

Class : IX

Subject : ART - Paper - 1

Drawing or Painting from Still Life

Objects Required :

Assorted size painting brushes, five tubes of acrylic paint, a glass of water, a

Arrangement :

Place the brushes inside the glass of water. Arrange the tubes of paint to make a suitable composition. All the items can be placed on a table.

Date: 10/11/20

DREAMLAND SCHOOL

Class: X

Subject: ART Paper-4

Instruments and tracing paper are allowed, but you are advised to restrict their use as far as possible.

Design an attractive book cover titled "7 of the Greatest Adventure Stories". Size should be 20 cm by 25 cm. Incorporate the name of the author of your choice. Paint the title in bold and theme related Calligraphy. Special attention must be given to a bold and creative design with a good colour scheme.

ଅନ୍ୟାନ୍ୟ  
ବିଶେଷ ମାଧ୍ୟମିକ  
(କଳା)

12 'କଳା' ଶବ୍ଦର ଅର୍ଥ କଣ? ଏହା କଣକୁ ବୁଝାଏ?

- (i) କଳା କଣକୁ ବୁଝାଏ?
- (ii) କଳା କଣକୁ ବୁଝାଏ? ଏହା କଣକୁ ବୁଝାଏ?
- (iii) କଳା କଣକୁ ବୁଝାଏ? ଏହା କଣକୁ ବୁଝାଏ?
- (iv) କଳା କଣକୁ ବୁଝାଏ? ଏହା କଣକୁ ବୁଝାଏ?

ପ୍ରଶ୍ନ

- (i) କଳା କଣକୁ ବୁଝାଏ? ଏହା କଣକୁ ବୁଝାଏ?
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विद्युत आवरण  
विद्युत आवरण (Shielding)

उदाहरण 20 (Example)

- 21. 'क्या हम एक (सी) वायु-मंडल में एक चालक को रख सकते हैं?'
  - (i) हाँ, हम एक चालक को वायु-मंडल में रख सकते हैं।
  - (ii) हाँ, हम एक चालक को (सी) वायु-मंडल में रख सकते हैं।
  - (iii) हाँ, हम एक चालक को (सी) वायु-मंडल में रख सकते हैं।
  - (iv) हाँ, हम एक चालक को (सी) वायु-मंडल में रख सकते हैं।

उत्तर

- (i) विद्युत आवरण (Shielding) का अर्थ है, किसी चालक को वायु-मंडल में रखना, जिससे वायु-मंडल में बिजली का प्रवाह रुक जाता है।
- (ii) चालक को वायु-मंडल में रखना, जिससे वायु-मंडल में बिजली का प्रवाह रुक जाता है।
- (iii) चालक को वायु-मंडल में रखना, जिससे वायु-मंडल में बिजली का प्रवाह रुक जाता है।
- (iv) चालक को वायु-मंडल में रखना, जिससे वायु-मंडल में बिजली का प्रवाह रुक जाता है।

**SUBJECT-MATHEMATICS**

**CLASS-X**

**Chapter:-Quadratic Equation In One Variable**

**Assignment:-3**

Example1

Solve  $x^2-4x+1=0$ .

Ans. Comparing this equation with  $ax^2+bx+c=0$ , we get  $a=1, b=-4, c=1$

By using S.A formula  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ , we obtain

$$x = \frac{4 \pm \sqrt{12}}{2}$$

$$= 2 \pm \sqrt{3}$$

Hence, the roots of the equation are  $2+\sqrt{3}$ ,  $2-\sqrt{3}$ .

Example2

Solve  $3x^2-4x-4=0$ .

Ans. Comparing this equation with  $ax^2+bx+c=0$ , we get  $a=3, b=-4, c=-4$

By using S.A formula  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ , we obtain

$$x = \frac{4 \pm \sqrt{64}}{6}$$

$$= 2, -2/3$$

**Nature of the roots of a quadratic equation**

Discriminant  $D = b^2 - 4ac$ .

If  $D > 0$ , then we get two real and distinct roots.

If  $D < 0$ , then we get no real roots.

If  $D = 0$ , then we get two equal real roots.

**HOME WORK**-Solve the equations

Q1.  $x^2 - 5x - 10 = 0$

Q2.  $5x(x+2) = 3$

Q3. Discuss the nature of the roots  $x^2 - 4x - 1 = 0$

Q4. Find the value of  $k$  for which the equation has equal roots

$9x^2 + kx + 1 = 0$

**Class-X, EVS, Ch-3, Home Assignment.....**

- 1 What does urban environment mean?
- 2 Why does urban environment need attention?
- 3 How does urban environment affect health?
- 4 What includes under urban environment health?
- 5 What are the criteria commonly used to define degree of urbanisation?
- 6 What could be responsible for an unorganised urban environment?
- 7 What are the benefits of urban development?
- 8 Why is sustainability important in urban areas?
- 9 How can we achieve urban sustainability?
- 10 What are the positive and negative effects of urbanization?
- 11 What are the problems of cities?
- 12 What is the impact of urbanization?

## Class X

21.04.2020

### History

#### *The First World War*

The First World War began in Europe, in the year 1914. Its extent was over the entire world including Asia, Africa, and the Pacific. This period witnessed innovations in the methods of destruction and defence, which in turn termed the period as 'the First World War'. The war was fought on the land and in the air, on the sea and under it, with all the resources of the world mobilised for military purposes.



### **Causes of the First World War**

#### ***Militant Nationalism***

This was the result of Aggressive Nationalism, Economic Competition and International Tension, which emerged in Europe in the second half of the 19th century. Aggressive nationalism basically meant the immense love and interest for one's own country and hatred towards the other countries. Fierce economic competition meant cut-throat commercial ambitions of the European nations, which ended up with an armed conflict amongst all the other nations, further leading to international tension and problems across the world.

### ***Race for Armaments***

The mad race for armaments which began soon after the Franco-Prussian War was one of the reasons, which led to the First World War. There was a great competition amongst Britain, Germany, France and Africa for increasing its armaments, in the name of self-defence and preservation of peace. But in reality, it filled the atmosphere with fear, apprehension and mutual hatredness.

### ***Division of Europe into Two Hostile Groups***

In Europe, there were two kinds of States, first was Single nation States like France, Holland and Germany, which were based on common languages and common traditions that they shared. And the other kind were the Imperial States consisting Austria-Hungarian empire and the Russian empire, who spoke different languages and had different cultural traditions. Thus Europe was divided into two major camps – on one side were England, France and Russia known as Triple Entente and on the other side Germany, Austria – Hungary, Italy and Turkey known as Triple Alliance was formed. The suspicions, fears, rivalry and enmity between the two camps was a major step towards World War I.

### ***Scramble for new Colonies***

France, Spain, Portugal and England had established colonies in various parts of the world. With Germany emerging as a powerful industrial nation, there was a great rivalry among the European nations to set up and control colonies.

### ***Sarajevo Crisis (Immediate Cause)***

One of the major causes of the First World War was the assassination of Archduke Francis Ferdinand, the heir to the throne of Austria-Hungary at Sarajevo, capital of Bosnia on 28th June, 1914. The assassination was planned and carried out by a secret society of the extremist Serbian nationalists called the **Black Hand** or the **Union of Death**. The assassin, Gavrilo Princep was nineteen year old Bosnian, the first student revolutionary to change the course of the history of Europe.

Austria put the blame on the Serbian government for this crime and sent an ultimatum. As Serbia refused to comply with some conditions, because Russian instigated her,so Austria declared a war against Serbia on July 28,1914.

Home work

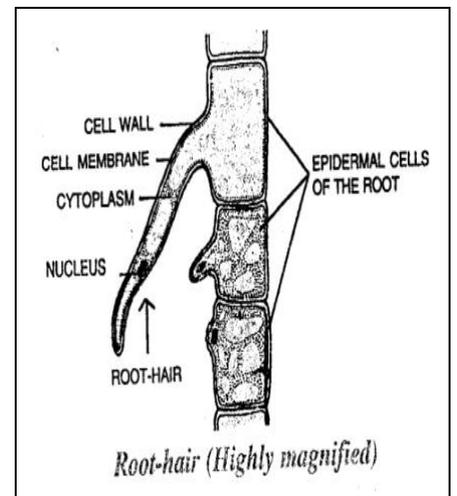
1. What was the immediate cause of the First World War?
2. Name the countries that formed the Allied Powers.
3. Explain any three causes of the First World War.
4. What do mean by militant nationalism?
5. When First world war was started?

DREAMLAND SCHOOL  
BIOLOGY - CLASS 10 (2020 – 2021)  
ASSIGNMENT

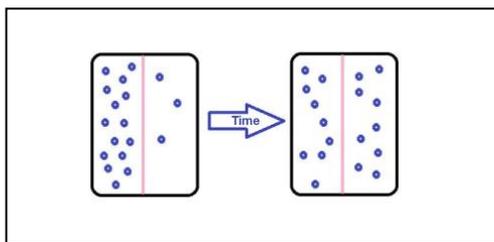
**CHAPTER – ABSORPTION BY ROOTS**

**BRIEF EXPLANATION –**

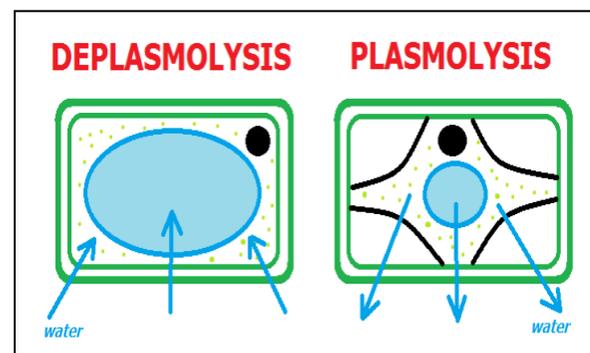
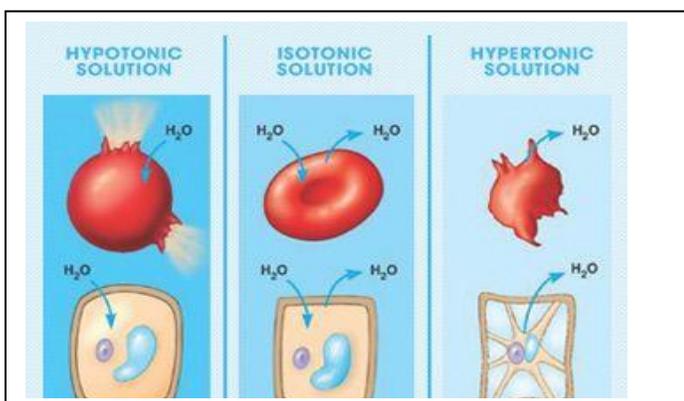
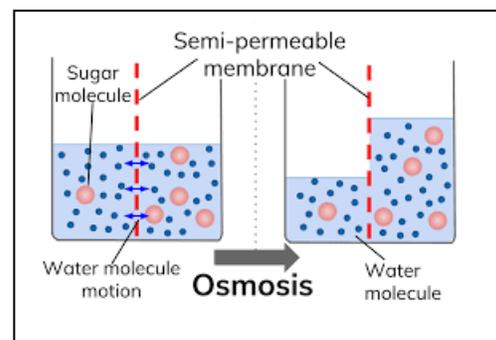
- **Absorption** is a physiological process of plants which enables uptake of water by roots to be used by the plant for various processes like photosynthesis, transpiration, transportation of various substances, giving mechanical support ( rigidity).
- Roots for absorbing water should have three basic characteristics-
  - 1) Surface area of roots should be enormous
  - 2) Root hairs contain cell sap of higher concentration than of surrounding water
  - 3) Root hair have thin walls
- The water travels upward through the stem by 5 phenomenon
  - 1) **Diffusion** – free movement of molecules of a substance from Region of higher concentration to region of lower Concentration when the two are in contact.
  - 2) **Osmosis** - movement of water molecules from higher to Lower concentration across a semi permeable membrane
  - 3) **Imbibition** – absorption of water by surface attraction.
  - 4) **Passive transport** - similar to diffusion.
  - 5) **Active transport** – passage of substance ( salt or ion) from Lower to higher concentration using energy.
- **Endosmosis** – inward diffusion of water through semi permeable Membrane when surrounding solution is less concentrated ( solute concentration less and water concentration more) Cell tends to swell up.
- **Exosmosis** - outward diffusion of water through semi permeable membrane when surrounding solution is more concentrated ( solute concentration more and water concentration less).cells shrink.
- **Osmotic pressure** – it is the minimum pressure that must be exerted to prevent the passage of pure solvent into the solution when the two are separated by a semi permeable membrane.
- **Tonicity** – relative concentration of the solution that determine the direction and extent of diffusion is called tonicity. It is of three types –
  - 1) **Isotonic** – same concentration on both the sides.
  - 2) **Hypotonic** - solution outside has a low solute concentration and high water concentration causing water to move inside ( endosmosis). Outside means outside the cell.
  - 3) **Hypertonic** – solution outside the cell has a higher solute concentration and low water concentration causing water to move out of the cell. ( exosmosis).
- When the cell reaches a state where it cannot accommodate any more water , it is called **turgid**.



- **Turgor pressure** - it is the pressure the cell contents apply on the cell wall.
- **Wall pressure** - it is the pressure the cell wall applies on the cell content.
- When a cell is placed in pure water then it remains in fully distended condition and shows **turgidity**.
- When the cell is placed in 5% salt solution the water moves out of the cell as the water concentration inside the cell is higher than the water concentration in the solution by the process of exosmosis. Due to this the cytoplasm and plasma membrane will shrink away from the cell wall resulting in **plasmolysis** & the condition is known as **flaccidity**.
- Again when the cell will be placed back in pure water then water will move into the cell resulting in **deplasmolysis**.
- Turgidity is required for the following-
  - 1) Provides rigidity.
  - 2) Helps push through hard ground.
  - 3) Build up root pressure.
  - 4) Helps in opening and closing of stomata.
  - 5) Helps in turgor movement.
- **Wilting** – drooping of leaves due to loss of turgidity.
- Four main forces in ascent of sap( upward movement of sap)
  - 1) **Root pressure**- pressure developed in root for drawing up water and rise up the stem.
  - 2) **Capillarity** – narrower the diameter of the xylem the water will move up more height exerting capillarity force.
  - 3) **Transpirational pull**- tendency of water molecules to be pulled up the xylem to fill up the vacuum created by loss of water due to transpiration. Water molecules has a tendency to remained joined ( **cohesion** – attachment of particles of same substance)
  - 4) **Adhesion** – it causes water to stick to the surface of cells thus drawing more water molecules from below when leaf cells lose water.



Diffusion



### **ASSIGNMENT 3**

- 1) Define the following:-
  - a) Turgidity
  - b) Plasmolysis
  - c) Exosmosis
  - d) Active transport
  - e) Osmotic pressure
  - f) Hypertonic solution
- 2) Differentiate between –
  - a) Isotonic & hypotonic solution ( definition)
  - b) Plasmolysis & deplasmolysis ( direction of movement of water)
  - c) Exosmosis and endosmosis ( definition)
- 3) Give reason –
  - a) We gargle in saline water in case of throat infection.
  - b) A closed can of dried seeds burst open if some water enters it by accident.
- 4) What is tonicity?
- 5) Name the following :-
  - a) The pressure through which water can rise upto some feet
  - b) The inward movement of solvent molecules through plasma membrane of a cell.
  - c) Condition of cell in which cell contents are shrunken.
  - d) Solutions which have the same osmotic pressure.

## Chemistry Class 10

### Chapter 3: Acids, Bases and Salts

- All acids compulsorily have hydrogen as their constituent element in the form of proton. Acids are defined as compounds which contain one or more hydrogen atoms and when dissolved in water produce hydronium, the positively charged ions.
- Acids can be classified in different ways. Depending on their source it can be classified into organic acids (acids which are obtained usually from plants, contain carbon atom as well as hydrogen atom) inorganic acids (acids obtained usually from minerals, do not contain carbon).
- Depending on their concentration it can be classified into concentrated acid (acid which contains a very small amount of water or no water) dilute acid (acid which contains far more amount of water than its own mass). Concentration of an acid tells us the amount of water present in the acid. Strength of an acid is the measure of concentration of hydronium ions it produces in its aqueous solution.
- Depending on their basicity acids can be classified into monobasic acid (acid which on ionisation in water produce 1 hydronium ion per molecule of acid), dibasic acid (acid which ionise into 2 hydronium ions) and tribasic acid (acid which produce 3 hydronium ions) [Basicity is defined as the number of hydronium ions that can be produced by ionisation of 1 molecule of that acid in water.]
- **Preparation of acid:** Binary acids can be prepared by synthesis. It can be obtained by action of water on non-metallic or acidic oxides (Eg: sulphur dioxide reacts with water to give sulphurous acid). It can be prepared by the oxidation of non-metals (sulphur reacts with nitric acid to form sulphuric acid, water, and nitrogen oxide). It can be formed by displacement. Normal salts of more volatile acids are displaced by less or non-volatile acid. (Eg: common salt reacts with sulphuric acid to form sodium bicarbonate and hydrochloric acid)
- **Physical properties of acids:** Acids have a sour taste. Some acids are solids and some are liquids at room temperature. All strong mineral acids have corrosive action on the skin and cause painful burns. They change the colours of indicators, which are complex substances that acquire separate colours in acidic and basic mediums. Litmus turns blue to red, methyl orange turns orange to pink, phenolphthalein remains colourless.
- **Chemical properties:** Acid reacts with active metals to form salt and hydrogen. Acid reacts with base to give salt and water. Acid reacts with carbonates/bicarbonates to form salt, water and carbon dioxide. In this case if the salt is insoluble then the reaction does not proceed. Acids react with sulphite/bisulphite to give salt, water and sulphur dioxide. Acids react with sulphides to give salt and hydrogen sulphide. Chlorides do not

react with any dilute acids. Chlorides react with conc. sulphuric acid on warming to liberate hydrogen chloride. Nitrates also do not react with dil acids, however lead nitrate solution reacts with both dil and conc. acids.

### **ASSIGNMENT**

1. What do you understand by the statement 'acetic acid is a monobasic acid'
2. Give a balanced equation for reaction of nitrogen dioxide with water
3. Lead carbonate do not react with dil. HCl. Explain
4. How is an acid prepared from a non metal, salt. Give an equation
5. Define tribasic acid with example
6. Name the positive ion formed when acid is dissolved in water. Give its structure.
7. Define the Basicity of an acid.
8. Give the Basicity of nitric acid, sulphuric acid and phosphoric acid
9. Define indicators
10. Differentiate between organic and inorganic acids with example

## Class10

### व्याकरण:

दिए गए विषय पर लगभग 250 शब्दों में लेख लिखें--

क)जी. एस. टी एक अप्रत्यक्ष टैक्स है जो की सरकार द्वारा व्यक्ति या किसी संस्थान से वस्तुओं व सेवाओं पर लिया जाता है। जी. एस. टी के लाभ और हानि पर अपने विचार लिखें।

**Read the extract given below and answer in Hindi the questions that follow :**  
निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :

“पाथर पूजे हरि मिले, जो मैं पूजू पहार।  
ताते ये चाकी भली, पीस खाय संसार।।”

- (i) इन पंक्तियों में कबीरदास जी ने क्या कहने का प्रयास किया है?
- (ii) कबीर ने हिन्दुओं में फैली किन-किन बुराइयों का विरोध किया है?
- (iii) हरि के गुणों के बारे में कबीरदास जी ने क्या कहा है?
- (iv) कवि ने चाकी को भला क्यों बताया है?

#### Question 9.

**Read the extract given below and answer in Hindi the questions that follow**  
निम्नलिखित पद्यांश को पढ़िए और उसके नीचे लिखे प्रश्नों के उत्तर हिन्दी में लिखिए :

राजा के दरबार में, जैसे समय पाय।  
साईं तहाँ न बैठिए, जहाँ कोउ देय उठाय।।  
जहाँ कोउ देय-उठाय, बोल अनबोले रहिए।  
हँसिये नहीं हहाय, बात पूछे ते कहिए।।  
कह 'गिरधर कविराय' समय सों कीजै काजा।  
अति आतुर नहिं होय, बहुरि अनखैहें राजा।।

- (i) राजा के दरबार में कब जाना चाहिए? और किस बात का ध्यान रखना चाहिए?
- (ii) कवि ने इन पंक्तियों में और क्या बात बताई है?
- (iii) अति आतुर होने के लिए कवि ने क्यों मना किया है?
- (iv) हमको अपनी बात कब कहनी चाहिए?

## **CLASS-X**

### **SUBJECT – GEOGRAPHY**

#### **CHAPTER-WATER RESOURCES (First Part)**

#### **ASSESSMENT-3**

India is a land of rich natural resources, water being one of the most vital of all. India being essentially an agricultural country, we need water for agriculture as well as industry.

The main sources of water are as follows-

- Surface water
- Ground water
- Lagoons and backwater

#### **Surface water**

Rainfall is the main sources of fresh water in India. From precipitation along India receives 4000 km<sup>3</sup> water. Surface water is available on the surface of the earth in the forms of rivers, lakes, ponds and canals.

#### **Ground water**

The part of rainwater that seeps through the cracks and crevices into the ground is called ground water.

- It is India an important water source in India.
- Due to the highly variable nature of climate, ground water has become a popular alternative for irrigation domestic water use.
- The distribution of ground is very uneven in India.

**Irrigation:** Irrigation refers to the process of providing water through artificial means to an area of land for cultivation of crops.

**Importance of irrigation in India:**

1. Uncertainty and irregularity of monsoonal rainfall.
2. Uneven distribution of rain across the country.
3. Seasonal type of rainfall.
4. HYV (High Yielding Variety) seeds need more water.
5. Double or multiple cropping.
6. Torrential rainfall.

**Methods of irrigation:**

**Canal irrigation:** Canal irrigation amount is about 40% of the total irrigated area in the country. This type of irrigation is more prevalent in the Northern part of the country where the rivers are perennial and flow through flat terrain.

**Types of canal Irrigation**

**a)Inundation Canal:**

**Advantages:**

1. Easily and cheaply built.
2. Useful in controlling floods.

**Disadvantages:**

1. Uncertainty of water supply.
2. Only can be used during floods.
3. Only low land can be irrigated.

**b)Perennial Canal:**

**Advantages:**

1. These canals serve throughout the year.
2. Cultivation of some crops can be carried round the year.

### **Disadvantages:**

1. Due to over flooding the soil become unsuitable for farming.
2. Sometimes due to water-logging the areas turn into swamps.
3. It is expensive to construct.

### **Northern India is more suitable in canal irrigation than the South, reasons-**

- The rivers of northern plains are perennials as they are snow fed than southern India.
- The surface of the northern plains is flat and soft, but in the south the region become rocky.
- Due to the agricultural production the demand for irrigation is greater than southern India.

### **II) Tank Irrigation:**

Tank irrigation is useful in the areas which are dependent on rainfall for their water supply.

Tanks are used mostly in peninsular India, where the underlying hard rocks do not allow the water to seep through.

### **Favorable Conditions for building tanks in Peninsular India:**

1. In peninsular India area is uneven with many natural tanks.
2. The Deccan plateau consists of underlying hard, non-porous rocks.
3. In peninsular India tanks collect water during rainy season.

### **Advantages of tank irrigation:**

1. It is prevalent in Deccan plateau region where water is collected for irrigation.
2. It is cheaper than other irrigation.
3. Tank irrigation can be used in dry season.
4. Tank water can be used for domestic purpose.



### **Disadvantages of tank irrigation:**

1. Large amount of water is wasted through evaporation.
2. Tanks are non-perennial and may dry up during summer.
3. Tanks often have to be desilted.

**Areas-**South India mostly in the states of Andhra Pradesh, Telengana, Tamil Nadu and Karnataka.

### **ASSESMENT QUESTIONS:**

1. Write the importance of irrigation.
2. Write two disadvantages inundation canal.
3. Northern India is more suitable in canal irrigation than south India – give reason
4. In which states of India tank irrigation is common?
5. Write the advantages of tank irrigation.
6. Tank irrigation is common in peninsular India-give reason.

DREAMLAND SCHOOL  
CLASS- X  
ENGLISH LANGUAGE  
HOME ASSIGNMENT 2  
ACADEMIC YEAR- 2020-21

- Fill in the blanks with suitable words.
  1. The office closes at 5, so you should be back home \_\_\_ 6.
  2. The next meeting will be held \_\_\_ Friday, 23<sup>rd</sup> June.
  3. We were at Ooty \_\_\_ 15<sup>th</sup> \_\_\_ 22<sup>nd</sup> May.
  4. Don't leave the room \_\_\_ I'm back.
  5. What happened \_\_\_ the teacher left the class?
  6. As the cock crowed \_\_\_ dawn, I got out of the bed.
  7. Mr. Williamson reaches here \_\_\_ Monday \_\_\_ the evening and leaves \_\_\_ Wednesday morning.
  8. I met Mukul \_\_\_ a cricket match.
  9. She was born \_\_\_ Mathura \_\_\_ Uttar Pradesh.
  10. The boat got stuck to something \_\_\_ the bridge.
  11. Shalini's name was \_\_\_ the top of the list \_\_\_ Ashima's
  12. The car and the bus collided \_\_\_ the middle of the road.
  13. There are very few trees \_\_\_ the top of the hill but many \_\_\_ the valley.
  14. You should sign neither \_\_\_ nor \_\_\_ the stamp but \_\_\_ it.
  15. A beautiful painting is hanging \_\_\_ the wall just \_\_\_ the window.
  16. She stood \_\_\_ the window and gazed at the clouds floating \_\_\_ the sky.
  17. There is a huge playground \_\_\_ the school building and the hostel.
  18. She took a key \_\_\_ her purse and opened the door.
  19. The ball came \_\_\_ the window and fell \_\_\_ the dustbin.
  20. The moon goes \_\_\_ the earth.
- Write a notice for the school notice board, informing all the students about an upcoming blood donation camp which is going to be held in your school, also ask the students to participate in this event.
- Write an email to the Chief Medical Officer of the Uttarpara General Hospital, inviting him to preside over the event of the blood donation camp which is going to be held in your school.

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PREPARED BY-  
SANTANIL BHATTACHARYA ANUSUA SABUI

CLASS-X  
SUBJECT-PHYSICS  
CHAPTER-3: MACHINES

**Simple Machine**

**Machines made up of very few parts are simple machines.**

**Important terms related to simple machines**

**Effort** : An effort is the force applied to a machine to do work.

**Load** : Load is the force that a machine exerts on a given body to be moved.

**Fulcrum** : A fixed point about which the machine can turn.

**Mechanical advantage** : The ratio of the load to the effort is called the mechanical advantage of the machine.

$$\text{M.A.} = \frac{\text{Load (L)}}{\text{Effort (E)}} \quad \text{or} \quad \text{M.A.} = \frac{\text{effort arm}}{\text{load arm}}$$

**MA > 1** : If the effort needed by machines is less than the load. Machine works as force multiplier.

**MA < 1** : If a machine needs an effort greater than the load. Machine gives gain in speed.

**MA = 1** : If the effort needed is equal to the load. Machine is used to change the direction of effort as there is no gain in force or speed.

**Efficiency (  $\eta$  ) of a Machine**

Efficiency of a machine is the **ratio of work output to the work input**. It is denoted by  $\eta$  (eta).

$$\eta = \frac{W_{\text{output}}}{W_{\text{input}}}$$

Efficiency is usually expressed as a percentage,  $\eta = \frac{W_{\text{output}}}{W_{\text{input}}} \times 100 \%$

**Principle of a Machine**

When energy is supplied to a machine by applying an effort, it does some useful work. The point at which energy is supplied to a machine by applying effort, is called the **effort point**. The point where energy is obtained by overcoming the load, is called the **load point**.

**Input energy : Work done at the effort point**  
= Effort  $\times$  Displacement of the point of application of effort.

**Output energy : Work done at the load point**  
= Load  $\times$  Displacement of the point of application of the load.

**Ideal Machine** : An ideal machine is that in which there is no loss of energy in any manner. The work output is equal to the work input.  
i.e. the efficiency of an ideal machine = 100%

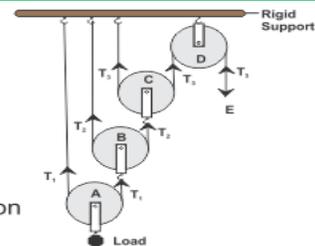
**Combination of Pulleys**

**Using one fixed pulley and other movable pulleys**

In this system there are  $n$  movable pulleys and one fixed pulley (e.g. in fig, 3 movable pulleys A, B, C and one fixed pulley D).

Formula for M.A. =  $2^n$  where  $n$  = number of movable pulleys with 1 fixed pulley  
Velocity ratio V.R. =  $2^n$

Efficiency = M.A. / V.R. = 1 or 100 % (for ideal situation)  
In actual practice, the weight of the pulleys and string, and the friction between the bearings of the pulleys, both reduces the efficiency.

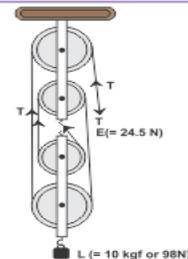


**Using several fixed pulleys in two blocks - Block and tackle system**

In this system of pulleys, two blocks of fixed pulleys are used.

One block (upper) having several fixed pulleys is fixed to a rigid support and the other block (lower) having several fixed pulleys is movable. This is called block and tackle arrangement.

The number of pulleys used in the movable lower block is either equal to or one less than the number of pulleys in the fixed upper block.



CLASS-X  
 SUBJECT-PHYSICS  
 ASSIGNMENT-3  
 CHAPTER-3: MACHINES  
 (F.M.-25)

**Question-1**

[5×1=5]

1. 'A machine can not be used as a force multiplier as well as speed multiplier'-Why?
2. Which type of pulley is used to change the direction of effort in a convenient direction?
3. State the principle of lever.
4. For a machine velocity ratio.....but mechanical advantage .....

**Question-2**

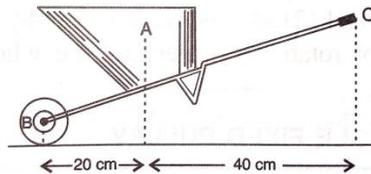
[4×2=8]

1. 'We use machine to make job easier'-Explain the statement.
2. Derive the relationship between mechanical advantage, velocity ratio and efficiency of a machine.
3. Give one example of a first class lever which is a force multiplier and another example which is a speed multiplier.
4. (i) In a single movable pulley, if the effort moves by a distance  $x$  upwards, by what height is the load raised?  
 (ii) State one reason why is mechanical advantage less than velocity ratio for an actual machine.

**Question-3**

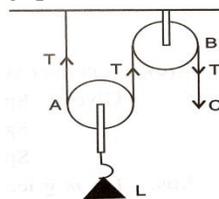
[4×3=12]

1. Write the position of load, effort and fulcrum of a second class lever. Give an example of this type of lever. What is the value of mechanical advantage of this class of lever? How it differs from third class lever?
2. Figure below shows a wheel barrow of mass 15 kg carrying a load of 30 kg with its centre of gravity at A. The points B and C are the centre of wheel and tip of the handle such that the horizontal distance  $AB=20\text{cm}$  and  $AC=40\text{cm}$ .



Find: (i) the load arm, (ii) the effort arm, (iii) the mechanical advantage, and (iv) the minimum effort required to keep the leg just off the ground.

3. A pulley system with  $V.R.=4$  is used to lift a load of 175 kgf through a vertical height of 15 m. The effort is required is 50 kgf in downward direction. ( $g=10 \text{ N/kg}$ ). Calculate: (i) Distance moved by the effort, (ii) Work done by the effort, (iii) M.A. of the pulley system, (iv) Efficiency of the pulley system.
4. From the figure below, answer the following questions:



- (i) What kind of pulleys are A and B?
- (ii) State the purpose of pulley B.
- (iii) What effort has to be applied at C just to raise the load  $L=20 \text{ kgf}$ ?

CLASS-X  
SUBJECT-PHYSICS  
CHAPTER-4: REFRACTION OF LIGHT AT PLANE SURFACE

**Refractive Index**

**Refractive Index** is a characteristic property of a medium. The refracting ability of a medium is measured by its refractive index.

$$\text{Refractive index} = \frac{\text{Speed of light in the medium from which light travels}}{\text{Speed of light in the medium into which light travels}}$$

**Absolute Refractive index of a medium** =  $\frac{\text{Speed of light in air or vacuum}}{\text{Speed of light in medium}}$

Refractive index of second medium with respect to first medium =  ${}_1\mu_2 = \frac{\text{Speed of light in medium 1}}{\text{Speed of light in medium 2}}$  or  ${}_1\mu_2 = \frac{\mu_2}{\mu_1}$

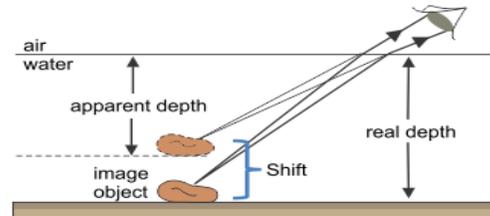
where  $\mu_1$  and  $\mu_2$  are absolute refractive indices for medium 1 and 2 respectively

Medium	Refractive Index
Air	1.003
Water	1.33
Alcohol	1.36
Kerosene	1.42
Types of glasses	1.5-1.7
Diamond	2.42

Those with higher values of refractive index are optically denser than those with lower values of refractive index. e.g. water is optically denser than air but optically rarer than glass.

**Real and Apparent Depth**

An object placed in a denser medium when viewed from a rarer medium, appears to be at a depth less than its real depth. This is because of refraction of light.



$\mu_{\text{Rarer}} \mu_{\text{Denser}} = \text{real depth/apparent depth}$

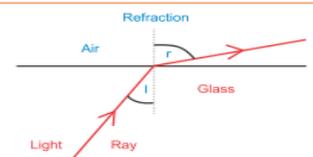
Shift = Real depth – Apparent depth  
or  
Shift = Real depth  $\times \left(1 - \frac{1}{\mu_{\text{Rarer}} \mu_{\text{Denser}}}\right)$

The shift by which the object appears to be raised depends upon

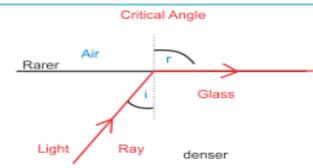
- The refractive index of the medium
- The thickness of the denser medium
- Colour (or wavelength) of incident light

**Critical Angle**

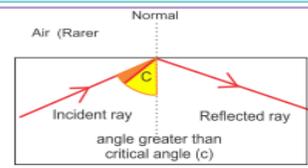
1) When the **angle of incidence** of light ray leaving the glass is **less than the critical angle**, the light ray speeds up on leaving the glass and is refracted **away from the normal**.



2) When the **angle of incidence** of the light ray reaches the **critical angle** the angle of refraction is **90°**.  
**Critical angle ( $i_c$ ) is the angle of incidence in the denser medium corresponding to which the angle of refraction in rarer medium is 90°.**  
 $i = i_c, r = 90$



3) When the **angle of incidence** of the light ray is **greater than the critical angle** then no refraction takes place. Instead, all the light is **totally reflected back into the denser medium**. This is called **total internal reflection**.



**CLASS-X**  
**SUBJECT-PHYSICS**  
**ASSIGNMENT-4**  
**CHAPTER-4: REFRACTION OF LIGHT AT PLANE SURFACE**  
**(F.M.-25)**

**Question-1**

[5×1=5]

1. 'Refractive index can be less than 1'-When?
2. Write the name of one optical instrument by which you can find the position of minimum deviation of a prism.
3. Find the critical angle of water-air interface ( $\mu=4/3$ ).
4. Which colour of light deviated by prism is least and which colour the most?
5. What is lateral displacement?

**Question-2**

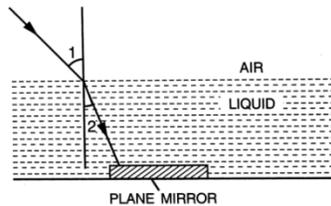
[4×2=8]

1. A boy uses blue colour of light to find the refractive index of glass. He then repeats the experiment using red colour of light. Will the refractive index be the same or different in the two cases? Give reasons to support your answer.
2. A coin is placed at the bottom of a beaker containing water of refractive index  $4/3$  to a depth of 28 cm. By what height the coin appears to be raised when seen from vertically above?
3. Write the factors on which deviation produced by prism depends.
4. What is meant by the statement 'critical angle for diamond is  $24^\circ$ '?

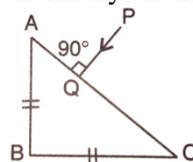
**Question-3**

[4×3=12]

1. A ray of green light enters a liquid from air, as shown in the diagram below. The angle 1 is  $45^\circ$  and angle 2 is  $30^\circ$ .



- (i) Find the refractive index of the liquid
  - (ii) Show in the diagram the path of the ray after it strikes the mirror and re-enters in air. Mark in the diagram the angles wherever necessary.
  - (iii) Redraw the diagram if plane mirror becomes normal to the refracted ray inside the liquid. State the principle used.
2. In the figure below, a ray of light PQ is incident normally on the face AB of an equilateral glass prism.



- (i) Complete the ray diagram showing its emergence into air after passing through the prism. Take critical angle for glass= $42^\circ$ .
  - (ii) Write the angles of incidence at the faces AB and AC of the prism.
  - (iii) Name the phenomenon which the ray of light suffers at the face AB, AC and BC of the prism.
3. (i) Why total internal reflection is better than normal reflection?  
 (ii) What is optical fibre? Write the name of the principle on which optical fibre works.
  4. For any prism prove that,

$$\mu = \frac{\sin \frac{A + \delta_m}{2}}{\sin \frac{A}{2}}$$

[Where  $\mu$ =refractive index of the material of the prism, A= angle of prism,  $\delta_m$ =angle of minimum deviation]

Class – X

Subject- SUPW

DATE – 21.04.2020(Tuesday)

Project Topic – **HANDKERCHIEF DESIGN**

Students I hope all of you are not so familiar with the work design of handkerchief so I am going to explain it to you. Basically handkerchief painting is a process of drawing something on an handkerchief and beautifully coloring it. First of all you have to take a clean white cotton handkerchief and in a beautiful way you should draw a design or a drawing of your own choice, then you have to color it with your imaginative power. The work should be done in a very neatly and cleanly way.

After making this craft you have to write about this topic in your project file, Photographs of handkerchief design are to be pasted in your project and the photographs of materials used should also be passed in a neat way. The heading should be written in a black ball pen and the contains inside should be written in a blue ball pen, any type of ink or glitter should not be used.

The Formation of your project should be:-

1. Preface
2. Acknowledgement
3. Topic Name(HANDKERCHIEF DESIGN)
4. Introduction
5. Materials Required
6. Procedure
7. Conclusion
8. Bibliography

Students I hope all of you will use your innovative ideas and enjoy doing this project.