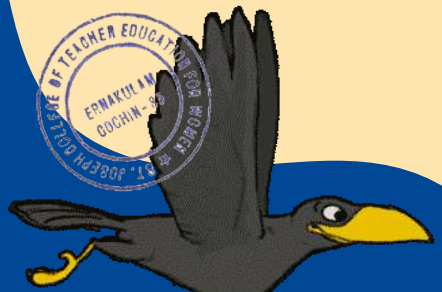
This digital work has been prepared to provide an idea and knowledge about the science happening in our day to day life. The presentation is designed by keeping the academic needs of students. This material will be extremely useful to all high school level students.

Study of science should be made a joyous experience by making use of this learning material. Let this learning material help you in cultivating scientific temper and satisfying your curiosities.

Table of contents

THE THIRSTY CROW

Archimedes' principle



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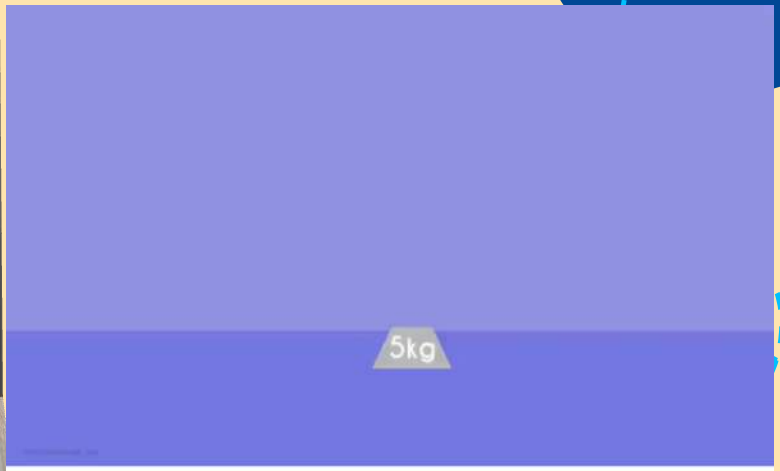
ARCHIMEDES' PRINCIPLE

When an object is immersed partially or completely in a fluid, the buoyancy experienced by it will be equal to the weight of the fluid displaced by it.

Buoyant force = weight of the liquid displaced



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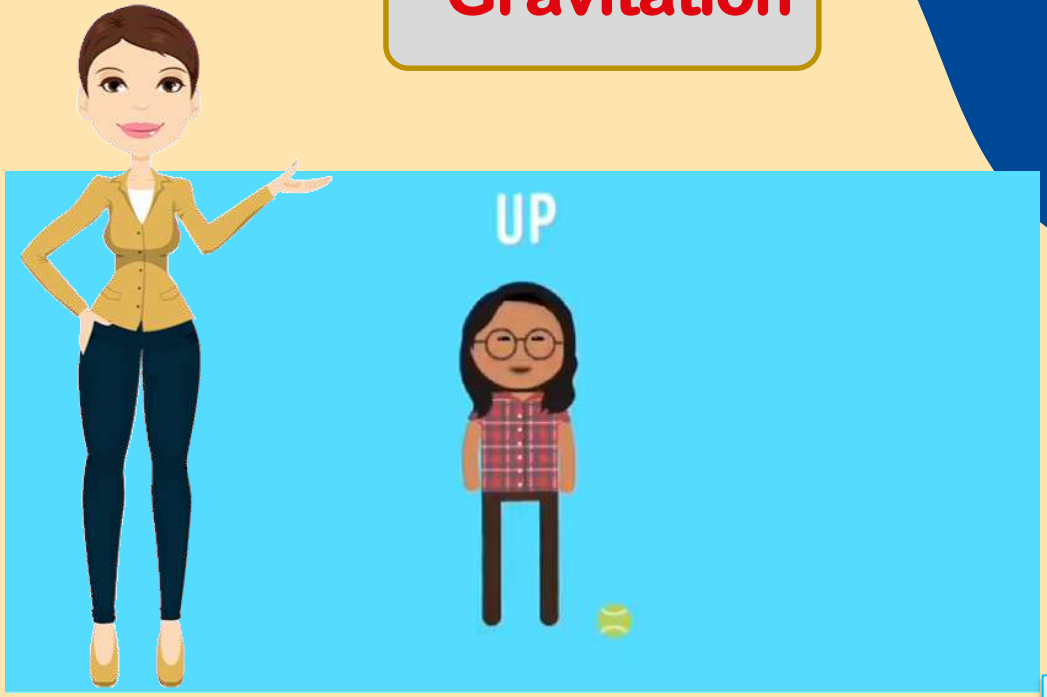
'What Goes Up Must Come Down'

What will happen when you throw a ball?

Gravitation

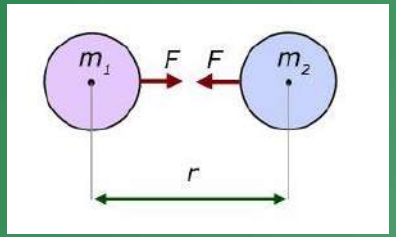


Gravitation

Gravitation is a force that exists among all material objects in the universe. For any two objects or particles having nonzero mass, the force of gravity tends to attract them towards each other.

Universal law of gravitation

$$F = \frac{Gm_1m_2}{r^2}$$



$G = 6.67 \times 10^{-11} Nm^2/Kg^2$

How a ball point pen works ?

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ACIDS

- Tastes sour
- Proton donors
- Increase H^+ ion concentration
- pH < 7
- Turns blue litmus to red

BASES

- Tastes bitter
- Proton acceptors
- Increase OH^- ion concentration
- pH > 7
- Turns red litmus to blue

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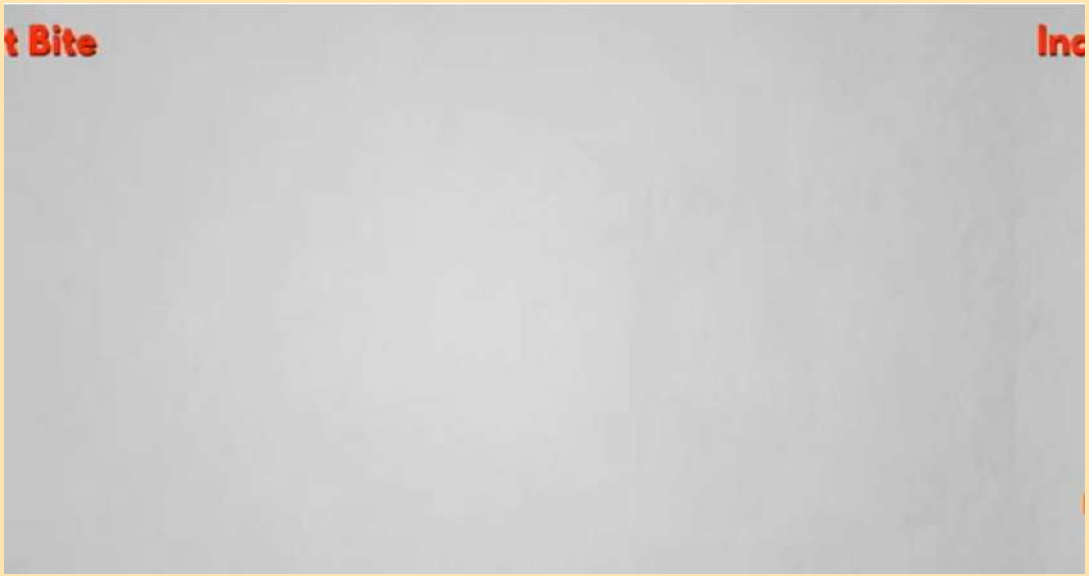
Neutralisation Reaction

What happens when an acid reacts with a base ?



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Conclusion

Archimedes' Principle

Gravitation

Acids and bases

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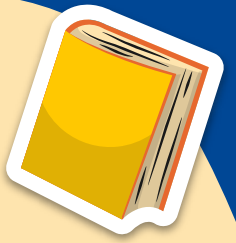

Thank You

ALICE JOSEPH