FIRAYALAL PUBLIC SCHOOL, RANCHI

Grade- X **Module-1/1**

SUBJECT-INFORMATION TECHNOLOGY (402)

CHAPTER NAME- 3. BASIC ICT SKILLS-II
TOPIC: OPERATING SYSTEM
Link- https://youtu.be/9IR88l4TN5Q

(SADANAND SAM – YOUTUBE CHANNEL)

NOTE:- Any query related to link and content, text us on the given e-mail-

fpsprincipal2020@gmail.com

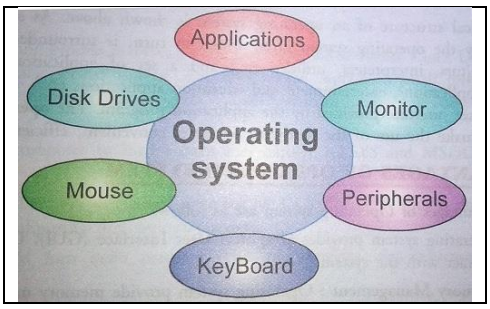
TUTORIALS:-

3.1.BASIC CONCEPTS OF OPERATING SYSTEM

Operating system is an integrated set of programs that controls the resources of a computer system and provides its users with an interface that is more convenient to use.
The objectives of an operating system are as follows:-

- Making a computer convenient to use.
- Managing the resources of a computer system.

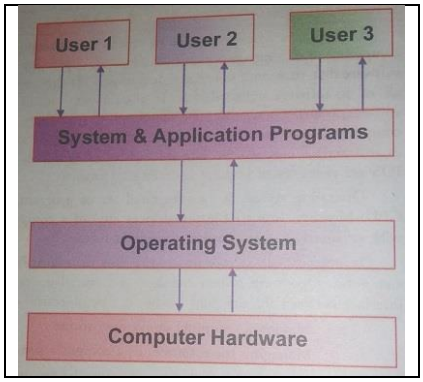
Without an operating system, a computer is useless. Example:- **Windows, Linux, Unix, DOS, Android and IOS.**
The components controlled by operating system are as follows:-



3.2. FUNCTIONS OF OPERATING SYSTEM

The main functions of an Operating System are as follows:

1. Making a computer system convenient to use.
2. To allocate resources to processes.
3. Provide a pleasant and effective user interface.
4. Managing the resources of a computer system.



3.3. ADVANTAGES OF OPERATING SYSTEM.

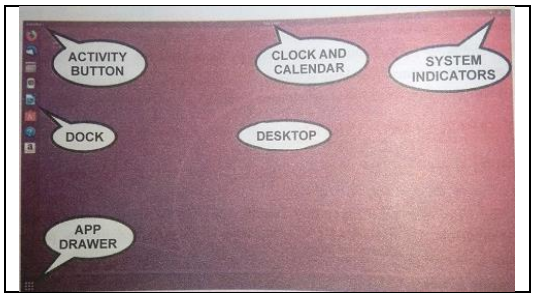
The advantages of operating system are as follow:

1. Operating system provides **Graphical User Interface (GUI).**
2. Memory management
3. Processor management
4. Device management
5. File management
6. Security

3.4. CLASSES OF OPERATING SYSTEM.

The various Operating Systems are as follows:

1. Microsoft Disk Operating System (MS DOS).
   MS DOS is the operating system for the IBM's personal computers and their compatibles. It was released in 1980. The following features are:
   - Single user operating system
   - Hierarchical file structure
   - Supports only 80 XXX archicture personal computer
   - Memory access limits 640 KB
2. Linux Desktop.
   Ubantu is the popular Linux distribution. The desktop for Linux Ubantu is GNOME. GNOME is a desktop environment for free and open source operating systems.



   The components of Linux desktop are as follows:
   - Top Bar: Activities overview, Date and Time, System indicators.
   - Desktop
   - Dock
   - App Drawer
   - Search
   - Date and Calendar
   - System Indicators

3. MS WINDOWS
   Microsoft Windows is an operating system developed by Microsoft for use on personal computers. The various released versions were Windows 95, Windows 98, Windows 2000, Windows Me, Windows XP, Windows NT, Windows Vista, Windows 7, Windows 8, Windows 10 etc. Microsoft Windows has many features also.

3.5. BASIC COMPONENTS OF WINDOWS.

1. Desktop:- Desktop is the area on the screen which displays various components of windows.
2. Desktop icons:- Icons are graphical images that provide a shortcut to a program or file when we click on them.
3. Start Menu:- It is used to quickly start the installed programs.

4. Taskbar:- It displays the Start menu and currently running programs.
5. Quick launch toolbar:- It is used to open a program quickly from a shortcut which are pinned on the taskbar.
6. System Tray:- It is located at the far right bottom corner of the screen.

7. Clock:- It displays the current system date and time.
8. Shortcuts:- Shortcuts are the ways to quickly access the program, files, folders, web pages etc.
9. Folder:- It is a named location on the disk of computer,in which we can store files and other folders.
10. Recycle Bin:- It is a reserved space on hard disk drive where files and folders we no longer want, can be disposed off.
11. My Computer or This PC:- This shows all the contents of the computer including floppy disk drives, Hard disk drives, CD/DVD ROM drives, Pen Drives, Network drives and additional add on drives.

3.6. FILE AND FOLDER:

Files are used to store data. File is a main storage unit inside computer. There are different types of files such as text files, data files, images, audio files and video files.

Folders are also called directory and are used to store files and other folders.

File	Folder
Files are used to store data.	Folders are used to store files and folders.
It works as a container to store data.	It works as a container to store files and folders.
Each and every file have an extension.	Folders doesn't have any extension
Files take space in memory	Folder doesn't take space in memory.

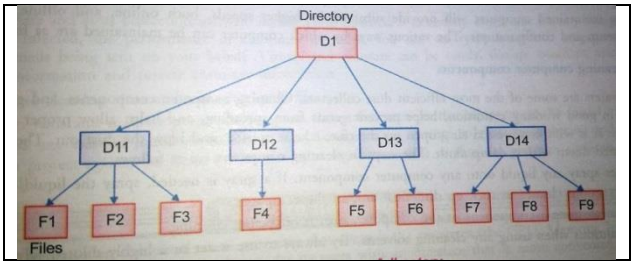
3.7. FILE OPERATIONS:

There are various operations that can be performed on files and folders like:-

- Creating Folder
- Renaming files and folders
- Deleting a file or folder
- Move or copy and paste a file or folder.
- Opening files and folders

3.8. DIRECTORY STRUCTURE:

A directory is a container that is used to contain folders and file. It organises files and folders into a hierarchical manner as shown below:-



3.9. FILE SYSTEM STRUCTURE:

A file system provides a way organising a drive. It specifies how data is stored on the drive. The three major file systems of Microsoft windows are:-

1. FAT – (File Allocation Table)
2. NTFS – (New Technology File System)
3. ReFS – (Resilient File System)

TOPIC: -CARE AND MAINTENANCE OF COMPUTER

3.9. IMPORTANCE AND NEED OF CARE AND MAINTENANCE OF COMPUTERS:

Computer maintenance describes various steps to keep computer functioning at an optimal performance level from a software and hardware point of view. The various ways by which computer can be maintained are as follows:-

1. Cleaning computer components
2. Preparing maintenance schedule
3. Protect computer against virus
4. Scanning and cleaning virus and removing spam files

QUESTIONS:-  Let's think and Answer

1. What is an Operating System? Write its functions.
2. Differentiate between File and Folder.
3. What is the significance of taskbar? Explain.
4. What is the purpose of My Computer?
5. What is the purpose of windows explorer? Explain.

LEARNING OUTCOME:-

After studying these topics, students will be able to:

- Explain the work of an Operating System.
- Differentiate between Operating System.
- Manage the Files and Folders.
- Maintain the performance of the Computer System.

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FIRAYALAL PUBLIC SCHOOL, RANCHI

Grade- X **Module-1/ 1**

SUBJECT - ENGLISH

CHAPTER NAME- A LETTER TO GOD
Link-https://youtu.be/DBzLlkppShI

https://youtu.be/iZ5g110rnT0

Please find herewith the web links of the chapters along with the written assignment we wish you to cover up by the end of this break. The entire assignment will form a part of your subject enrichment assessment and needs to be done in home-work copy. This assignment will be a part of subject enrichment. In case of any clarification please feel free to get in touch with your subject teachers, once the school reopens or else mail it to principal@firayalalpublicschool.com

TUTORIALS:

ABOUT AUTHOR:

Gregorio Fuentes (Arrecife July 11, 1897 – Cojimar January 13, 2002) was a fisherman and the first mate of the **Pilar**, the boat belonging to the American writer **Ernest Hemingway**. Fuentes was born on Lanzarote in the Canary Islands. He first went to sea as deck boy with his father at age 10.

Born: July 11, 1897, Arrecife

Died: January 13, 2002, Cojimar

Profession: Fisherman

New words

Predict : say in advance .
Ex : She predicted that the improvement would continue.

Intimately : closely.
Ex : They are intimate friend.

Draped : cover or decorate something
Ex : Dracula appeared, draped in a huge cloak.

Hailstones : small balls of ice falling as rain.
Ex : The ground was covered with **hailstones**.

Plague : of something large number of a pest that invade an area.
Ex : a **plague** of flies, locusts, rats.

INTRODUCTION

The story, "A Letter to God" by G.L Fuentes revolves around the idea of having unquestionable belief in something. The story is set in a Latin American country. Lencho, the farmer, who is the protagonist of the story, writes a letter to God seeking help from the almighty after discovering his entire crop yield destroyed by a devastating hailstorm. Although, his wishes get fulfilled partially, if not completely, he is ungrateful in the end and questions the honesty and modesty of the post-masters who actually helped him with money (anonymously) in the name of god.

SUMMARY

'A letter to God' is a story of extreme faith in god. The writer had tried to depict the faith of a poor and simple farmer in god. Lencho was an honest and hardworking farmer. Once there was a hailstorm. It destroyed his crop completely. Lencho had great faith to God. He asked God to send him money. The postmaster saw the letter. He decided to help Lencho. He collected some money. He put it inside the envelope. Lencho came to the post office to check his mail. The post office people gave him the envelope. Lencho opened the envelope. He took out the money and counted it. He found that it was less than he had asked for. He wrote another letter to God. He asked God to send him rest of the money. But he wanted God not to send the money through the mail. He considered them a bunch of crooks who had stolen thirty pesos from the hundred pesos sent by God.

KEY POINTS

- Lencho was a farmer and had the field of ripe corn.
- He needed a downpour to make his harvest good.
- But the rain turned into hailstones which destroyed his whole crop of corn.
- He had nothing to eat so he decided to seek help from god.
- He wrote a letter to god demanding 100 pesos.
- The post office employees made fun of him. But the post master decided to help him.
- He collected 70 pesos from his own effort.
- But Lencho was angry to receive 70 pesos in place of 100.
- He wrote another letter to god demanding rest of the money.
- He also requested to send the money through another means because what he believed that post office employees were bunch of crooks

IMPORTANT CHARACTERS

★Lencho :
→ A poor farmer who lived on the peak of a low hill with his family. He was a firm believer of God. He was innocent, hopeful, caring and responsible.

★Postmaster :
→ A fat amiable (Friendly) fellow who helped Lencho to retain his faith in God. He gave a part of his salary in the charity for Lencho on behalf of God.

★ Post office employees :
→ People who helped the lencho on Postmaster's call. They laughed at Lencho when they saw the letter but helped him in his need. Lencho called them a bunch of crooks.

EXTRACT BASED QUESTIONS

Question 1.
The house- the only one in the entire valley- sat on the crest of a low hill. From this height one could see the river and the field of ripe corn dotted with the flowers that always promised a good harvest. The only thing the Earth needed was a downpour or at least a shower. Throughout the morning Lencho who knew his fields intimately had done nothing else but see the sky towards the North-East. "Now we're really going to get some water, woman.
" The woman who was preparing supper, replied, "Yes, God willing".
(a) Where was Lencho's house located?
(b) What was Lencho's wife preparing?
(c) Find the word from the passage which means 'very closely'.
(d) What does 'Crest' means?

Question 2.
With a satisfied expression he regarded the field of ripe corn with its flowers, draped in a. curtain of rain. But suddenly a strong wind began to blow and along with the rain very large hailstones began to fall. These truly did resemble new silver coins. The boys, exposing themselves to the rain, ran out to collect the frozen pearls.
(a) What happened to the rain suddenly?
(b) 'The frozen pearls' refers to which thing in the paragraph.
(c) Find the similar meaning-of 'contented' in the paragraph.
(d) Find from the passage a word which means 'to take after'.

Question 3.
When he finished, he went to the window to buy a stamp which he licked and then affixed to the envelope with a blow of his fist. The moment the letter fell into the mailbox the postmaster went to open it. It said: "God: Of the money that I asked for, only seventy pesos reached me. Send me the rest, since I need it very much. But don't send it to me through the mail because the post office employees are a 'bunch of crooks'. Lencho."
(a) What did Lencho do wijh the stamp?

(b) What did the postmaster do when the letter fell into the mailbox and why?
(c) Find out the word which has the similar meaning as 'attached' used in the passage.
(d) Which word in the passage denotes a dishonest person?

SHORT ANSWER TYPE QUESTIONS

Question 1.

Who was Lencho? What were his main problems?

Question 2.

Do you think that Lencho was right to call the post office employees a bunch of crooks? Why or why not?

LONG ANSWER TYPE QUESTIONS

Question 1.

Give a character-sketch of Lencho.

Question 2.

Sketch the character of the postmaster in the story 'A Letter to God".

LEARNING OBJECTIVES:-

- Will be able to understand the importance of faith.
- Will be able to believe that faith can move mountains.
- Will be able to develop such a faith in them to develop confidence in them.
- Will be able to encourage them to develop faith in them.

FIRAYALAL PUBLIC SCHOOL, RANCHI

Grade- X **Module-1/2**

SUBJECT-MATHEMATICS

TOPIC: REAL NUMBER (Ch- 1)

Link- http://ncert.nic.in/ebooks.html
https://www.geneo.in/class-10.php

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TUTORIALS:-

In class IX we studied about real numbers, especially about irrational numbers.
In this chapter, we shall discuss namely Euclid's division lemma and the fundamental theorem of arithmetic.

Lemma – A lemma is a proven statement used for proving another statement.

EUCLID'S DIVISION LEMMA

For any two given positive integers **a** and **b,** there exist unique whole numbers **q** and **r** such that
$\boldsymbol{a = bq + r, where\ 0 \leq r < b}$.
Here , **a** = dividend,
B = divisor,
q = quotient and
r = remainder.

Example 1: - **A number when divided by 73 gives 34 as quotient and 23 as remainder. Find the number.**
Solution:- divisor(b) = 73, quotient(q) = 34, and remainder (r) = 23, dividend (a) = ?
By Euclid's division lemma,
a = bq + r
= (73 x 34) + 23
= 2482 + 23
= 2505 Ans.

Algorithm - An algorithm is a series of well- defined steps which gives a method for solving a certain type of problem.

EUCLID'S DIVISION ALORITHM

It is a technique to compute the HCF of two given positive integers, say **a** and **b** with a > b, in following steps.

Step 1: On dividing a and b, we get quotient q and remainder r such that $a = bq + r, where\ 0 \leq r < b$.

Step 2: If r = 0 then HCF (a, b) = b.
If r ≠ 0 then apply the division lemma to b and r.

Step 3: Continue the process till the remainder is 0.

The last divisor will be the required HCF.

Example 2:-Use Euclid's algorithm to find HCF of 272 and 1032.
Solution:- We find HCF (272, 1032) by using Euclid's algorithm.

1032 = 272 x 3 + 216
272 = 216 x 1 + 56
216 = 56 x 3 + 48
56 = 48 x 1 + 8
48 = 8 x 6 + 0
HCF (272, 1032) = 8 Ans.

Example 3:-Use Euclid's algorithm to find HCF of 1651 and 2032.

Solution:- We find HCF (1651, 2032) by using Euclid's algorithm.

2032 = 1651 x 1 + 381
1651 = 381 x 4 + 127
381 = 127 x 3 + 0
HCF (1651, 2032) = 127 Ans.

SOME APPLICATION OF EUCLID'S DIVISION LEMMA

- **1. Show that every positive integer is of the form 2m and that of every positive odd integer is of the form (2m + 1), where m is some integer.**

Solution:

Let n be any arbitrary positive integer.
On dividing n by 2, let m be the quotient and r be the remainder.
Then, by Euclid's division lemma, we have
n = 2m + r, $where\ 0 \leq r < 2$
Case I, r=0
n = 2m (even)
Case II, r=1
n = 2m + 1 (odd)
Hence, every positive integer is of the form 2m and that of every positive odd integer is of the form (2m + 1) for some integer m.

- **2. Show that any positive integer is of the form 3m or (3m + 1) or (3m + 2) for some integer m.**

Solution:

Let n be any arbitrary positive integer.
On dividing n by 3, let m be the quotient and r be the remainder.
Then, by Euclid's division lemma, we have
n = 3m + r, $where\ 0 \leq r < 3$
Case I, r=0
n = 3m
Case II, r=1
n = 3m + 1
Case III, r = 2
n = 3m + 2
Hence, any positive integer is of the form 3m or (3m + 1) or (3m + 2) for some integer m.

- **3. Using Euclid's division lemma, show that the square of any positive integer is either of the form 3m or (3m + 1) for some integer m.**

Solution:

Let n be any arbitrary positive integer.
On dividing n by 3, let q be the quotient and r be the remainder.
Then, by Euclid's division lemma, we have
n = 3q + r, $where\ 0 \leq r < 3$
Squaring on both sides,
$n^2 = (3q + 1)^2$
$\therefore n^2 = 9q^2 + 6qr + r^2$ .....(i) , $where\ 0 \leq r < 3$
Case I, r=0
Putting r= 0 in equation (i)
$n^2 = 9q^2$
$= 3(3q^2)$
$=3m$ (where $m = 3\ q^2$)

Case II, r=1

Putting r= 1 in equation (i)

$n^2 = 9q^2 + 6q + 1$

$= 3(3q^2 + 2q) + 1$

$= 3m + 1$ (where $m = 3q^2 + 2q$)

Case III, r = 2

Putting r= 2 in equation (i)

$n^2 = 9q^2 + 12q + 4$

$=9q^2 + 12q + 3 + 1$

$= 3(3q^2 + 4q + 1) + 1$

$= 3m + 1$ (where $m = 3q^2 + 4q + 1$)

Hence, the square of any positive integer is either of the form 3m or (3m + 1) for some integer m.

Assignment 1

1. What do you mean by Euclid's division lemma?
2. By what number should 1365 be divided to get 31 as quotient and 32 as remainder?
3. Show that any positive odd integer is of the form (6m + 1) or (6m + 3) or (6m + 5), where m is some integer.
4. Using Euclid's division algorithm, find the HCF of
   a) 504 and 1188
   b) 960 and 1575
5. Using Euclid's division lemma, show that the cube of any positive integer is either of the form 9m or (9m + 1) or (9m + 8) for some integer m.

FIRAYALAL PUBLIC SCHOOL, RANCHI

Grade- X **Module-2/2**

SUBJECT-MATHEMATICS

TOPIC: REAL NUMBER (Ch- 1)

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TUTORIALS:-

FUNDAMENTAL THEOREM OF ARITHMETIC

Every composite number can be uniquely expressed as a product of primes, except for the order in which these prime factors occurs.

Examples 1:

12 = 2 x 2 x 3
69 = 3 x 23
462 = 2 x 3 x 7 x 11
651 = 3 x 7 x 31

- **Show that any number of the form 4^n , n ϵ N can never with the digit 0.**

  Solution:

  If 4^n ends with 0 then it must have 5 as a factor.
  But, $4^n = (2^2)^n$
  $= 2^{2n}$, shows that 2 is the only prime factor of 4^n.
  Also, we know from the fundamental theorem of arithmetic that the prime factorization of each number is unique.
  So, 5 is not a factor of $4^{=]}$.
  Hence, 4^n can never end with the digit 0.

- **Show that any number of the form 6^n , n ϵ N can never with the digit 0.**

  Solution:

  If 6^n ends with 0 then it must have 5 as a factor.
  But, $6^n = (2 \times 3)^n$
  $= 2^n \times 3^n$, shows that 2 and 3 are the only prime factor of6^n.
  Also, we know from the fundamental theorem of arithmetic that the prime factorization of each number is unique.
  So, 5 is not a factor of $6^{=]}$.
  Hence, 6^n can never end with the digit 0.

- **An Important Property**

  Product of two given numbers = product of their HCF and LCM
  Thus, (a x b) = HCF(a, b) x LCM(a, b)

  Note: The above result is true for two numbers only.

  Example 2: Given that HCF (252, 594) = 18, find LCM (252, 594).

Solution:

We have

$$\text{LCM} = \frac{\text{product of two given numbers}}{\text{their HCF}}$$

$$= \frac{252\ x\ 554}{18} = 8316 \quad \text{Ans.}$$

Rational Numbers

1. **Natural numbers**
   Counting numbers 1, 2, 3, 4, …….etc., are known as natural numbers.

2. **Whole Numbers**
   All counting numbers together with 0 form the collection of whole numbers.
   Thus, 0, 1, 2, 3, 4, …….etc., are whole number.

3. **Integers**
   All counting numbers, negative of counting numbers and 0 form the collection of all integers.
   Thus, …….. -4, -3, -2, -1, 0, 1, 2, 3, ……..etc., are integers.

4. **Rational Numbers**
   The numbers of the form $\frac{p}{q}$, where p and q are integers, and q ≠ 0 are called rational numbers.

Rational Numbers in Decimal Form

Every rational number when expressed in decimal form is expressible either in terminating or in non-terminating repeating decimal form.

To Test whether a given Rational Number is a Terminating or Repeating Decimal

Let x be a rational number whose simplest form is $\frac{p}{q}$, where p and q are integers and q ≠ 0. Then,

i) x is terminating decimal only when q is of the form $(2^m \times 5^n)$ for some non – negative integers m and n.

ii) x is a non-terminating reporting decimal, if $q \neq (2^m \times 5^n)$.

Example 3: Without actual division, show that each of the following rational numbers is a terminating or not.

i) $\frac{17}{625}$ ii) $\frac{33}{50}$ iii) $\frac{17}{90}$

Solution:

i) $\frac{17}{625}$

625 = 5 x 5 x 5 x 5 = 5^4 and 5 is not a factor of 17.
So, the given number is in its simplest form.
Now, 625 = 5^4 is of the form $(2^m \times 5^n)$, where m = 0 , n = 4
So, the given number is a terminating decimal.

ii) $\frac{33}{50}$

50 = 2 x 5 x 5 = $2^1 \times 5^2$ and none of 2 and 5 is a factor of 33.
So, the given number is in its simplest form.
Now, 50 = $2^1 \times 5^2$, where m = 1 , n = 2
So, the given number is a terminating decimal.

iii) $\frac{17}{90}$

90 = 2 x 3 x 3 x 5 = $(2 \times 3^2 \times 5)$
Clearly, 2, 3 and 5 is not a factor of 17.
So, the given number is in its simplest form.
Also, 90 = $(2 \times 3^2 \times 5) \neq (2^m \times 5^n)$

So, the given number is not terminating decimal or non-terminating decimal.

Example 4: Express $0.\overline{32}$ as a fraction in simplest form.

Solution: Let $x = 0.\overline{32}$

$x = 0.323232\ldots\ldots$ (i)

$100x = 32.3232\ldots\ldots$ (ii)

On subtracting (i) from (ii)

$99x = 32$

$\therefore x = \frac{32}{99}$

Example 5: Express $0.2\overline{54}$ as a fraction in simplest form.

Solution: Let $x = 0.2\overline{54}$

$x = 0.2545454\ldots\ldots$ (i)

$10x = 2.545454\ldots\ldots$ (ii)

$100x = 254.545454\ldots\ldots$ (iii)

On subtracting (ii) from (iii)

$990x = 252$

$\therefore x = \frac{252}{990} = \frac{126}{495} = \frac{42}{165} = \frac{14}{55}$

$\therefore x = \frac{42}{165}$

IRRATIONAL NUMBERS

The numbers which when expressed in decimal form are expressible as non-terminating and non-repeating decimals are known as irrational numbers.

Examples :

Type 1 Every non-terminating and non-repeating decimal is irrational.

i) Clearly, $0.1010010001\ldots\ldots$ is a non-terminating decimal.
So, it is irrational

ii) $0.2020020002\ldots\ldots\ldots$, $0.12112111211112\ldots\ldots\ldots$ and so on.

Type 2 If m is a positive integer which is not a perfect square then $\sqrt{m}$ is irrational.
Thus, $\sqrt{2}, \sqrt{3}, \sqrt{5}, \sqrt{6}, \sqrt{7}$, etc., are all irrational.

Theorem 1: Prove that $\sqrt{2}$ is irrational.

Proof: If possible, let $\sqrt{2}$ be rational and let its simplest form be $\frac{a}{b}$.

Then, a and b are integers having no common factor other than 1, and $b \neq 0$.

Now, $\sqrt{2} = \frac{a}{b}$

Squaring on both sides

or, $2b^2 = a^2$ .....(i)

or, 2 divides a^2

or, 2 divides a

Let $a = 2c$

Squaring on both sides

$a^2 = (2c)^2$

or, $a^2 = 4c^2$

from equation (i)

or, $2b^2 = 4c^2$

or, $b^2 = 2c^2$

or, 2 divides b^2

or, 2 divides b

Thus, 2 is a common factor of a and b.

But, this contradicts the fact that a and b have no common factor other than 1.

The contradiction arises by assuming that $\sqrt{2}$ is rational.

Hence, $\sqrt{2}$ is irrational. Proved.

Theorem 2: Prove that $\sqrt{3}$ is irrational.

Proof: If possible, let $\sqrt{3}$ be rational and let its simplest form be $\frac{a}{b}$.

Then, a and b are integers having no common factor other than 1, and $b \neq 0$.

Now, $\sqrt{3} = \frac{a}{b}$

Squaring on both sides

or, $3b^2 = a^2$ .....(i)

or, 3 divides a^2

or, 3 divides a

Let a = 3c

Squaring on both sides

$a^2 = (3c)^2$

or, $a^2 = 9c^2$

from equation (i)

or, $3b^2 = 9c^2$

or, $b^2 = 3c^2$

or, 3 divides b^2

or, 3 divides b

Thus, 3 is a common factor of a and b.

But, this contradicts the fact that a and b have no common factor other than 1.

The contradiction arises by assuming that $\sqrt{3}$ is rational.

Hence, $\sqrt{3}$ is irrational. Proved.

Theorem 3: Prove that $\sqrt{p}$ is irrational.

Proof: If possible, let $\sqrt{p}$ be rational and let its simplest form be $\frac{a}{b}$.

Then, a and b are integers having no common factor other than 1, and $b \neq 0$.

Now, $\sqrt{p} = \frac{a}{b}$

Squaring on both sides

or, $pb^2 = a^2$ .....(i)

or, p divides a^2

or, p divides a

Let a = pc

Squaring on both sides

$a^2 = (pc)^2$

or, $a^2 = p^2c^2$

from equation (i)

or, $pb^2 = p^2c^2$

or, $b^2 = pc^2$

or, p divides b^2

or, p divides b

Thus, p is a common factor of a and b.

But, this contradicts the fact that a and b have no common factor other than 1.

The contradiction arises by assuming that $\sqrt{p}$ is rational.

Hence, $\sqrt{p}$ is irrational. Proved.

Theorem 4: If a is rational and $\sqrt{p}$ is irrational then prove that (a + $\sqrt{p}$) is irrational.

Proof: Let a be rational and $\sqrt{p}$ be irrational. Then, we have to prove that (a + $\sqrt{p}$) is irrational.

If possible, let (a + $\sqrt{p}$) is rational. Then,

(a + $\sqrt{p}$) is rational. and a is rational.

or, {(a + $\sqrt{p}$) – a} is rational [difference of rationals is rational]

or, $\sqrt{p}$ is rational

This contradicts the fact that $\sqrt{p}$ isir rational.

The contradiction arises by assuming that $(a + \sqrt{p})$ is rational.

Hence, $(a + \sqrt{p})$ is irrational. Proved.

Assignment 2

1. The HCF of two numbers is 23 and their LCM is 1449. If one of the numbers is 161, find the other.
2. Find the largest number which divides 320 and 457, leaving remainders 5 and 7 respectively.
3. Without actual division, show that each of the following rational numbers is a terminating or not.
   i) $\frac{15}{1600}$ ii) $\frac{29}{343}$ iii) $\frac{64}{455}$
4. Express each of the following as a fraction in simplest form
   i) $0.\overline{365}$ ii) $0.\overline{12}$
5. Prove that each of the following numbers is irrational.
   i) $\sqrt{6}$ ii) $\sqrt{11}$ iii) $(2-\sqrt{5})$

Assignment 3 (Module 1+ 2)

1. Is it possible to have two numbers whose HCF is 25 and LCM is 520?
2. If a and b are relatively prime, what is their LCM?
3. Give an example of two irrational numbers whose sum is rational.
4. Write a rational number between $\sqrt{3}$ *and* 2.
5. What is a composite number?
6. Find the least number which when divided by 20, 25, 35 and 40 leaves remainder 14, 19, 29 and 34 respectively.
7. Find the HCF and LCM of 12, 15, 18, 27.
8. What is the least number that is divisible by all the natural numbers from 1 to 10 (both inclusive)?
9. Show that 8^n is never end with digits 0.
10. Find the HCF and LCM of 612 and 1314 using prime factorization method.

FIRAYALAL PUBLIC SCHOOL, RANCHI

Grade- x **Module-1/1**

SUBJECT- Biology

CHAPTER NAME- Life processes

TOPIC: Nutrition in animals

Link- https://youtu.be/5_4Y0tTHqyk(nutrition in amoeba)

https://youtu.be/zr4onA2k_LY (process of digestion)

Please find herewith the web links of the chapters along with the written assignment we wish you to cover up by the end of this break. The entire assignment will form a part of your subject enrichment assessment and needs to be done in home-work copy. This assignment will be a part of subject enrichment. In case of any clarification please feel free to get in touch with your subject teachers, once the school reopens or else mail it to principal@firayalalpublicschool.com

TUTORIALS:-

Animals are heterotrophs and depend on other organisms (plants , animals or their products) for their food. On the basis of their food habits or eating habits , animals are of three types :

herbivores: eat only plants and their products

carnivores: eat only flesh of other animals

omnivores: eat both plants and animals

In addition there are two more types; **parasites:** depend on ether organisms and cause harm to them. Eg: mosquito, leech

saprophytes: depend on dead and decaying matter. Eg: fungi and other decomposers

Different steps involved in nutrition of animals

1 Ingestion- intake of food

2 Digestion - breaking down of complex components into simpler forms

3 Absorption – digested food passes through intestinal wall into blood and lymph

4 Assimilation – conversion of absorbed food into energy

5 Egestion – removal of undigested food from the body

Nutrition in single celled organisms

In single celled organisms , the food may be taken in by the entire surface.

In amoeba the pseudopodia fuse over the food particles forming a food vacuole.

The complex substances are broken down into simpler forms in the food vacuole which then diffuse into the cytoplasmic assimilation . The undigested food comes to the surface of the cell and is thrown out.

In paramoecium the food is moved to the cell mouth or cytostome by the movement of cilia. The food is digested in the food vacuole and the undigested food is thrown out through a temporary opening called cytopyge (cell anus) . Thus , the nutrition here is microphageal and bacteria is its chief food.

Nutrition in human beings

human beings show holozoic mode of nutrition. The human digestive system mainly consists of alimentary canal and its associated glands i.e. , salivary glands, liver and pancreas.

Structure and function of the alimentary canal

It is along tube (about 9 m) extending from the mouth to the anus.

It has the following parts:

1 Mouth (buccal cavity)
2 Oesophagus
3 Stomach
4 Small intestine
5 Large intestine(Colon)
6 Rectum
7 Anus

Mouth

The digestion of food starts in the mouth. The inner part of the mouth is called the buccal cavity and the roof of the buccal cavity is called palate.

The buccal cavity contains :

1) Teeth- Human beings have diphyodont(milk and permanent teeth) , thecodont (teeth are embedded in the socket of the jaw bones) , heterodont (having different types of teeth) .

Types of teeth: Incisors , Canines , Premolars and Molars

Dental formula :- 2123 ------

2) Tongue – it is a muscular organ attached to the floor of the mouth. It helps helps in chewing the food, swallowing it and brush to clean the teeth. It contains taste buds to taste the food.

3) Salivary glands: They produce **saliva** that contain an enzyme **Salivary amylase (Ptyalin)** that breaks down starch into sugar.the three pairs of salivary glands are ; Parotid , Sub-mandibular, Sub- lingual.

Dental caries

- is caused by the action of acids on the enamel surface. The acid is produced when sugars (mainly sucrose) in foods or drinks react with bacteria present in the plaque present on the tooth surface. The acid can be neutralised by using toothpaste and natural pH of mouth can be restored.

Now answer the following

1) Show the process of nutrition in amoeba through a diagram.
2) Show the process of nutrition in paramoecium.
3) What is the normal pH of the mouth ?
4) What are the taste buds present on the tongue and where are they located on the tongue?
5) Write the dental formula for the temporary set of teeth in humans.
6) Write the pH of saliva and its other use than one mentioned above.
7) Define plaque.
8) What are the different layers of a tooth?
9) How does a toothpaste neutralise the acid in mouth?

Learning outcome:

* Heterotrophic nutrition involves the intake of complex materials prepared by other organisms.
* In singled celled organisms the food may be taken up by the entire body surface.
* human beings follow holozoic mode of nutrition.
* the dental formula of human beings.
* Digestion begins in mouth.
* What are dental caries and their prevention.

FIRAYALAL PUBLIC SCHOOL, RANCHI

Grade- x **Module-1/1**

SUBJECT- Physics

Chapter name -Electricity

Link - www.ncerthelp.com

1. Electric Charge - The primary physical quantity of matter due to which Electric effect or other related effect is produced, is called Electric charge.

2. Coulomb: I is the S.I. unit of charge. One coulomb is defined as that amount of charge which \repel an equal and similar charge with a force of 9×10^9 N when placed in vacuum at a distance of 1 meter from it.Charge on an electron = -1.6×10^{-19} Coulomb.

3. Static and current electricities: Static electricity deals with the electric charges at rest while the current electricity deals with the electric charges in motion.

4. Conductor: A substance which allows passage of electric charges through it easily is called a Conductor. A conductor offers very low resistance to the flow of current. For example copper, silver, aluminium etc.

5. Insulator: A substance that has infinitely high resistance does not allow electric current to flow through it. It is called an insulator. For example rubber, glass, plastic, ebonite etc.

6.Electric current: The flow of electric charges across a cross-section of a conductor constitutes an electric current.

It is defined as the rate of flow of the electric charge through any section of a conductor.Electric current = Charge/Time or

$I = Q/t$

Electric current is a scalar quantity.

7.Ampere: It is the S.I. unit of current. If one coulomb of charge flows through any section of a conductor in one second, then current through it is said to be one ampere.

1 ampere = 1 coulomb/1 second or $1\ A = 1C/1s = 1Cs^{-1}$

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

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

8.Electric circuit: The closed path along which electric current flows is called an _electric circuit‘.

9.Conventional current: Conventionally, the direction of motion of positive charges is taken as the direction of current. The direction of conventional current is opposite to that of the negatively charged electrons.

10. Electric field: It is the region around a charged body within which its influence can be experienced.

11. Electric potential: Electric potential at any point in an electric field is defined as the amount of work done in bringing a unit positive charge from infinity to that

point. Its unit is volt. Positive charges move from higher to lower potential regions. Electrons, being negatively charged, move from lower to higher potential regions.

12. Potential difference between two points: The Potential difference between two points in an electric field is the amount of work done in bringing a unit positive charge from one to another. Potential difference = Work done/Charge or V = W/Q

13. One volt potential difference: The Potential difference between two points in an electric field is said to one volt if one joule of work has to be done in bringing a positive charge of one coulomb from one point to other point.

1 volt = 1 joule/1coulomb or1 V = 1J/1C

14. Galvanometer: It is device to detect current in an electric circuit.

15. Ammeter: It is device to measure current in a circuit. It is always connected in series in a circuit.

16. Voltmeter: It is a device to measure potential difference. It is always connected in parallel to the component across which the potential difference is to be measured.

17. Ohm's law: This law states that the current passing through a conductor is directly proportional to the potential difference cross its ends, provided the physical conditions like temperature, density etc. remains unchanged.

$V \alpha I$ or $V = RI$

The proportionality constant R is called resistance of conductor.

18. Resistance: It is a property of a conductor by virtue of which it opposes the flow of current through it. It is equal to the ratio of the potential difference applied across its ends and the current flowing through it.

Resistance = Potential difference/Current or R = V/I

19. Ohm: It is the S.I. unit of resistance. A conductor has a resistance of one ohm if a current of one ampere flows through it on applying a potential difference of one volt across its ends.

1 ohm = 1 volt/1 ampere or $1\Omega = 1V/1A$

20. Factors on which resistance of a conductor depends: The resistance R of a conductor depends

i) Directly on its length L i.e. $R \alpha L$.

ii) inversely on its area of cross-section A i.e. $R \alpha 1/A$ iii) on the nature of material of the conductor on. On combining the above factors, we get $R \alpha L/A$

$R = \rho * L/A$ The proportionality constant ρ is called resistivity of conductor.

21. Resistivity: It is defined as the resistance offered by a cube of a material of side 1 m when current flows perpendicular to its opposite faces. Its S.I. unit is ohm-meter (Ωm). Resistivity, $\rho = RA/L$

22. Equivalent resistance: If a single resistance can replace the combination of resistances in such a manner that the current in the circuit remains unchanged, then that single resistance is called the equivalent resistance.

23. Laws of resistances in series:

i) Current through each resistance is same.

ii) Total voltage across the combination = Sum of the voltage drops.

$V = V_1 + V_2 + V_3$

iii) Voltage drops across any resistor is proportional to its resistance.

$V_1 = IR_1$, $V_2 = IR_2$, $V_3 = IR_3$

iv) Equivalent resistance = Sum of the individual resistances. R_s

$= R_1 + R_2 + R_3$

v) Equivalent resistance is larger than the largest individual resistance.

24. Laws of resistances in parallel:

i) Voltage across each resistance is same and is equal to the applied voltage. ii) Total current = Sum of the currents through the individual resistances. $I = I_1 + I_2 + I_3$

iii) Currents through various resistances are inversely proportional to the individual resistances. $I_1 = V/R_1$, $I_2 = V/R_2$, $I_3 = V/R_3$

iv) Reciprocal of equivalent resistance = Sum of reciprocals of individual resistances.

$1/R_p = 1/R_1 + 1/R_2 + 1/R_3$

v) Equivalent resistance is less than the smallest individual resistance.

25. Joule's law of heating: It states that the heat produced in a conductor is directly proportional to (i) the square of the current I through it (ii) proportional to its resistances R and (iii) the time t for which current is passed. Mathematically, it can be expressed as

$H = I^2Rt$ joule $= I^2Rt/4.18$ cal

or

$H = VIt$ joule $= VIt/4.18$cal

26. Electric energy: It is the total work done in maintaining an electric current in an electric circuit for given time.

Electric energy, $W = VIt = I^2Rt$ joule

27. Electrical power: Electrical power is the rate at which electric energy is consumed by an appliance.

$P = W/t = VI = I^2R = V^2/R$

28. Watt: It is the S.I. unit of power. The power of an appliance is 1 watt if one ampere of current flows through it on applying a potential differences of 1 volt across its ends.

1 watt = 1 joule/1 second =1 volt x 1 ampere

ELECTRICITY
FORMATIVE ASSESSMENT I
Q. PAPER

MARKS-30 TIME- 70 MINUTES

Instructions:

- Questions : 1 to 5 - 1 Mark each
- Questions : 6 to 9 - 2 Marks each
- Questions : 10 to 13 - 3 Marks each
- Question 14 - 5 Marks

GIST OF THE LESSON

1. Define resistivity of material.

2. What is the power of torch bulb rated at 2.5V and 500mA?

3. Why series arrangement not used for connecting domestic electrical appliances in a circuit?

4. Which has higher resistance - a 50W bulb or a 2.5W bulb and how many times?

5. What is the direction of flow of conventional current?

6. Why is it not advisable to handle electrical appliances with wet hands?

7. Two electric bulbs marked 100W 220V and 200W 200V have tungsten filament of same length. Which of the two bulbs will have thicker filament?

8. How does the resistance of a wire vary with its area of cross section?

9. Draw the following symbols

i) Battery ii) Switch closed

iii) Resistor of resistance R iv) Voltmeter

10. A geyser is rated 1500W, 250V. This geyser is connected to 250V mains. Calculate -

i) The current drawn

ii) The energy consumed in 50hrs.

iii) The cost of energy consumed at Rs. 2.20 per kWh.

11. What is the function of an electric fuse? Name the material used for making fuse. In household circuit where is fuse connected?

12. Write one important advantage of using alternative current. How alternating current differ from direct current?

13. What is the difference between short circuiting and overloading?

14. a) Draw diagram showing three resistors R1, R2 and R3 in series.

b) Two resistors of resistance 4· and 12·

i) In parallel

ii) In series

Calculate the values of effective resistance in each case.

ELECTRICITY
FORMATIVE ASSESSMENT I
Q. PAPER

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i)In parallel

ii) In series

Calculate the values of effective resistance in each case.

HOTS QUESTIONS (SOLVED / UNSOLVED)

Q.1. Why is the tungsten metal more coiled in the bulb and not installed in straight parallel wire form?

Ans. The coiled wire of tungsten increases the surface area of the wire in very less space so as to emit more light and helps in glowing with more intensity.

Q.2. Why are fairy decorative lights always connected in parallel?

Ans. When the fairy lights are connected in series the resistance offered will be greater and brightness of the bulbs will be affected. But in parallel connection all the bulbs will glow with same intensity and if any more bulbs gets fused the other bulbs will continue to glow.

Q.3. What will happen when -

a) Voltmeter is connected in series?

b) Ammeter is connected in parallel?

Ans. a) Negligible current will pass through the circuit because the voltmeter has a very high resistance.

b) Ammeter will get damaged due to flow of large amount of current through it, because it has low resistance.

ELECTRICITY

ORAL QUESTIONS (CONVERSATION TYPE)

1. a) Why is electricity more useful than other forms of energy?
   b) How is static electricity different from current electricity?
   c) What are conductors? Give examples.
   d) What are insulators? Give examples.

2. a) What constitutes an electric current?
   b) Name the SI unit of electric charge.
   c) Which is bigger - c coulomb of charge or a charge of an electron?
   d) How much is the charge on an electron? Can a charge less than this value exist? e) What is the number of electrons constituting one coulomb of charge?

3. a) Define electric current.
   b) Name the SI unit of current. Define one ampere.
   c) Is electric current a scalar of vector quantity?

4. a) What does an electric circuit mean?
   b) When does the current flow in an electric circuit?
   c) How can the current be kept continuous in a conductor?
   d) Which particles constitute current in a metallic conductor?

5. a) Define potential difference.
   b) Name the SI unit of potential difference.
   c) What is meant by saying that a potential difference between two points in 1volt? d) What is the relationship between work done, potential difference and charge

FIRAYALAL PUBLIC SCHOOL, RANCHI

Grade- X **Module-1/1**

SUBJECT-CHEMISTRY

CHAPTER NAME- CHEMICAL REACTIONS AND EQUATIONS

TOPIC: TYPES OF CHEMICAL REACTIONS

Link- http://www.extramarks.com/ncert-solutions/cbse-class-12/chemistry

http://ncert.nic.in/ebooks.html

https://youtu.be/uoKxKM_w6pE

Please find herewith the web links of the chapters along with the written assignment we wish you to cover up by the end of this break. The entire assignment will form a part of your subject enrichment assessment and needs to be done in home-work copy. This assignment will be a part of subject enrichment. In case of any clarification please feel free to get in touch with your subject teachers, once the school reopens or else mail it to principal@firayalalpublicschool.com

TUTORIALS:

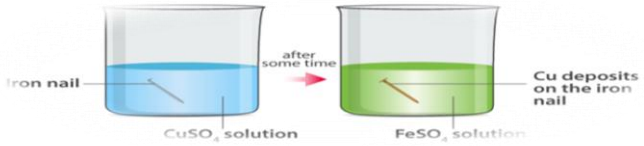
INTRODUCTION:

Before we start, let's first revise physical and chemical changes which you studied in your previous class.

CHEMICAL CHANGE – In a chemical change, one or more new substances with new physical and chemical properties are formed.

Example: $Fe(s) + CuSO_4(aq) \rightarrow FeSO_4(aq) + Cu(s)$
(Blue) (Green)

Here, when copper sulphate reacts with iron, two new substances, i.e., ferrous sulphate and copper are formed.



PHYSICAL CHANGE – In physical change, there is change in colour or state but no new substance is formed.

Example: Water changes to steam on boiling but no new substance is formed.This involves only a change in state.

CHEMICAL REACTIONS

A chemical reaction can be determined with the help of any of the following observations:
a) Evolution of a gas
b) Change in temperature
c) Formation of a precipitate
d) Change in colour
e) Change of state

Chemical reactions are chemical changes in which reactants transform into products by making or breaking of bonds(or both) between different atoms.

Types of chemical reactions

Taking into consideration different factors, chemical reactions are grouped into multiple categories.
Few examples are:

- Combination
- Decomposition
- Single Displacement
- Double displacement
- Redox

- Endothermic
- Exothermic
- Precipitation
- Neutralisation

Chemical Reactions and Equations I

Word equation

A word equation is a chemical reaction expressed in words rather than chemical formulas. It helps identify the reactants and products in a chemical reaction.
For example,
Sodium + Chlorine → Sodium chloride
The above equation means: "Sodium reacts with chlorine to form sodium chloride."

Symbols of elements and their valencies

A symbol is the chemical code for an element. Each element has one or two-letter atomic symbol, which is the abbreviated form of its name.
Valency is the combining capacity of an element. It can be considered as the number of electrons lost, gain or shared by an atom when it combines with another atom to form a molecule.

Writing chemical equations

Representation of a chemical reaction in terms of symbols and chemical formulae of the reactants and products is known as a chemical equation.

$$\underset{\text{(Reactants)}}{Zn(s) + dil.\,H_2SO_4(aq)} \rightarrow \underset{\text{(Products)}}{ZnSO_4(aq) + H_2(\uparrow)}$$

- For solids, the symbol is "(s)".
- For liquids, it is "(l)".
- For gases, it is "(g)".
- For aqueous solutions, it is "(aq)".
- For gas produced in the reaction, it is represented by "(↑)".
- For precipitate formed in the reaction, it is represented by "(↓)".

Balancing of a Chemical Reaction

Conservation of mass

According to the law of conservation of mass, no atoms can be created or destroyed in a chemical reaction, so the number of atoms for each element in the reactants side has to balance the number of atoms that are present in the products side.
In other words, the total mass of the products formed in a chemical reaction is equal to the total mass of the reactants participated in a chemical reaction.

Balanced chemical equation

The chemical equation in which the number of atoms of each element in the reactants side is equal to that of the products side is called a balanced chemical equation.

Steps for balancing chemical equations

Hit and trial method: While balancing the equation, change the coefficients (the numbers in front of the compound or molecule) so that the number of atoms of each element is same on each side of the chemical equation.

Short-cut technique for balancing a chemical equation

Example:

$aCaCO_3+bH_3PO_4 \rightarrow cCa_3(PO_4)_2+dH_2CO_3$

Set up a series of simultaneous equations, one for each element.

Ca: a=3c

C: a=d

O: 3a+4b=8c+3d

H: 3b=2d

P: b=2c

Let's set c=1

Then a=3 and

d=a=3

b=2c=2

So a=3; b=2; c=1; d=3

The balanced equation is

$3CaCO_3+2H_3PO_4 \rightarrow Ca_3(PO_4)_2+3H_2CO_3$

Chemical Reactions and Equations II

Types of chemical reactions

Taking into consideration different factors, chemical reactions are grouped into multiple categories.
Few examples are:

- Combination
- Decomposition
- Single Displacement
- Double displacement
- Redox
- Endothermic

- Exothermic
- Precipitation
- Neutralisation

Combination reaction

In a combination reaction, two elements or one element and one compound or two compounds combine to give one single product.

$H_2 + Cl_2 \rightarrow 2HCl$

element + element → compound

$2CO + O_2 \rightarrow 2CO_2$

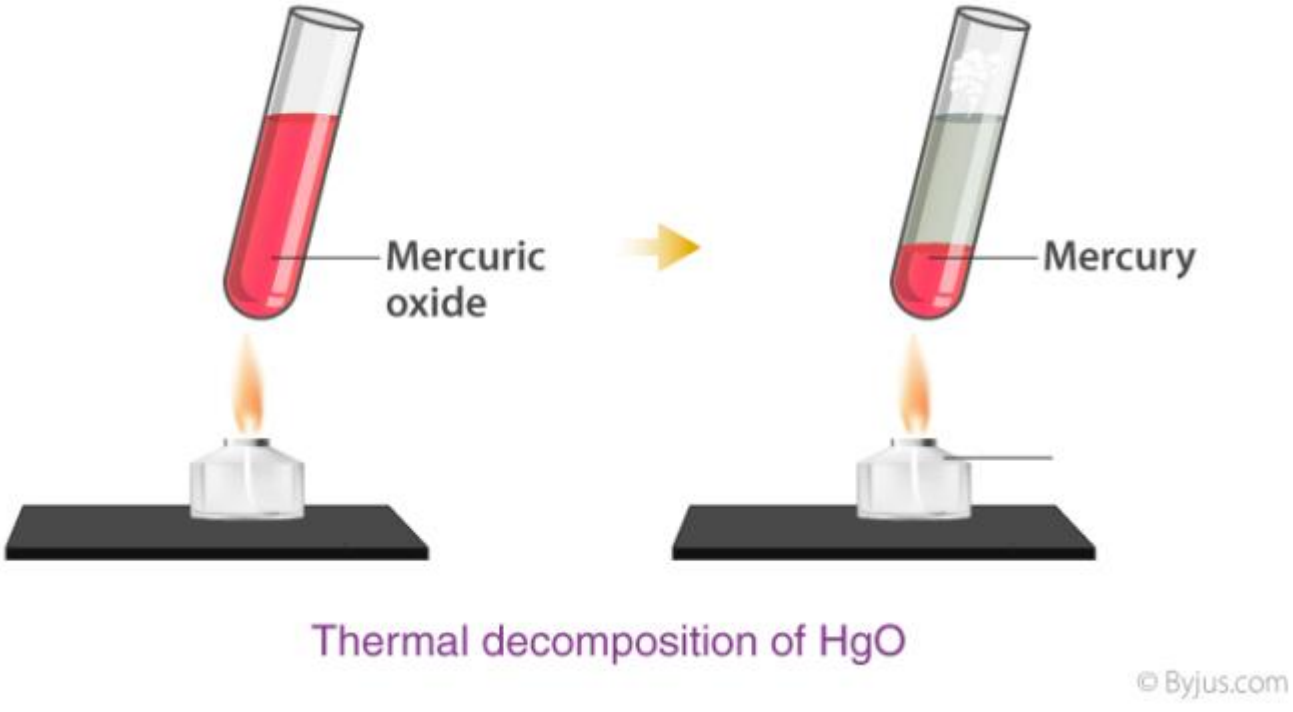
compound + element → compound

$NH_3 + HCl \rightarrow NH_4Cl$

compound + compound → compound

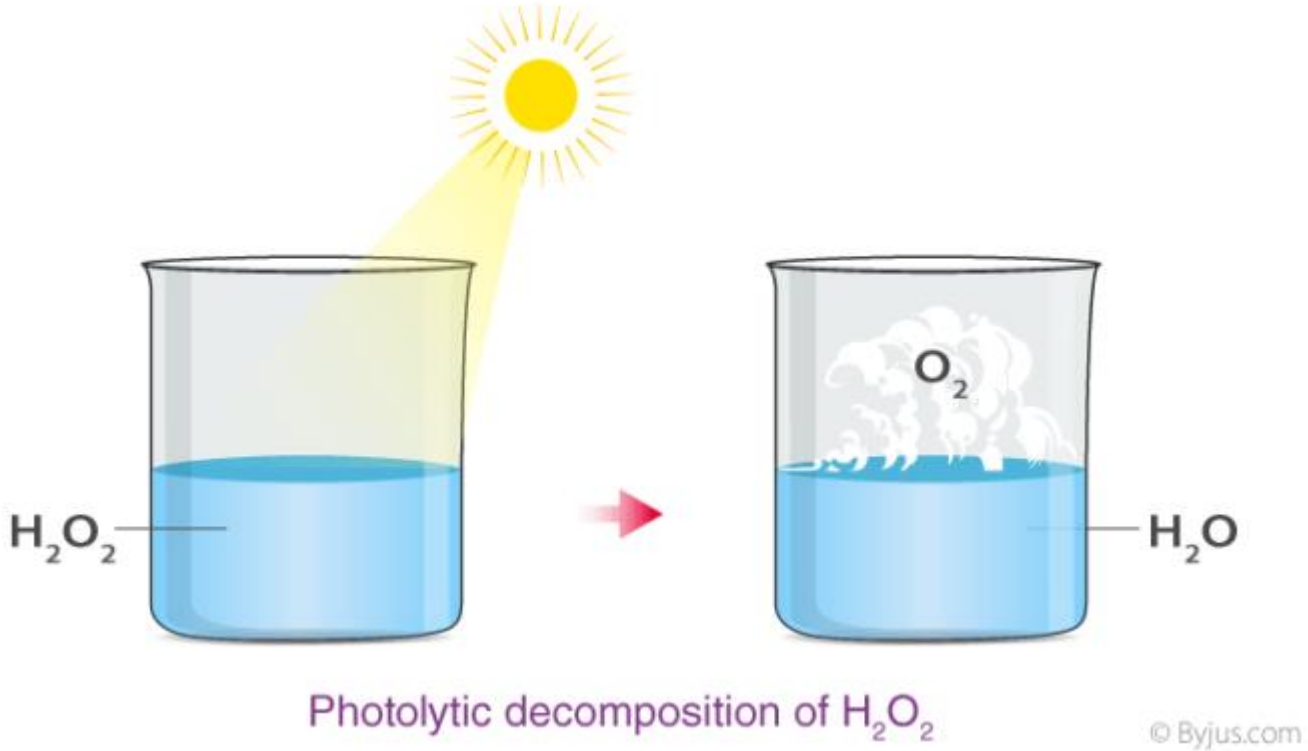
Decomposition reaction

A single reactant decomposes on the application of heat or light or electricity to give two or more products.
Types of decomposition reactions:
a. Decomposition reactions which require heat – thermolytic decomposition or thermolysis.



Thermal decomposition of HgO

b. Decomposition reactions which require light – photolytic decomposition or photolysis.



Photolytic decomposition of H2O2

c. Decomposition reactions which require electricity – electrolytic decomposition or electrolysis.

Electrolytic decomposition of H2O

Displacement reaction

More reactive element displaces a less reactive element from its compound or solution.

i) $Zn(s) + CuSO_4(aq) \rightarrow ZnSO_4(aq) + Cu(s)$
ii) $Cu(s) + 2AgNO_3(aq) \rightarrow Cu(NO_3)_2(aq) + 2Ag(s)$

Double displacement reaction

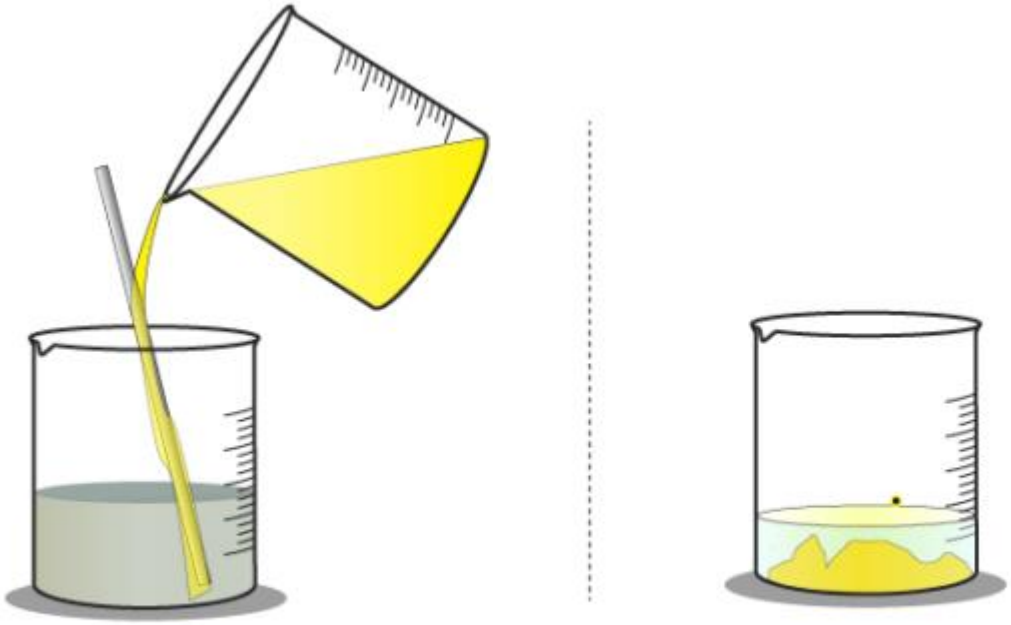
An exchange of ions between the reactants takes place to give new products.

For example, $Al_2(SO_4)_3(aq) + 3Ca(OH)_2(aq) \rightarrow 2Al(OH)_3(aq) + 3CaSO_4(s)$

Precipitation reaction

An insoluble compound called precipitate forms when two solutions containing soluble salts are combined.

For example, $Pb(NO_3)_2(aq) + 2KI(aq) \rightarrow 2KNO_3(aq) + PbI_2(\downarrow)(s)(yellow)$



Precipitation reaction

Redox reaction

Oxidation and reduction take place simultaneously.
Oxidation: Substance loses electrons or gains oxygen or loses hydrogen.
Reduction: Substance gains electrons or loses oxygen or gains hydrogen.
Oxidising agent – a substance that oxidises another substance and self-gets reduced.
Reducing agent – a substance that reduces another substance and self-gets oxidised.

Examples:

1. $Fe(s) + CuSO_4(aq) \rightarrow FeSO_4(aq) + Cu(s)$
(Blue) (Green)

$Fe \rightarrow Fe^{+2} + 2e-$ $(oxidation)$; Fe - reducing agent.

$Cu^{+2} + 2e- \rightarrow Cu(s)$ $(reduction)$; Cu - oxidising agent.

2. $ZnO + C \rightarrow Zn + CO$

ZnO reduces to Zn → reduction

C oxidises to CO → oxidation

ZnO - Oxidising agent

C - Reducing agent

Endothermic and exothermic reaction

Exothermic reaction – heat is evolved during a reaction. Most of the combination reactions are exothermic.

$Al+Fe_2O_3 \rightarrow Al_2O_3+Fe+heat$
$CH_4+2O_2 \rightarrow CO_2+2H_2O+heat$

Endothermic – Heat is required to carry out the reaction.

$6CO_2+6H_2O+Sunlight \rightarrow C_6H_{12}O_6+6O_2$

Glucose
Most of the decomposition reactions are endothermic.

Corrosion

Gradual deterioration of a material, usually a metal, by the action of moisture, air or chemicals in the surrounding environment.

Rusting:

$4Fe(s)+3O_2(\text{from air})+xH_2O(\text{moisture}) \rightarrow 2Fe_2O_3.xH_2O(\text{rust})$
Corrosion of copper:
$Cu(s)+H_2O(\text{moisture})+CO_2(\text{from air}) \rightarrow CuCO_3.Cu(OH)_2(\text{green})$
Corrosion of silver:
$Ag(s)+H_2S(\text{from air}) \rightarrow Ag_2S(\text{black})+H_2(g)$

Rancidity

It refers to the oxidation of fats and oils in food that is kept for a long time. It gives foul smell and bad taste to food. Rancid food causes stomach infection on consumption.
Prevention:
(i) Use of air-tight containers
(ii) Packaging with nitrogen
(iii) Refrigeration
(iv) Addition of antioxidants or preservatives

QUESTIONS:-  **Let's solve:**

LEARNING OUTCOME:-

After studying this topic, students will be able to:

- Define osmosis, reverse osmosis, different types of osmotic solutions etc.
- Understand the concepts of abnormal molar mass and Van't Hoff Factor.
- Solve numerical on osmotic pressure and abnormal molar mass.
- Derive equations for association and dissociation constant.

FIRAYALAL PUBLIC SCHOOL, RANCHI

Grade- X **Module-1/2**

SUBJECT- Sst (Geography)

CHAPTER NAME-RESOURCES AND DEVELOPMENT

TOPIC: Resource and it's kind; development of Resources

Link- https://www.extramarks.com

https://ncert.nic.in/ebooks.html

https://youtu.be/eyS6pECYAQA

https://youtu.be/hTT_dXVbJ40

https://youtu.be/_6yuzzkggBA

https://youtu.be/SqU7aVag4SI

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TUTORIALS:- We all consume different components from the environment as per our it for example water, sunlight, electricity etc all these are termed as Resources. Now let us get in detail about it.
Meaning of Resource- Everything available in our environment which can be used to satisfy our needs , provided,it is technologically accessible, economically feasible and culturally acceptable can be termed as ' Resource'.
* Note- human being interact with Nature through technology and create institutions to accelerate their economic development. This process of transformation of things available in our environment involves three things- interdependence between Nature, technology and institution.

Now have u ever imagine from where we get these resources.
Yes,from nature.
CLASSIFICATION OF RESOURCES
These resources can be classified in following ways-
a)on basic of origin
b) on the basis of exhaustibility
c) on the basis of ownership
d)on the basis of status of development

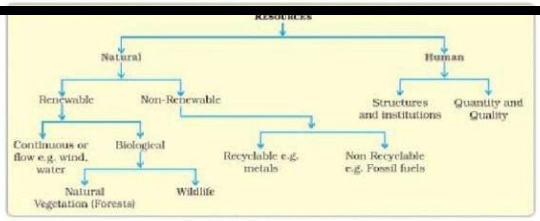

Fig. 1.2: Classification of resources

A) On the basis of origin : it is divided into two-

BIOTIC RESOURCES	ABIOTIC RESOURCES
These are obtained from biosphere (living world). Eg : human being,flora and fauna.	All those things which are composed of non-living things. Eg:rocks and metals

B) On the basis of Exhaustibility: it is also divided into two-

RENEWABLE RESOURCES	NON- RENEWABLE RESOURCES
The Resources which can be renewed or reproduced by physical, chemical or mechanical processes. Eg- solar and wind energy,water, forests and wildlife.	The Resources once consumed cannot be replaced and occur over a very long geological time. Eg- oil,coal,fossil fuels

C) On the basis of ownership - it is divided into four-

Individual Resources	Community resources
The Resources owned privately by individuals. Eg- plot,houses,well etc owned by a person or family.	The Resources which are accessible to all the members of the community. Eg-public parks, picnic spots owned by a community.
National Resources	International Resources
The Resources which come under one nation. Technically all the Resources belong	The Resources lying beyond 200kms of exclusive economic zone in the ocean. No

to the nation of particular nation.	one use these resources without permission of international institutions.

D) on the basis of status of development: it is divided into four-

Potential Resources	Developed Resources
Resources which are found in a region,but have not been utilised.Eg- the regions Rajasthan and Gujarat have enormous potential for the development of wind and solar energy.	Resources which are surveyed and their quality and quantity have been determined for utilisation.(they are in use)

Stock	Reserves
The resources that have been surveyed,but cannot be used due to lack of technology.for eg- water is a compound of two inflammable gases; hydrogen and oxygen ,which cannot be used as a rich source of energy but we don't have technical know-how to use them.	The resources that have been surveyed and we can use them with present technology but their use has not been started . Eg- water in the dams,forests.

DEVELOPMENT OF RESOURCES

Resources are vital for human survival. It was believed that resources are free gifts of nature so human being used them indiscriminately and this has led to the following major problems:
>Depletion of resources for satisfying the greed of few individuals.
> Accumulation of resources in few hands which divides the society into rich and poor.
> Indiscriminate exploitation of resources has led to global ecological crises such as global warming, ozone layer depletion, Environment pollution and land degradation.

For a sustained quality of life and global peace,an equitable distribution of resources has become essential. For using resources judiciously,we need to adopt sustainable economic development.
SUSTAINABLE DEVELOPMENT- It means development should take place without damaging the environment, and development in the present should not compromise with the needs of the future generations.
Global level effort- Rio de Janeiro Earth summit ,1992. Agenda 21 was adopted aiming at achieving global sustainable development,to combat environmental damage, poverty, disease through global co-operation.

RESOURCE PLANNING

Resource planning is a complex process which involves:
I) Identification and inventory of resources across the regions of the country.This involves surveying, mapping and qualitative and quantitative estimation and measurement of the resources.
ii) Evolving a planning structure endowed with appropriate technology, skill and institutional set up for implementing Resources development plans.
iii) Matching the resource development plans with overall national development plans.
India's effort- the Resource planning was done by five year plan.

Conversation of resources- Irrational consumption and over - utilisation of resources may lead to socio-economic and environmental protection.To overcome these resource conversation is important. For example ,Gandhiji was very apt in voicing his concern about Resource conversation in these words:' there is enough for everybody's need and not for anybody's greed'.
We have to preserve Resources from the hand of greedy people and use it wisely and effectively to meet present need without damaging the environment and preserve them for future use as well.

Let's examine: answer the following questions according to your own understanding:
1) How are human resources important for development of natural resources?
2) Classify and Explain Resources of the basis of ownership?
3) what are the three things involved in the process of transformation of resources?
4)What do you mean by sustainable development? Why is it essential for resource planning?
5)what are the problems associated with indiscriminate use of resources?
6)State some important measures of resource conservation.
7) Give a clear explanation of Gandhiji's views on conversation of resources?
8) Name the international institution that give permission for use of international Resources.
9) Differentiate between national and international Resources.
10) Differentiate between renewable and non - renewable resources.
11) Differentiate between biotic and abiotic Resources.
12) define- a) reserves b) stock of resources.
13) Differentiate between potential and developed resources.
14) What is the two aim of Agenda 21.
15)how conservation of resources leads to global peace . Explain

LEARNING OUTCOME:-

After studying this topic, students will be able to:

* Students will understand meaning of resources and it's different types .
*It will help to know the meaning of sustainable development and world effort.
* An awareness will be created to conserve the Resources.
* They will know problems related to use of resources.
* They will know proper method of resource planning.

FIRAYALAL PUBLIC SCHOOL, RANCHI

Grade- X **Module-2/2**

SUBJECT-SST (geography)

CHAPTER NAME-resources and development

TOPIC: land Resources and soil resources

Link-https://www.extramarks.com

https://ncert.nic.in/ebooks.html

https://youtu.be/eyS6pECYAQA

https://youtu.be/hTT_dXVbJ40

https://youtu.be/_6yuzzkggBA

https://youtu.be/SqU7aVag4SI

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TUTORIALS:-

LAND RESOURCES - Land is a natural resource of utmost importance. It supports natural vegetation , wildlife,human life , economic activities, transport and communication systems. Land is present in limited size so we must use them effectively.

Land Resources in India

India has land under a variety of relief features, namely

> Plain land- about 43 percent of the land area is plain,which provides facilities for agriculture and industry.

> Mountain - about 30 percent of the total surface area of the country are mountains which ensure perennial flow of some rivers and provide facilities for tourism and ecological aspects.

> Plateau - about 27 percent of the area of the country is the plateau region that possesses rich reserves of minerals, fossil fuels and forests.

Land utilisation - Land resources are used for the following purposes:

1) forests

2) land not available for cultivation

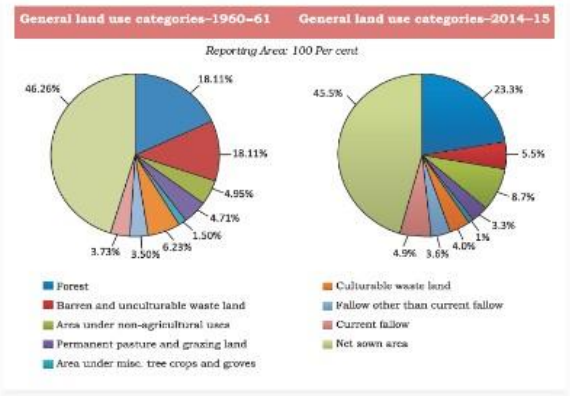
a) Barren and wasteland

b) land put to non- agricultural uses

3) Fallow lands
4)Other uncultivated lands (excluding fallow land)
5) Net sown area
The use of land is determined by two factors:
1.Physical factors- such as topography, climate, soil types
2. Human factors- such as population density, technological capability and culture and traditions etc.

Land use data , however,is available only for 93 percent of the total geographical area because the land use reporting for most of the north-east states except Assam has not been done fully. Also,some areas of Jammu and Kashmir occupied by Pakistan and China have also not been surveyed.

The data below represents the land use pattern in India.



* Note- wasteland is the Land put to other non-agricultural uses which include rocky ,arid and desert areas,roads, railways, industry etc.

LAND DEGRADATION AND CONSERVATION MEASURES

Continuous use of land over a long period of time without taking appropriate measures to conserve and manage it,had resulted in land degradation.
Reasons for land degradation: Human activities such as deforestation,over grazing,mining and quarrying contributed in land degradation.
Measures to control land degradation:
> Afforestation
> Plantation of shelter belts of plants
> Control on over grazing
> Stabilisation of sand dunes by growing thorny bushes
> Proper management of waste lands
> Control mining activities

SOIL AS A RESOURCE

Soil is the most important renewable natural resource. It is the medium of plant growth and supports different types of living types of living organisms on the earth.

Classification of soil

On the basis of the factors responsible for soil formation, colour, thickness, texture,age, chemical and physical properties,the soils of India are classified into

A) alluvial soil - it consist of various proportions of sand ,silt and clay. It is the most fertile soil found in the northern plains is deposited by three river systems - the Indus,the Ganga and the Brahmaputra. Alluvial soil is divided into two old alluvial and new alluvial.

New alluvial has fine particles than old and is more fertile.

B) Black soil- made up of clayey material and hold moisture ,also contain calcium carbonate, magnesium,potash and lime.It is ideal for cultivation of cotton. It is found in the Deccan trap area - Maharashtra,Malwa, Madhya Pradesh, Chattisgarh etc. The soil is sticky when wet and difficult to work on unless tilled immediately after the first shower or during the pre-approval monsoon period.

C) Red soil- this type of soil develops on crystalline igneous rocks in areas low rainfall in eastern and southern parts of Deccan plateau. They contain diffuse iron so appears to be red.

D) laterite soil- this Soil is the result of intense leaching due to heavy rain .they are acidic in nature and generally deficient implant nutrients. They are mostly found in southern states, western ghats of Maharashtra, Odisha ,some parts of West Bengal and north - east regions. This soil are useful for growing tea and coffee.

E) Arid soil- they are sandy in texture and saline in nature.lacks in humus and moisture. They are not fit for cultivation. Areas mostly found are Rajasthan.

F) Forest soil- these soil are found in the hilly and mountainous areas. They are loamy,silty and have coarse grains. They are acidic and content low humus.

The map below shows the different types of soils found in India.

SOIL EROSION AND SOIL CONSERVATION

The denudation of the soil cover and subsequent washing down us described as soil erosion. The soil erosion is caused due to human activities like deforestation , overgrazing, construction and mining etc. Also ,there are some natural forces like wind, glacier and water which lead to soil erosion. Soil erosion is also caused due to defective methods of farming.

There are mainly two types of soil erosion:

1. Gully erosion- the running water cuts through the clayey soils and makes deep channels as gullies.the land becomes unfit for cultivation and is known as bad land.
2. Sheet erosion- when water flows as a sheet over large areas down a slope and top soil is washed away.

CONVERSATION OF SOIL

1. Ploughing along the contour lines decelerate the flow of water down the slopes. This is called contour ploughing .
2. Terrace cultivation- this type of agriculture practice is done in western and central Himalayas.
3. Strip cropping- when large field is divided into strips and grass are left between two creops to break up the force of the wind.
4. Shelter belts- planting lines of trees to create shelter helps in the stabilisation of sand dunes in row of trees.

Let examine. Answer the following questions:

1) Name the different types of land Resources found in India .
2) What is the usefulness of plateaus?
3) What is the meaning of wasteland?
4) List some reasons for the degradation of land.
5) List some conversation measures to protect land.
6) what is soil and how it is made?
7) Name the factors responsible for formation of soil.
8) Define- a) alluvial soil b) laterite soil
9) why is is necessary to tilt Black soil after last rainfall?
10) Name two crops grown in laterite soil.
11) Name one crop grown in black soil.
12) List the various reasons for soil erosion.
13) List effective measures for soil conservation from erosion.

LEARNING OUTCOME:-

1) the students will understand the distribution of land and their different uses.
2) they will understand the reasons for land degradation of land and conservation measures.
3) they will know about soil and its types.
4) they will understand soil erosion and practical application of soil conservation.

FIRAYALAL PUBLIC SCHOOL, RANCHI

Grade- 10 **Module- 1/1**

Link : Not Available

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TUTORIALS:

हिन्दी व्याकरण : रस

साहित्य के आनंद को रस कहते हैं। साहित्य अथवा काव्य की आत्मा रस है। इसी रस का आस्वाद लेने के लिए पाठक, श्रोता या दर्शक साहित्य पढ़ते, सुनते या देखते हैं । यदि कविता या साहित्य में रस ही न मिले तो उसका कोई मूल्य ही नहीं । इसीलिए संस्कृत के आचार्य विश्वनाथ ने कहा है :- वाक्यं रसात्मकं काव्यं । अर्थात सरस अभिव्यक्ति ही काव्य है ।

रस का स्वरूप :- साहित्य रस या काव्य रस अन्य लौकिक रसों से अलग है । लौकिक रसों की भौतिक सत्ता होती है। उन्हें बर्तन में डाल कर जीभ से पान किया जाता है, किंतु साहित्य रस भीतरी और मानसिक होता है । इसका पान मन-ही-मन किया जा सकता है । अतः यह सूक्ष्म अतीन्द्रिय है परन्तु यह ब्रह्मनंद की तरह अलौकिक नहीं है । भगवान, भक्ति और साधना से प्राप्त आनंद अलौकिक होता है परन्तु साहित्य रस लौकिक संसार को देख-सुन कर प्राप्त होता है । अतः यह न तो पूर्णतया लौकिक है और न अलौकिक । यह भावों से उत्पन्न आनंद है, अतः भावात्मक है।

रस का सूत्र :- नाट्यशास्त्र के आचार्य भरत मुनि ने रस की परिभाषा देते हुए कहा—

विभावानुभावव्यभिचारीसंयोगाद्रसनिष्पत्तिः अर्थात विभाव अनुभाव व्यभिचारी भाव के सहयोग से रस की निष्पत्ति होती है।

यह रस की सामग्री है। दूसरे शब्दों में रस के अवयव हैं। जिस प्रकार रस सामने हो किंतु जिह्वा उसका पान न करें तो आनंद नहीं मिल सकता उसी प्रकार विभाव अनुभव व्यभिचारी आदि के संयोग से तभी प्राप्त होता है जबकि पाठक श्रोता या दर्शक के मन में स्थित स्थाई भाव उन्हें ग्रहण करने में पूरी तरह तत्पर हो। अतः रस को समझने के लिए पहले स्थाई भाव को समझना आवश्यक है।

स्थायी भाव -- प्रत्येक मनुष्य के चित्त में नौ स्थाई भाव वासना के रूप में स्थित रहते हैं। यह सुसुप्त अवस्था में सदा विद्यमान रहते हैं। जब इनके सम्मुख रस की सामग्री प्रकट होती है तो ये क्रियाशील हो उठते हैं। सदा में दर्शक का चित्त व्यक्तित्व की निजी सीमाओं को तोड़कर राग द्वेष से रहित हो जाता है इसी को रामचंद्र शुक्ल ने हृदय की मुक्त अवस्था कहा है। राग द्वेष और अपना पराया के भेद सेऊपरउठने के कारण रस अनुभूति सदा ही आनंदमयी होती है। दुख और संघर्ष के दृश्य भी मूलतः आनंदित करते हैं।

मनुष्य के हृदय में ये नौ स्थाई भाव ही रस की सामग्री से सहयोग करके रस रूप में परिणत हो जाते हैं। अतः भावों से ही रस बनते हैं। यह कह सकते हैं कि भाव ही परिपक्व होकर रस बन जाते हैं। 9 स्थाई भाव और उनसे व्यक्त रस इस प्रकार हैं :--

भाव	रस
रति।	श्रृंगार
शोक	करुण
क्रोध।	रौद्र
घृणा।	वीभत्स
शम , वैराग्य।	शांत
उत्साह।	वीर
हंसी।	हास्य
भय	भयानक
विस्मय	अद्भुत

कुछ विद्वान भागवत रति और संतति रति के आधार पर दो अन्य रस भी मानते हैं:--

भागवत रति -- भक्ति रस

संतति रति - वात्सल्य रस ।

प्रस्तुत पाठ के आधार पर प्रश्नों के उत्तर दे : --

1. रस किसे कहते हैं ?
2. रस का सूत्र स्पष्ट कीजिए ।
3. स्थाई भाव किसे कहते हैं ?
4. रस निष्पति में स्थाई भाव की क्या भूमिका है ?
5. हास्य रस का स्थाई भाव बताएं ?
6. उत्साह से कौन सा रस निष्पनन होता है ?
