सत्यमेव जयते

Government of Maharashtra

Bridge Course

Standard : Tenth

Subject : Science and Technology Part 2

Academic Year 2021-22



Academic Year 2020-21







ज्ञानसेवा तु साफल्यम्

State Council of Educational Research and Training, Maharashtra, Pune 30

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Instructions for Students / parents

Namaskar dear students !

In the academic year 2020-21, you could not go to school as usual, but your teachers were trying to bring education to you through various media. Even though our school was not regular, the education continued. Now we are getting ready for the new academic year. This bridge course has been prepared for the purpose of pre-preparation for the academic year 2021-22 as well as a review of the previous year's syllabus.

1. This year's syllabus is based on the important concepts of the previous class, the same concepts have been included in this bridge course.
2. The duration of the bridge course has been fixed at 45 days and it consists of three tests. These tests are based on the Activity Sheets in the bridge course.
3. Each Activity Sheet in the bridge syllabus has been prepared with the aim of clarifying important concepts.
4. The Activity Sheet is constructed as follows:

- **Let's Understand:** The concepts included in the Activity Sheet are given here.
- **Reference:** Reference is made to last year's lesson.
- **Learning Outcomes / Competency Statements:** Learning Outcomes and developing competencies that can be achieved through the given Activity Sheet.
- **Let's take a look:** A brief explanation is given to make the concept clearer. It includes tables, concept diagrams, flow charts, figures, etc.
- **Let's Practice:** The questions are designed with a balance of knowledge, understanding, application and skills to further practice the concepts and contents understood.
- **Links for more study:** To strengthen the concepts in the Activity Sheet, video links of related concepts on the Diksha portal are provided.

5. The Activity Sheet should be solved under the guidance of the teacher. Parents and students should keep in touch with the teacher to stay consistent in the study.
6. Attempts should be made to complete it within the time allotted for each Activity Sheet.
7. **The answers to the questions in the Activity Sheet should be solved in a separate notebook and preserve the notebook for internal assessment.**
8. Small activities as well as experiments are given. These should be performed by the students in the presence of parents or teachers.
9. Students should better understand the concept by watching the related videos using the links given at the end of the Activity Sheet.
10. Seek the help of your parents or teachers if you have any problems solving the Activity Sheet. We are confident that you too will successfully complete this bridge course and prepare yourself for the new academic year 2021-22 with confidence.

Best wishes for completing the bridge course with sincerity and self-effort!

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Instructions for teachers

The global crisis of coronavirus outbreak in the academic year 2020-21 has led to many difficulties in direct classroom teaching. We all tried to reach out to the students using various media. We also had great success in it. But due to lack of direct teaching, our efforts were facing many limitations. The crisis is not over yet. There is a question mark over the commencement of schools in the academic year 2021-22. This bridge course is created to review the studies done by our students in the academic year 2020-21, as well as for pre-preparation of the current academic year curriculum.

1. The bridge course is to be completed in a period of 45 days.
2. In this bridge course, the most important concepts of the previous year have been included and presented in the form of Activity Sheets.
3. Each of the Activity Sheets is constructed in such a way that they contain small activities and experiments which can be easily performed by the students using the materials that are readily available .
4. Understand the structure of the Activity Sheet in a systematic way, so that it will be easier to solve.

Let's Understand: Here are the key concepts included in the Activity Sheet related to last year's lesson. Much emphasis has been placed on last year's concepts, which have been further expanded this year.

Reference: Reference is made to last year's lesson. Students should be instructed to use their last year's textbook.

Learning Outcomes / Competency Statements: Learning Outcomes and developing competencies that can be achieved through the given Activity Sheet. While solving the Activity Sheet, attention should be paid to the achievement of the learning outcome, as well as to the development of the relevant competency.

Let's take a look: A brief explanation is given to make the concept clearer. It includes tables, concept diagrams, flow charts, figures, etc. Here you can design various other learning experiences. Important points and brief information are provided to make your teaching easier. You can add explanations to those concepts as per available time.

Let's Practice: The questions are designed with a balance of knowledge, understanding, application and skills to further practice the concepts and contents understood. The practice questions in each Activity Sheet should be written by the students in an independent notebook. This will lead to revision as well as writing practice. These notebooks should be submitted after completion of the bridge course.

Links for more study: To strengthen the concepts in the Activity Sheet, video links of related concepts on the Diksha portal are provided. Students should be instructed to watch these videos at this link at home.

5. This bridge course will be useful for understanding various concepts in the present class, for awakening the students' foreknowledge as well as for reviewing the students' learning.

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6. Observe that the students solve the Activity Sheets strictly as per the plan given in the index.
7. The teacher should pay attention to the fact that the students will solve the Activity Sheets in the bridge syllabus honestly and with self-effort. Understand their problems and help them accordingly.
8. After reviewing certain units, the given tests should be attempted by the students. After checking the tests, they should be evaluated by adopting proper criteria and the marks should be recorded.
9. After the evaluation of each test, the students who need therapeutic teaching should be properly guided. Thus all the three tests should be implemented.
10. After completing this 45 days bridge course, you should start teaching your regular course.

Best wishes for the academic year 2021-22 !

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Preparatory Bridge Course

Standard – X

Sub – Science and Technology Part 2

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Activity Sheet No.	Name of the topic in activity sheet
1st July to 15th July 2021	
1	Heredity and evolution 1
2	Heredity and evolution 2
3	Heredity and evolution 3
4	Life processes in living organisms 1
5	Life processes in living organisms 2
Unit Test 1 (Based on Activity Sheet No. 01 to 05)	
16th July to 30th July 2021	
6	Life processes in living organisms 3
7	Life processes in living organisms 4
8	Life processes in living organisms 5
9	Life processes in living organisms 6
10	Energy flow in an ecosystem
Unit test 2 (Based on Activity Sheet No. 06 to 10)	
31st July to 14th August 2021	
11	Classification of plants
12	Useful and harmful microbes
13	Introduction to biotechnology
14	Environmental management
15	Information and communication Technology
Unit test 3 (Based on Activity Sheet No. 01 to 15)	

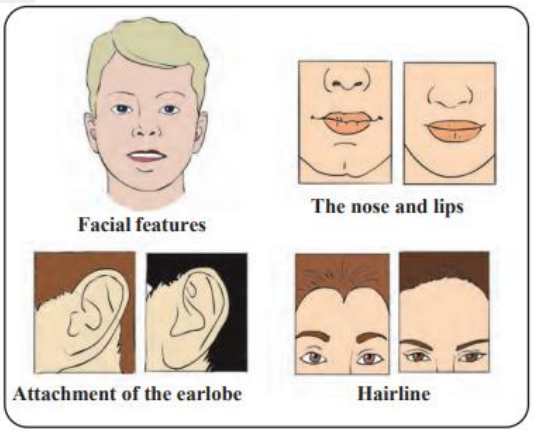
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Preparatory Bridge Course
Std. – X Activity sheet No.1 Sub – Science and Technology Part 2

Let's Understand : Inheritance, Heredity: characteristics and their appearance, Types of chromosomes, DNA, RNA.
Reference : Std. IX Chapter 16 Heredity and Variation.
Competency statements:

1. By taking information about inheritance and genetics, learns that the similarities and differences between parents and offspring are the result of heredity and are manifested by genes inherited from parents.
2. Explains organization and types of chromosomes.
3. Studies the structure of DNA and RNA.

Let's take a look:



We have seen that there is great variation within every species in nature. Let's study the factors that give rise to these variations. Carefully observe the differences in the given picture. Irrespective of all of us being humans we have differences in height, skin, facial features. For example, some have attached earlobes, the nose and lips ,and the hairlines are different from each other.

Inheritance : The transfer of characteristics of organisms from one generation to the next is called inheritance. New progeny is formed through the process of reproduction. Organisms produced by asexual reproduction show minor variations. However, offspring produced through sexual reproduction show comparatively greater variations.
Genetics: The branch of biology which studies the transfer of characteristics of organisms from one generation to the next,and genes in particular, is called " Genetics"
Inherited traits and expression of traits . The similarities and differences are all the effects of heredity.

Chromosomes : The structure in the nucleus of cells that carries the hereditary called the characteristics is chromosome. Each chromosome is made up of nucleic acid and proteins. Each species has a specific number of chromosomes.

Types of chromosomes : depending upon the position of centromere,there are 4 types - Metacentric, sub-metacentric, acrocentric, telocentric.

By shape and organization there are 4 types - homologous, heterologous, Sex chromosomes or allosomes and autosomes.

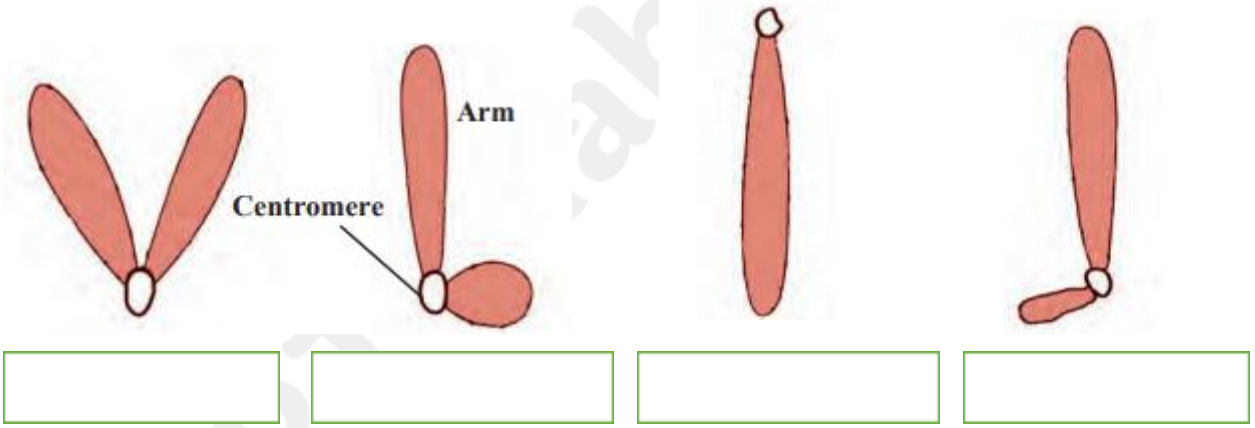
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DNA (deoxyribo nucleic acid): The structure of DNA molecules is the same in all organisms. In 1953, Watson and Crick produced a model of DNA molecule.These molecules control the functioning, growth and division of the cell and are therefore called the Master molecules. Each strand in the molecule of DNA is made up of many small molecules known as Nucleotides.There are four types of nitrogenous bases adenine, guanine, cytosine and thymine. Adenine and guanine are called as purines while cytosine and thymine are called pyrimidines.

RNA: It is made up of ribose sugar, phosphate molecules and 4 types of nitrogenous bases adenine, guanine, cytosine, uracil.
According to function there are 3 types- r-RNA, m-RNA, t- RNA.

Let's Practice:

1. Label the type of chromosome.



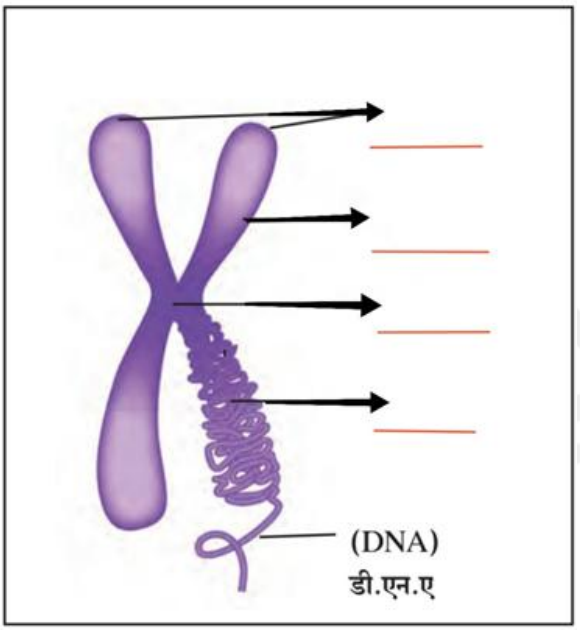
2.Give reason-Some plants are tall and some are short .

_____
_____
_____
_____

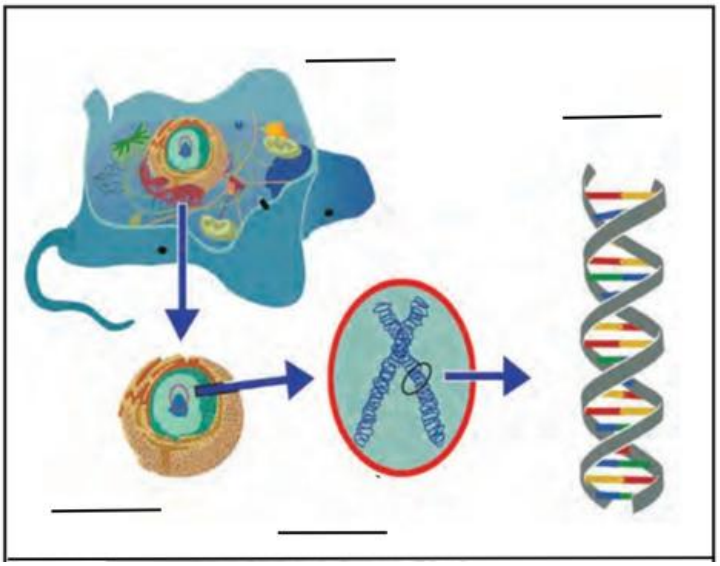
3.Complete the following table-

Sr. No.	organism	No. of chromosomes
1		46
2		48
3	crab	
4		04
5		26

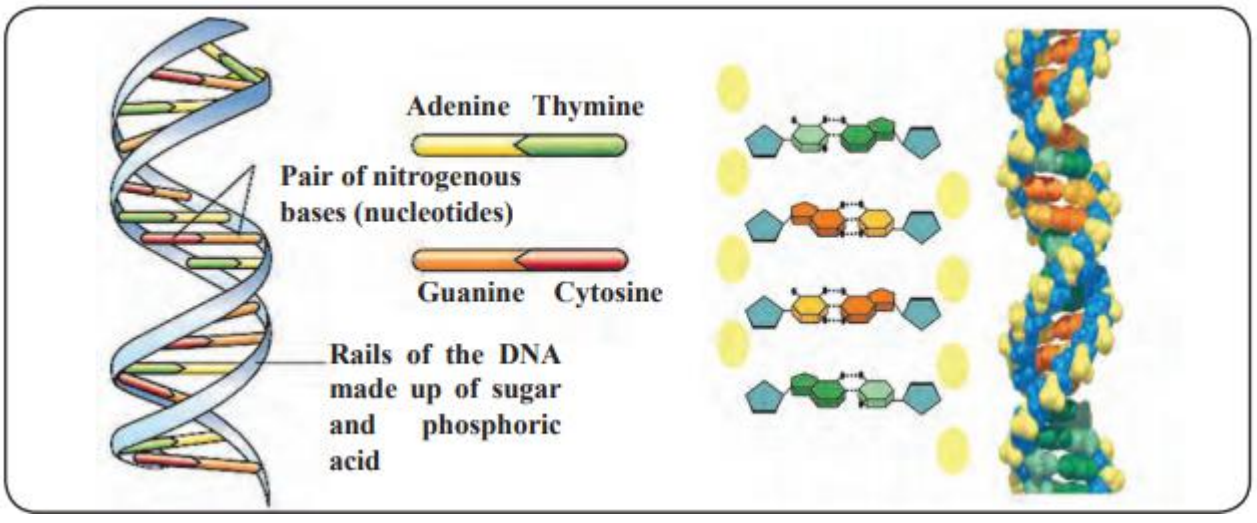
4. Label the diagrams.



5. Label the diagrams.



6. Observe the given diagram and answer the following.



i. Identify the given diagram.

ii. DNA has two parallel threads , what is this structure called ?

iii. Name nitrogenous bases.

iv. From which substances each rail of the DNA ladder is made up of?

v. Complete the correlation

Adenine :Thymine :: _____ : Cytosine.

7. Name the type of RNA.







_____ _____ _____

Links for more study:

1. Heredity and Variations - https://bit.ly/3xqHRjn
2. DNA - https://bit.ly/36h3sPt
3. Types of Chromosomes- https://bit.ly/3Azapct

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Activity Sheet : 02

Let's understand : Mendel's principles of heredity

1. Mendel's experiment of the Monohybrid Cross
2. Mendel's experiment of the Dihybrid Cross

Reference : Std. IX, Chapter 16 Heredity and Variation

Competency statements :

1. Understands Mendel's experiments on monohybrid and dihybrid progeny and the principles of heredity.
2. Writes the ratios of genotype and phenotype.

Let's take a look:

1. Mendel brought about the cross between two pea plants with only one pair of contrasting characters (tall plant and dwarf plant) .This type of cross is called a monohybrid cross.

2. In the dihybrid cross, two pairs of contrasting characteristics are under consideration. Mendel performed more experiments on hybridization in which he considered more than one pair of contrasting characteristics. He brought about a cross between a pea plant producing rounded and yellow coloured seeds(RRYY) and a pea plant with wrinkled and green coloured seeds(rryy). In this cross, two pairs of contrasting characteristics were considered colour of seeds and shape of seeds. Hence, it is called a dihybrid cross.

Let's practice :

Q1. Write names:

In Mendel's monohybrid experiment in Generation P1: -

1. English letters used for tall plants =
2. English letters used for dwarf plants =

Q2. Write the names of dominant and recessive characteristics of human beings in the following table.

Dominant	Recessive
Rolling tongue	
	Absence of hairs on arms
Black and curly hair	
	Attached earlobe

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Q3. Write the correct answer in the blanks in Mendel's experiment of Monohybrid cross.

Mendel's experiment of the Monohybrid Cross

Parental Generation (P_1)

Phenotype: Tall Dwarf

Genotype: T T t t

Gametes: T t

First Filial Generation (F_1)

Phenotype: Tall

Parental Generation (P_2) Selfing in F_1

Phenotype: Tall Tall

Genotype: Tt Tt

Gametes: T and t T and t

First Filial Generation (F_2)

Male gamete / Female gamete	T	t
T		Tt (Tall)
t	Tt (Tall)	

Q4. Complete the following table.

Characteristics	Type
F2 Pure dominant (TT)- tall plants	
F2 Pure recessive (tt) - dwarf plants	Homozygous
F2 Hybrid plants (Tt)–tall plants	

Q5. Study the following table of Mendel's experiment of dihybrid cross and write the answer for the following questions.

Mendel's experiment of dihybrid cross

Parental Generation (P_1)

Phenotype: Rounded-yellow seeds Wrinkled-green seeds

Genotype: RRYY rryy

Gametes RY ry

First Filial Generation (F_1) RrYy

Phenotype: (Rounded-yellow seeds)

Parental Generation (P_2) Selfing in F_1

Phenotype: Rounded-yellow seeds Rounded-yellow seeds

Genotype: RrYy RrYy

Gametes RY, Ry, rY, ry RY, Ry, rY, ry

Second Filial Generation (F_2)

Second Filial Generation (F_2)

Female gamete / Male gamete	RY	Ry	rY	ry
RY	RRYY	RRYy	RrYY	RrYy
Ry	RRYy	RRyy	RrYy	Rryy
rY	RrYY	RrYy	rrYY	rrYy
ry	RrYy	Rryy	rrYy	rryy

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A. Write the English letters for the gametes from the table above.

a) Round yellow =
b) wrinkled yellow =
c) Round green =
d) wrinkled green =

B. Write its Phenotypic ratio.

a) Round-Yellow:-
b) Wrinkled-Yellow:-
c) Round-Green:-
d) Wrinkled-Green:-

Phenotypic ratio _____ : _____ : _____ :_____

C. Write its Genotypic ratio:

a) RRYY = b) RRYy = c) RRyy =
d) RrYY = e) RrYy = f) Rryy =
g) rrYY = h) rrYy = i) rryy =

Genotypic Ratio = ___ : ___ :___ : ___ : ___ :___ :___ : ___ : ___

Links for more study:

Mendel's monohybrid cross:
https://diksha.gov.in/play/content/do_3130187069767352321109?referrer=utm_source%3Dmobile%26utm_campaign%3Dshare_content

Mendel's dihybrid cross :
https://diksha.gov.in/play/content/do_3130187069904650241821?referrer=utm_source%3Dmobile%26utm_campaign%3Dshare_content

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Activity Sheet : 03

Let's Understand: Genetic Disorders:

a) Disorders due to chromosomal abnormalities.
b) Monogenic disorders
c) Mitochondrial disorder
d) Polygenic disorder

Reference : Std. IX Chapter 16 Heredity and Variation.

Competency statements :

i. Studies the genetic disorders occurring due to chromosomal abnormalities and mutation of genes, Mitochondrial disorders.
ii. Gives examples of physical disorders like cleft lips,albinism and physiological disorders like sickle cell anaemia, hemophilia, etc.

Let's take a look:

Diseases or disorders occurring due to abnormalities in chromosomes and mutations in genes are called genetic disorders. For eg. Albinism, cleft lips,Turner syndrome, Sickle-cell anaemia, etc.

Human beings have 46 chromosomes in the form of 23 pairs. There is great variation in the size and shape of these chromosomal pairs. These pairs have been numbered. Out of 23 pairs, 22 pairs are autosomes and one pair is of sex chromosomes.Chromosomes in women are represented as 44 + XX and in men as 44 + XY.

A. Disorders due to chromosomal abnormalities :-
   i. Down's Syndrome (46 + 1)
   ii. Turner's syndrome (44 + X)
   iii. Klinefelter's syndrome (44 + XXY)

B. Diseases occurring due to mutation in a single gene .
   i. Albinism
   ii. Sickle – cell anaemia
C. Mitochondrial disorders
D. Disorders due to mutations in multiple genes.

Let's practice :

Q.1. Complete the correlation.

i. 44 + X : Turner's syndrome : : 44 + XXY : _____
ii. Haemophilia : Monogenic disorder : : _____ : Mitochondrial disorder

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Q.2. Observe the figures and identify the disorders.







1. _____ 2. _____ 3. _____

Q.3. Identify the disorder In the given picture. How will you identify the disorder? Write the name of the genetic disorder.

_____

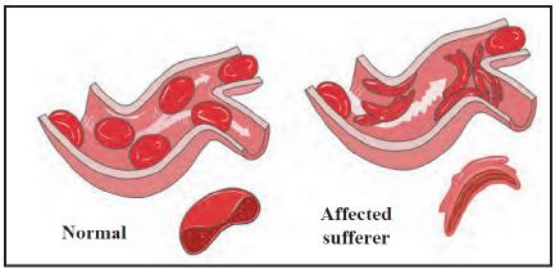
_____

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_____

_____

Q.4. Please Tell :

i. Raja can't see at night, can't walk properly, he is suffering from which disease ?

_____

_____

_____

ii. Under the National Health Mission Scheme which test is available for diagnosis of sickle-cell anaemia?

_____

_____

_____

Links for more study:

1. Genetic Disorders - https://youtu.be/pVpT_ZygZ3A

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Activity Sheet : 04

Let's understand: Transportation in plants, excretion, root pressure absorption with the help of roots transpiration through leaves and translocation.

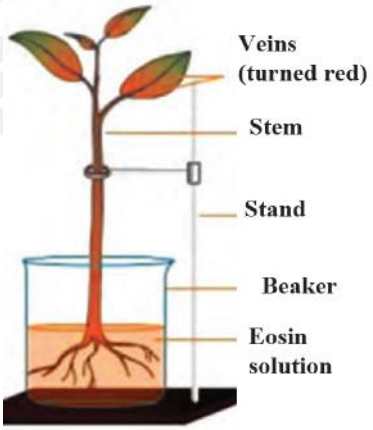
Reference : Std. IX Chapter 15 life processes in living organisms.

Competency statements :

1. To understand transportation in plants, excreting root pressure with the help of diagrams.
2. To draw neat and labelled diagrams.
3. To label the given diagram.

Let's take a look :

1) Transportation - By the process of transportation, substances either synthesized or absorbed in one part of the body reach another. Roots of plants absorb inorganic substances from the soil and transport them.



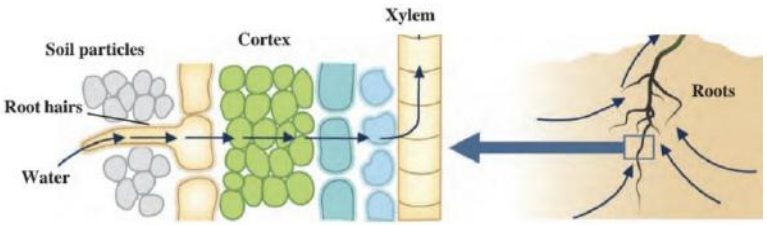
15.1 Root pressure

2) Root pressure - Observe the figure given below and try to understand. Transportation of red colour through the stem takes place so the veins of leaves turn red.

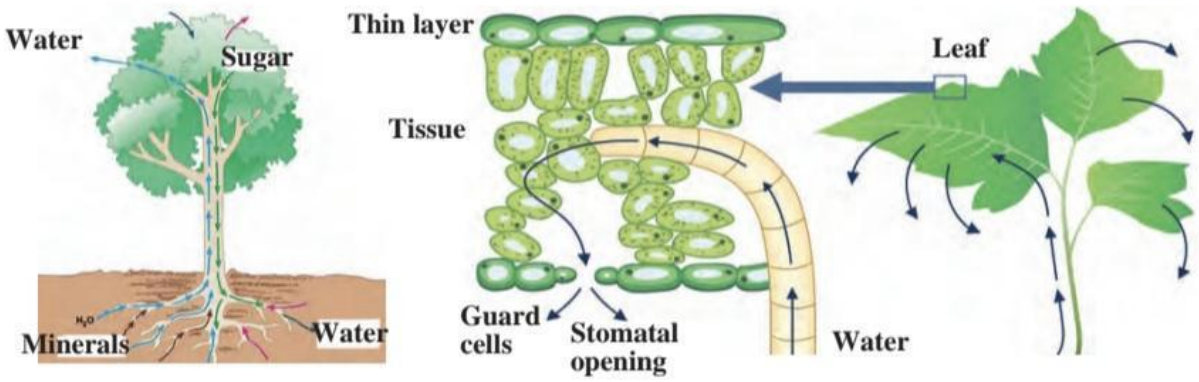
3) Absorption with the help of roots

Observe the diagram carefully.

Root cells are in contact with water and minerals in the soil.Water and minerals enter the cell on the root surface due to differences in concentration. As a result these cells become turgid.These turgid cells exert pressure on the adjacent cells.This is called root pressure.



4) Transpiration through leaves : Observe the following figure



Transpiration through Leaves

Plants give out water in the form of vapour through the stomata on their leaves. There are two guard cells around the stomata. These cells control the opening and closing of stomata. Transpiration occurs through these stomata, this is the process of evaporation. In this process water is released into the atmosphere by leaves. As a result, water level in the epidermal layer of the leaf decreases. Water is brought up to the leaves through the xylem so as to compensate for the lost water. Transpiration helps in absorption of water and minerals and distribution to all parts of the plants whereas root pressure performs the important role of pushing the water up during the night time.

5) Transportation:

The food produced in leaves is transported to each cell in the plant body. Excess food, except amino acids, is stored in roots, fruits and seeds.This process is called translocation of materials.

Let's practice :

Q.1) Identify the phenomenon in the given picture and write the reason behind it.



_____
_____
_____
_____
_____
_____
_____

Q.2) Write the names of waste materials of plants that are useful to humans.

_____
_____
_____

Q.3) Write a note on transpiration through leaves and evaporation of water from leaves.

_____
_____
_____
_____
_____

Links for more study:

1. Transpiration in Plants - https://youtu.be/U4rzLhz4HHk

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Activity Sheet : 05

Let's understand : Excretion in human beings, Excretory system and kidneys, Structure of nephron and Dialysis of blood.

Reference : Std. IX, Chapter 15 life processes in living organisms.

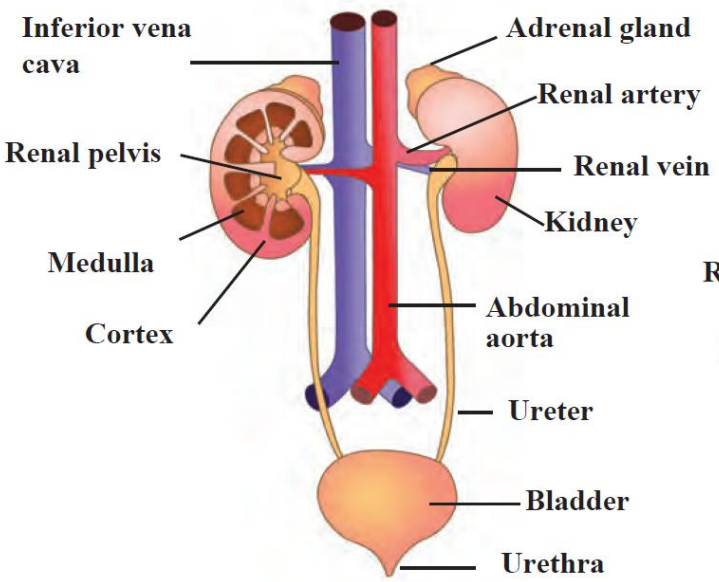
Competency statements :

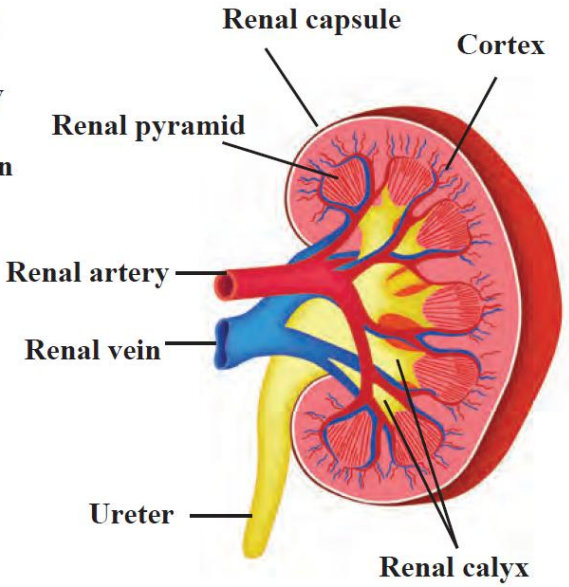
1) students will be able to understand excretion in human beings.
2) To draw the construction of Nephron.
3) Students will be able to understand the importance of dialysis of blood.

Let's take a look:

1) Excretion in human beings: Removal of waste materials like urea, uric acid ammonia etc. from the body is very important and it is the excretory system that carries out this function. The human excretory system consists of a pair of kidneys, a pair of ureters, the urinary bladder and the urethra. Urine is formed by the kidneys by separating the waste and unwanted excess substances from the blood .

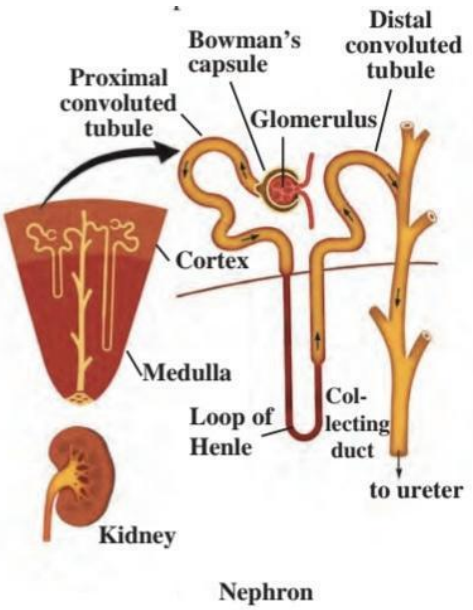
Excretory system-





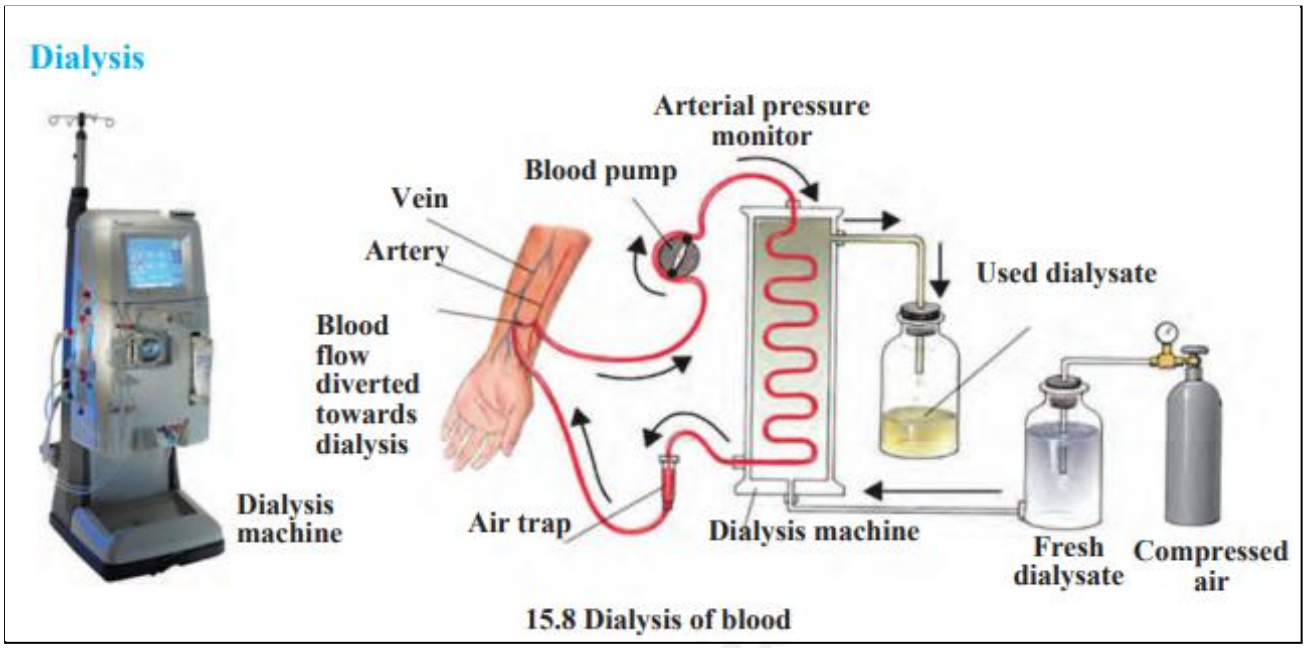
Structure of nephron and formation of urine

The functional unit of the kidney that performs the basic functions of filtration is called a nephron.The right kidney is slightly lower than the left. Each kidney has approximately 10 lakh nephrons. The approximately 5 litre of blood which is present in a normal healthy person's body is filtered by the kidneys about 400 times everyday.



Nephron

Observe the following figure carefully.



15.8 Dialysis of blood

The efficiency of kidneys can be adversely affected by injury, infection or decreased blood supply. In case this happens, an excess of toxic substances accumulates in the body and it can lead to death. If kidneys fail, nitrogenous Wastes are separated from the blood with the help of a man-made machine. The process of separating the nitrogenous Wastes from blood with the help of this machine is called dialysis. About 500 ml of blood is sent at one time through this machine. Purified blood is infused into the body of the patient.

Let's Practice:

Q.1) Write names -

a) The organ that makes urine by separating waste products and excess waste products from the blood.

b) Artificial method of separating nitrogenous substances from the blood.

c) The functional unit of the kidney that performs the basic function of filtration.

Q.2) Draw neat and labelled diagrams.

1. Human excretory system.

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2. Vertical section of kidney.

Q.3) Identify correlation between the terms.

Nephron: blood filtration :: Urinary bladder : _____

Q.4) Answer in one sentence.

1. Name the organs which help in the process of excretion (other than kidneys).

_____

2. How much blood is present in a normal healthy person's body ?

_____

3. How many times blood is filtered by the kidneys every day?

_____

Q.5) Write the three important components of human organisation and their functions.

_____

Links for more study:

1. Excretion in human beings - https://bit.ly/3AuAFoi

SCERT Maharashtra

State Council of Educational Research and Training, Maharashtra, Pune 30

Preparatory Bridge Course Test: 01

Class: X **Science and Technology Part – 02** **Marks : 15**

Activity Sheet : 01 to 05 **Time : 30 Minutes**

Instructions :

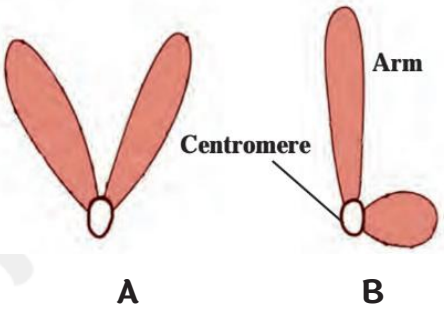
1. All questions are compulsory to solve.
2. Draw scientifically and technically correct diagrams with names if necessary .
3. The numbers on the right side indicate the marks.
4. Unit test based on worksheet no. 1 to 5.

Q.1) Write the answers of the following questions in one sentence. (Any 05) 05

1) What is heredity?

2) What are chromosomes mainly made up of ?

3) Give proper names to the following chromosome types.



4) What is Excretion?

5) Which plant wastes are useful to human beings?

6) Write True or False **:** 'The process of separating the nitrogenous waste from blood with the help of this machine is called dialysis.'

7) Write correlations. 1) 44 + X : Turner syndrome :: 44 + XXY : _____

8) Write correlation. 1). 3 : 1 Monohybrid :: 9 : 3 : 3 _____

Q.2) Write short answers to the following questions. (Any 05) 10

1) Give the proper names to the following chromosome diagram.



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2) Below is an experiment of Mendel's Monohybrid offspring, complete the table by writing the correct answer in the blanks.

Mendel's experiment of the Monohybrid Cross

Parental Generation (P_1)

Phenotype: Tall Dwarf

Genotype: [ ] t t

Gametes: T t

First Filial Generation (F_1)

Phenotype: Tt Tall

Parental Generation (P_2) Selfing in F_1

Phenotype: Tall Tall

Genotype: Tt [ ]

Gametes: T and t T and t

First Filial Generation (F_2)

Male gamete / Female gamete	T	t
T	[ ]	Tt (Tall)
t	Tt (Tall)	[ ]

3) Write brief information about Down's syndrome.

4) Below are some of the characteristics of human beings. Classify them in Dominant and Recessive characters.
(Rolling tongue, Presence of hair on arms, Non-rolling tongue, Black and curly hair, Absence of hair on arms, Attached earlobe, Brown and straight hair, Free earlobe)

5) Identify the types of RNAs given in the figure.





_____ _____

6) In humans, which organs excrete the waste material?

7) What is the cause of a genetic disorder called albinism? Write down the symptoms of this disorder.

*****

Activity Sheet : 06

Let's understand : Coordination: Coordination in plants, tropism aur tropic movement, plant hormones

Reference : Std. IX Chapter 15 Life processes in living organisms.

Competency statements :

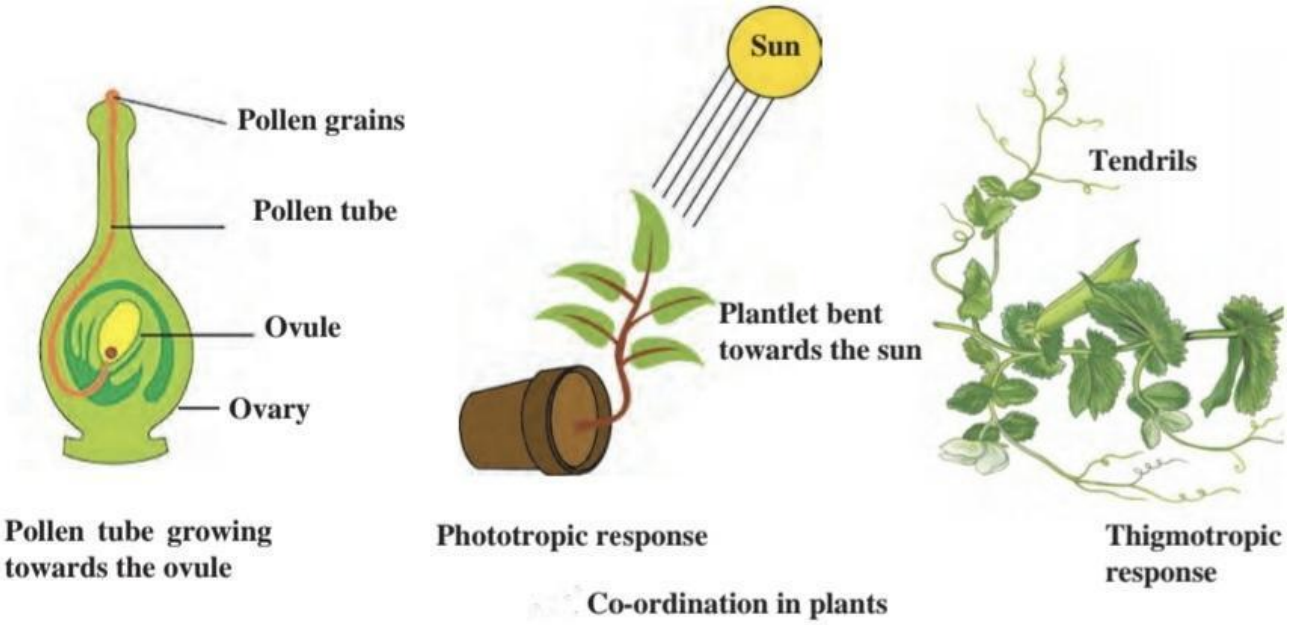
1) Students will be able to understand and compare movements of plants.
2) To understand the reason behind tropism.
3) Students will be able to understand the importance of hormones or the role of hormones in coordination in plants.

Let's take a look:

1) Control and coordination:

Systematic regulation of different processes can be called control and bringing about the different processes in the proper sequence can be called coordination.

2) Coordination in plants:



Co-ordination in plants

1) Movement in response to specific chemicals it's called chemotropic movement. example - growth of pollen tube towards the ovule.
2) The movement shown by plants towards the source of light is called phototropic movement.
3) Some vines grow on the support. The tendrils of these vines take the support and grow. This is called thigmotropic movement. Thus plants respond to external stimuli.
4) The response to stimuli like gravitation and water is known as gravitropic movement and hydrotropic movement respectively. for example, movement of roots.

All the above movements are related to growth so there are growth relevant movements.

3) Plant hormones : Auxin, gibberellin, and abscisic acid

Tendrils of climbers are sensitive to touch.

A hormone called auxin produced in the apical part of the shoot helps in enlargement of cells.

Hormone-like gibberellins help in stem elongation. Cytokinins help in cell division. Hormone abscisic acid is effective in prevention and retardation of growth, leaf wilting etc.

4) Growth - irrelevant movements :

In plants like touch - me - not (Mimosa) movements also occur at the places other than where it has been touched. Some specific movements of the plants do not lead to the plant's growth. Such movements are called 'growth-irrelevant movements'. As a response to changes in the surroundings, plant hormones bring about various movements in plants.



Touch-me-not



Venus fly trap



Lotus

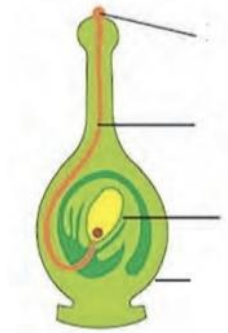


Balsam

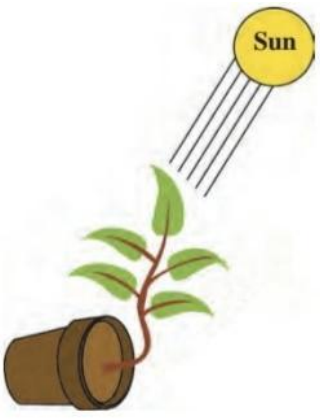
There are fibrils present on the leaves of Drosera which bend inwards when the insect lands on the leaves and surround the insect from all sides. In Venus fly trap plant there is a trap that appears and smells like flowers and deceives insects. When an insect visits that flower-like trap, the trap closes up and the trapped insect is digested by the plant.The lotus flower opens during daytime and tuberose opens at night. In Balsam the ripened fruits dehisces that it bursts open at the right time to disperse the seeds.

Let's Practice:

Q.1) Observe the following figures and identify the type of movement in the plants.



Pollen tube growing towards the ovule





Co-ordination in plants

Q.2) Complete the following chart.

Hormone	functions
Auxin	
Gibberellins	
Abscisic acid	

Q.3) Answer in one sentence.

What commands do mimosa plants use in movement? Write whether this movement is growth-elevant or growth-irrelevant.

_____

_____

Links for more study:

1. Coordination in plants-1 - https://youtu.be/T4qUs0Ks5P8
2. Coordination in plants-2 - https://youtu.be/4D8tg3sY8MA

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Activity Sheet : 07

Let's understand : 1.Nerve control. 2.Neurons. 3.Types of neurons according to their functions. 4.Human nervous system types.

Reference : Std. IX Chapter 15 Life Processes in living organisms.

Competency statements :

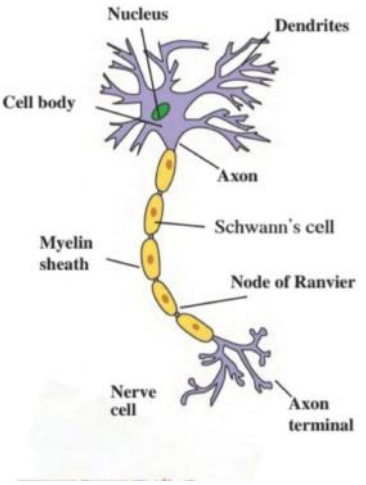
1. Able to draw the neuron diagram and describe it in detail.
2. Able to classify the neurons according to their functions.

Let's take a look:

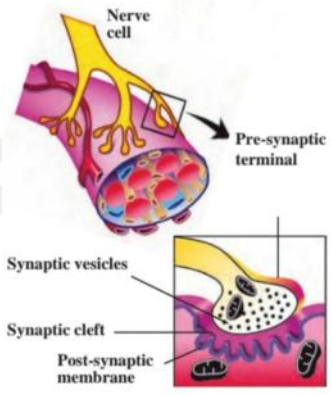
1. Nervous control –

Humans can respond to changes in their surroundings due to nervous control. Nervous control plays an important role in empowering the body cells with the ability to respond to these impulses. Multicellular animals like humans have a nervous system to respond to the stimuli.

2. Neurons or nerve cells –



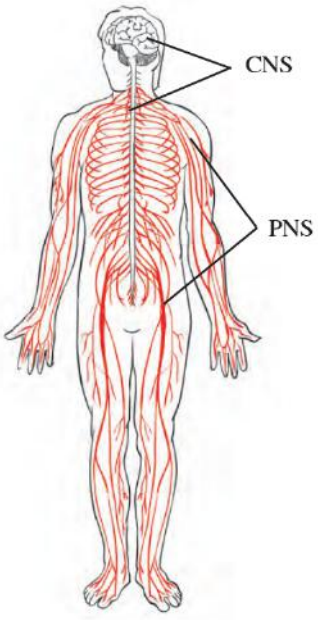
These are special types of cells which conduct impulses from one place to the another in the body called nerve cells or neurons. These generate electrochemical impulses. All the information about our surroundings is collected by ends or dendrites of the neuron. Impulses get transferred from one nerve to the next. The impulse that reaches the terminal of an axon, stimulates the nerve cell to secrete certain chemicals. These chemicals pass through a minute space, called the synapse, between two adjacent neurons and generate the impulse in the dendrites of the next neuron. In this way, impulses are conducted in the body and these impulses are finally conveyed by nerve cells to muscle cells or glands.



3. Types of Nerve cells –

There are three types of nerve cells – Sensory neurons, Motor neurons, Association neurons

4. Human nervous system is divided into three parts – Central nervous system, peripheral nervous system, autonomic nervous system.

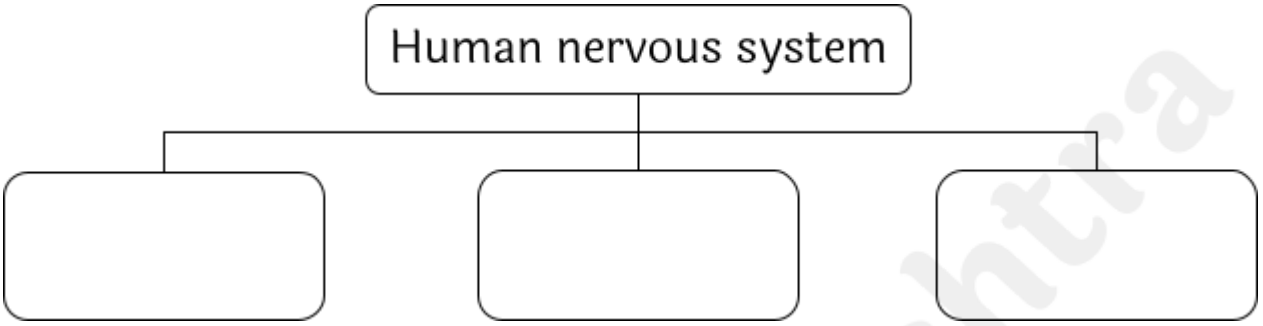


15.12 Human nervous system

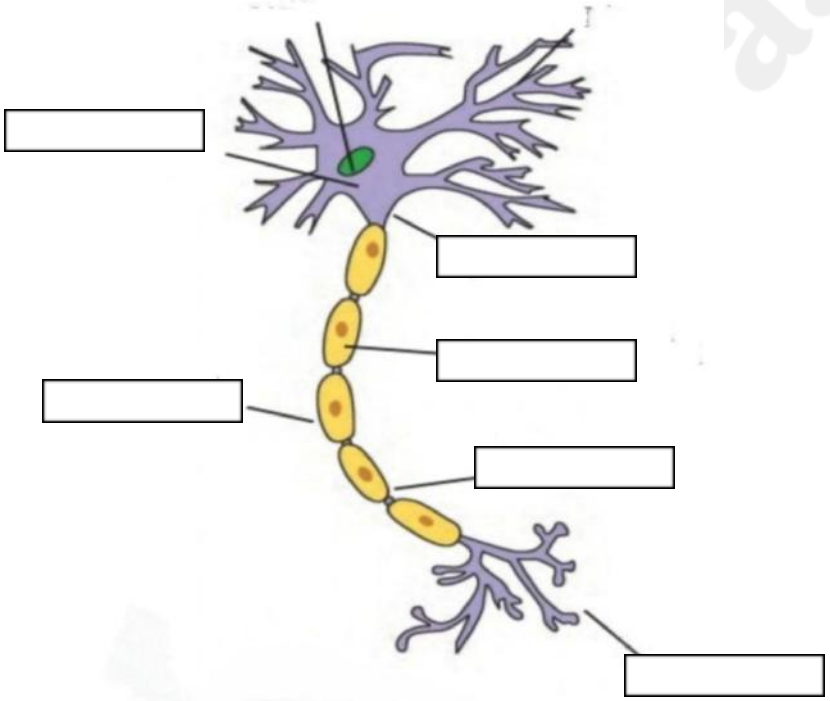
Art Maharashtra

Let's Practice :

Q1. complete the following flow chart-



Q2. Label the following diagram.



Q. 3. Write the answer in one word.

1. Which type of special cells conduct impulses from one place to another in the body? _____
2. Which is the longest cell in the human body? _____
3. Which cell supports the nerve cell and helps in their functioning? _____

Links for more study:

Central Nervous System - https://youtu.be/uaAwlN1gPm4

Activity Sheet : 08

Let's understand: 1.Central Nervous System, 2.Cerebrum, 3.Cerebellum, 4.Medulla Oblongata, 5.Spinal cord.

Reference : Std IX Chapter 15 Life Processes in living organisms.

Competency Statements :

1.To draw a neat labeled diagram of the human brain.

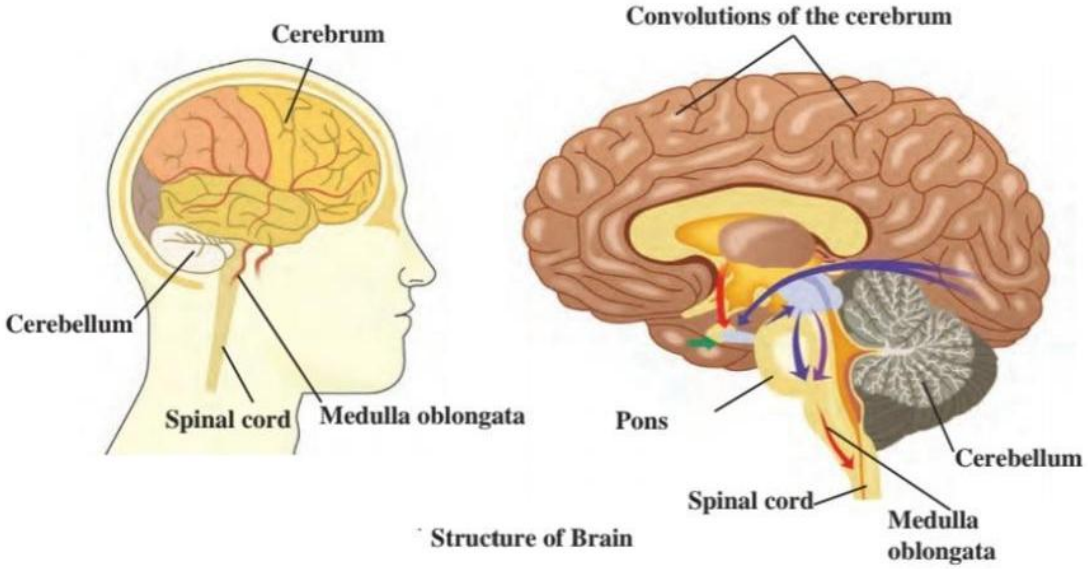
2.To compare parts of the human brain and its functions.

3.To give clarification regarding parts of the human brain.

Let's take a look:

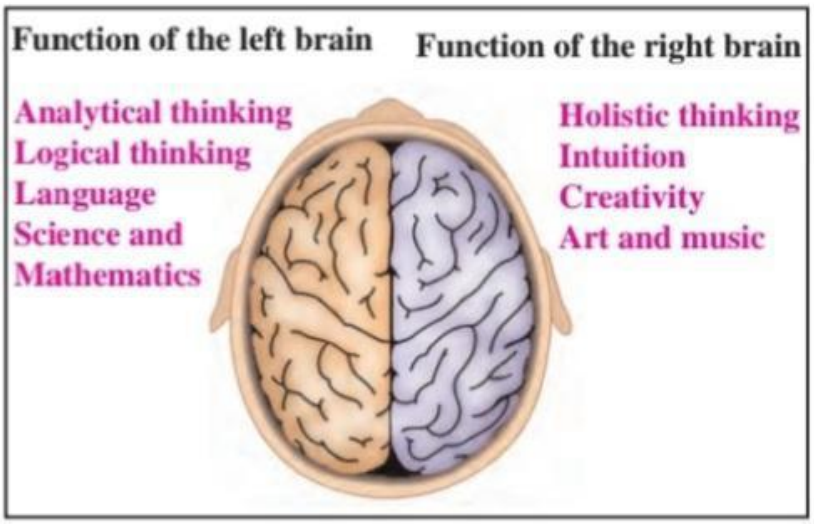
Central nervous System - Central nervous system consists of the brain and spinal cord. Brain is the most controlling part of the nervous system. Cavities present in various parts of the brain are called ventricles.Long tubular cavity of the spinal cord is called the central canal.

Structure of the brain :



Structure of Brain

Parts of brain and its functions-



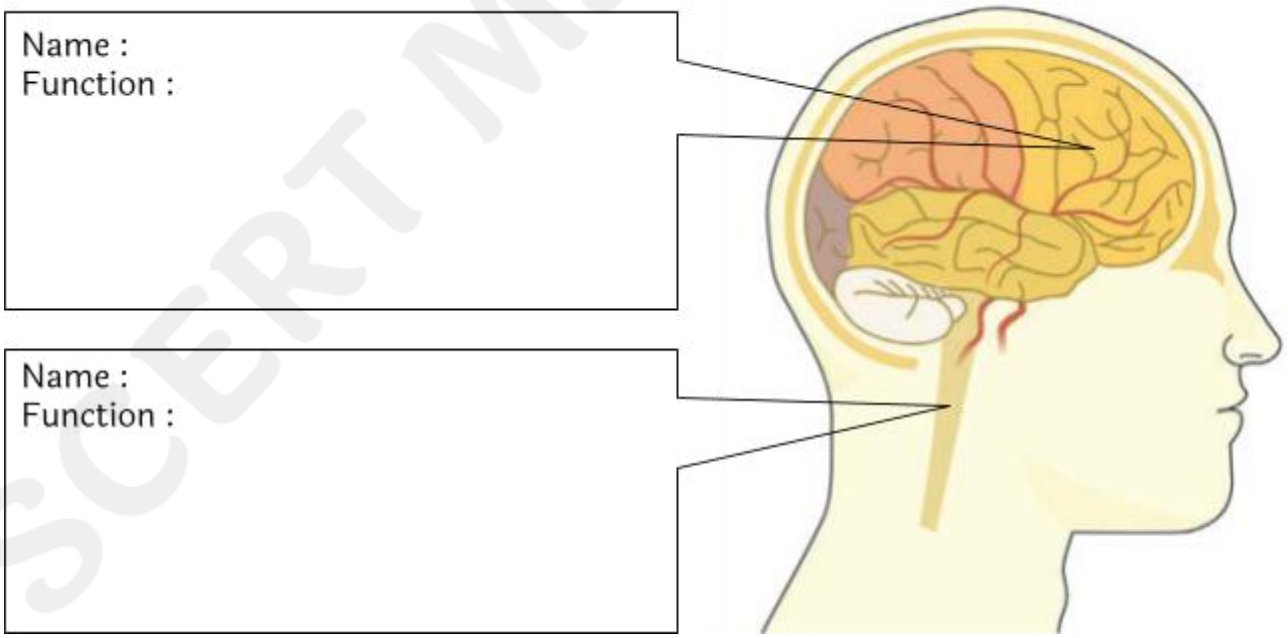
Left and right sides of brain

Study the following chart :

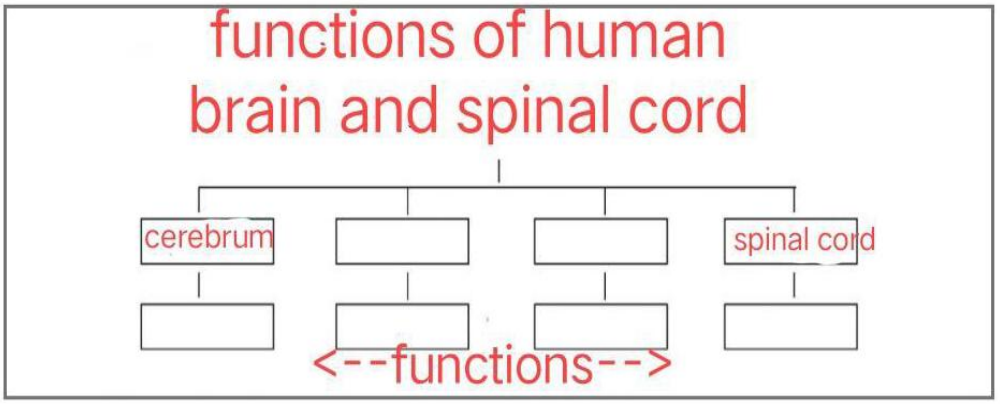
parts of the brain	functions.
Cerebrum	Control of voluntary movements, concentrations, planning, decision-making,memory,intelligence and intellectual activities.
Cerebellum	1.Ccoordination of voluntary movements. 2.Maintaining the body's balance.
Medulla oblongata	Control of involuntary activities like the beating of the heart. Blood circulation,breathing, sneezing, coughing salivation etc.
Spinal cord	1.Conduction of impulses from the skin towards the brain. 2.from the brain to the muscles and glands. 2.Coordination of Reflex action.

Let's Practice:

Q.1. Find out and Write the parts of the brain and its functions from the following diagram.



Q.2. Complete the following chart.



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Q.3. Tick mark there in the boxes in the chart where the human brain's right or left part is functioning.

1.Saniya is studying Numbers.	☐ Left brain	☐ Right brain
2.Advait is enjoying piyano.	☐ Left brain	☐ Right brain
3.John is writing poem in the garden	☐ Left brain	☐ Right brain
4.Inspector starts investigation on the basis of local evidence.	☐ Left brain	☐ Right brain

Q.4. Observe the model of the human brain in your science lab with the help of a science teacher. Try to get more information about the brain and write it in your practical book.

Links for more study:

Human Brain- Parts and Function- https://youtu.be/HieUJTLaOZY

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Activity Sheet : 09

Let's understand: 1.Peripheral Nervous System, 2.Cranial nerves, 3.Spinal Nerves, 4.Autonomic Nervous System, 5.Reflex Action, 6.Chemical Control-Endocrine glands.

Reference : Std. IX, Chapter 15 Life Processes in living organisms.

Competency Statements :

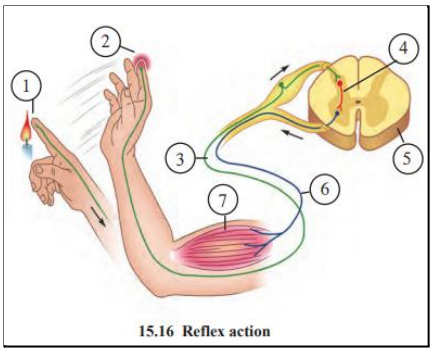
1. To identify the mechanism of reflex action, how the control and coordination is possible without control from the brain,with a labelled diagram.
2. To know and remember the importance ,location and functions of endocrine gland

Let's take a look:

1. Peripheral nervous system-Consists of nerves originating from the central nervous system.These nerves connect the central nervous system with all parts of the body.

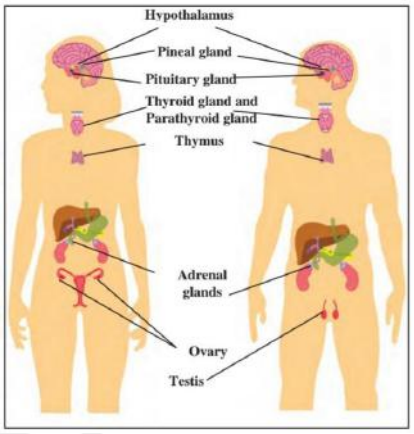
These are of two types : 1. Cranial Nerves, 2. Spinal Nerves.

2. Autonomic nervous system - consists of nerves of involuntary organs like heart, lungs, stomach, etc.



15.16 Reflex action

Reflex action - An immediate and involuntary response given to a stimulus from the environment is called reflex action. Reactions given to certain stimuli from the surroundings without any thinking on our part. In such conditions, proper control and coordination is achieved even without intervention of the brain.



3. Chemical control - Control and coordination in our body is also brought by some chemical substances called hormones. Hormones are secreted by **endocrine glands**.These are ductless glands present in specific locations in our body. Hormones are secreted only in the required quantity with special mechanism.Endocrine glands along with the nervous system help each other to control and integrate the various activities of the body.

Let's Practice

Q.1. Observe the diagram of reflex action given above and answer the following questions.

a. What is happening at 1 and 2?

_____

_____

b. Which nerve carries the impulse to the point marked 3? In which direction is it conducting the impulse?

_____

_____

c. Which is the nerve shown by 4?

_____

_____

d. Which is the organ marked as 5?

_____

_____

e. At 6, which nerve is conducting the response impulse?

_____

_____

f. At 7, where has the impulse reached? What is its effect?

_____

_____

Q. 2-complete the following chart.

Sr No.	Gland	Location	Hormones	Functions
1.	Pituitary			
2.	Thyroid			
3.	Adrenal			
4.	Pancreas			
5.	Testis			

Q 3 Complete the following chart.

Hormones	Functions
Oestrogen	
Progesterone	
Testosterone	
Thymosin	

Links for more study:

1. Human Nervous System- https://youtu.be/NK4OsGPPEQs
2. Reflex Action - https://youtu.be/WLa4eFzf0sQ

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Activity Sheet : 10

Let's Understand : Energy flow in an Ecosystem.

Reference : Std. IX, Chapter 07 Energy flow in an Ecosystem.

Competency Statements: Correlation between Food chain and Food Web, The energy pyramid.Biogeochemical cycle- and gather more information about main processes in carbon,oxygen and Nitrogen Cycles.

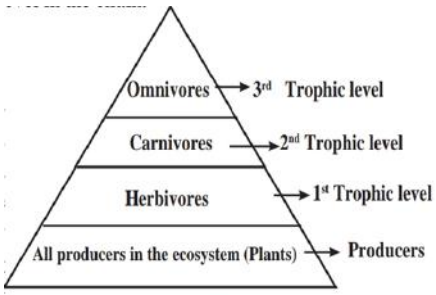
Let's take a look:



7.1 अन्नसाखळी

1. Food Chain : continuous Interactions between producers, consumers, and saprophytes in a definite sequence is called food chain. Each chain consists of 4, 5 or more links.

2. Food Web :- Food web are interconnected food chains in an ecosystem. An organism may be the prey for many other organisms. So it forms an intricate web.



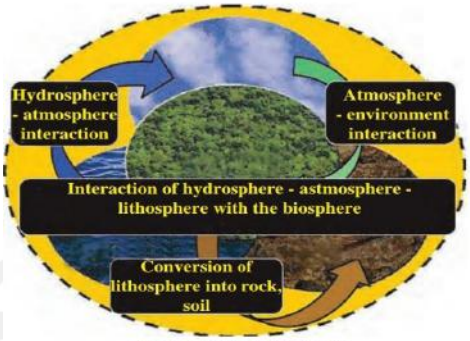
7.3 Trophic levels

3.Trophic Level :- Each level in the food chain is called a trophic level.It is the step at which the organism obtains its food in the chain.

4.Energy Pyramid : Energy Pyramid is the diagrammatic representation showing how the energy transferred from producer to consumer shows decrease in the quantity of energy at each level.

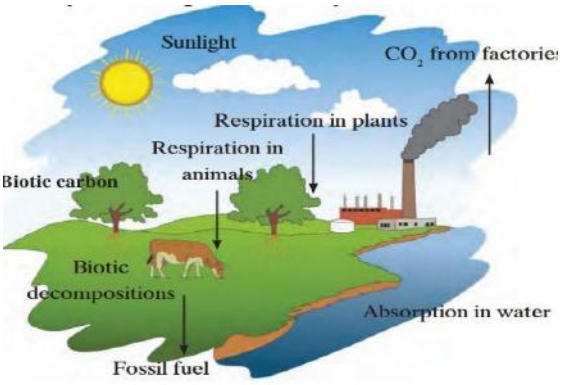
5.Bio-geo-chemical cycle :

The cyclic flow of nutrients within an ecosystem is called Bio-geo-chemical cycle. It provides different types of nutrients to all living organisms for their growth and development.



7.5 Bio-geo-chemical cycle

6. The Carbon Cycle :- The circulation and recycling of carbon from the atmosphere to living organisms and after their death back to the atmosphere is called the carbon cycle. Abiotic carbon atoms are circulated and recycled into biotic mainly through Photosynthesis and respiration.

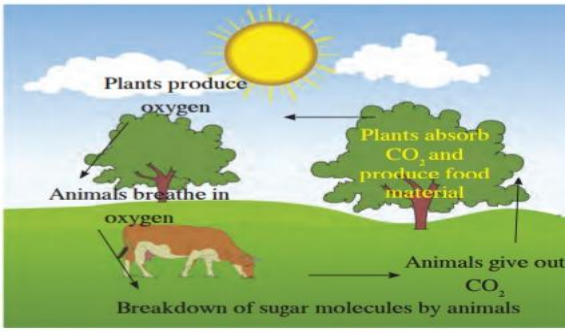


7.6 The carbon cycle

Main processes in the carbon cycle

$$6\,CO_2 + 12\,H_2O \xrightarrow[\text{Chlorophyll}]{\text{Sunlight}} C_6H_{12}O_6 + 6\,H_2O + 6\,O_2\uparrow$$

$$C_6H_{12}O_6 + 6\,O_2 \xrightarrow{\text{Mitochondria}} 6\,CO_2\uparrow + 6\,H_2O + \text{Energy}$$



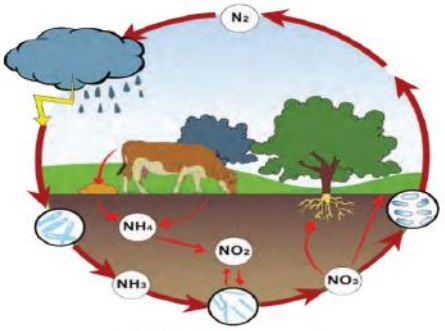
7.7 The oxygen cycle

7. The Oxygen Cycle :

Oxygen forms 21 % of the atmosphere. Circulation and recycling of oxygen within the biosphere is called the oxygen cycle. This cycle also includes biotic and abiotic components.

8. The Nitrogen Cycle :

Nitrogen forms 78 % i.e. the maximum portion of the atmosphere. Circulation and recycling of nitrogen gas into the form of different compounds through various biotic and abiotic processes in nature is called the nitrogen cycle.



7.8 The nitrogen cycle

Let's Practise :

1. Complete the following table.(carefully study the carbon, oxygen and nitrogen cycle).

Bio-geo-chemicle cycles	Biotic processes	Abiotic processes
1. Carbon cycle		
2. Oxygen cycle		
3. Nitrogen cycle		

2.What are the differences between flow of nutrients and flow of energy in an ecosystem? Describe in your own words.

_____

_____

_____

_____

3. What would you do to maintain the equilibrium in the various Bio-geo-chemical cycles ? Explain in brief.

_____

_____

_____

_____

Links for more study:

1. Energy Flow in Ecosystem Introduction - https://youtu.be/9x_4GiFW98A

SCERT Maharashtra

State Council of Educational Research and Training Maharashtra Pune 30

Preparatory Bridge Course Test: 02

Science and Technology Part 02

Class : X **Marks:15**

Activity Sheets: 06 to 10 **Time: 30 Minutes**

Instructions :

1. All questions must be solved.
2. The numbers on the right indicate marks.

Q. 1. Solve the following questions. (Any five) **05**

i) What is the central nervous system made of?

ii) What is a 'Bio-geo-chemical cycle'?

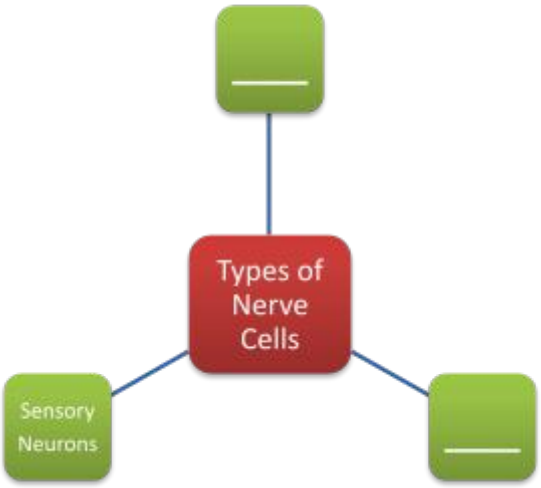
iii) Write correlation. Producer : Autotroph :: Predator : _____

iv) Write the name of the plant in the picture and what kind of movement takes place in this plant.



v) Take the odd term out - Estrogen, Insulin, Pancreas, Oxytocin

vi) Complete the diagram of the types of nerve cells given below



vii) Define - Carbon cycle

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Q. 2. Write the answers of the following questions. (Any five) **10**

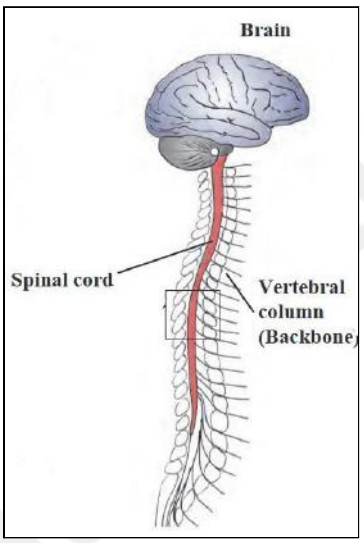
i) Differentiate between Gaseous cycle and Sedimentary cycle

ii) Write whether the following statements are correct or incorrect-

a) Endocrine glands are also called ductless glands.

b) Plants have nervous systems.

iii) Look at the diagram given below and answer the following questions.



a) Name the given diagram.

b) Where is the spinal cord located?

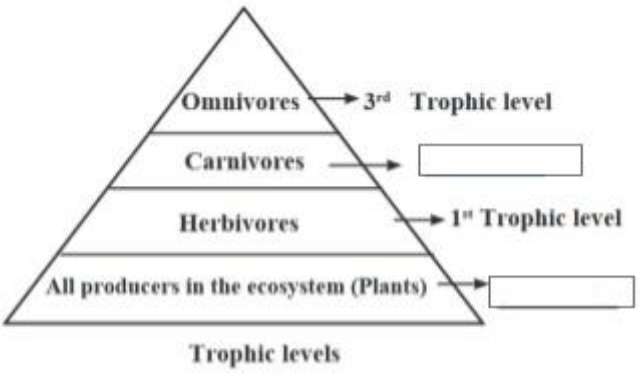
iv) Complete the table given below.

Gland	Hormones
• Parathyroid • Ovary	• _____ • _____

v) Write the scientific reason: "Energy flow through an ecosystem is one way"

vi) Write examples of two reflex actions you have experienced.

vii) Fill in the blanks in the figure given below.



* * *

Activity Sheet : 11

Let's Understand : Kingdom Plantae, Basis for classification of plants.

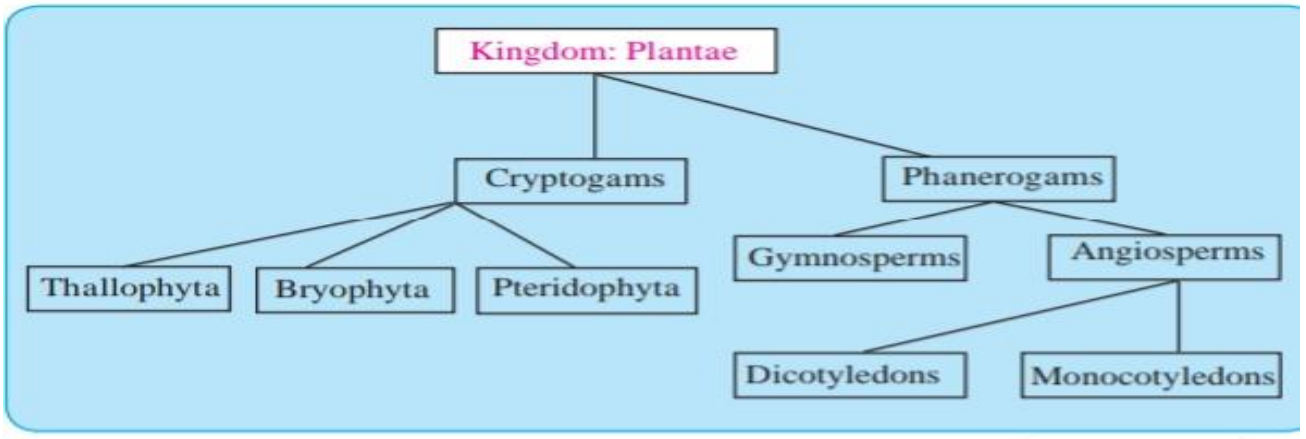
Sub-Kingdom : Cryptogams, phanerogams

Reference : Std. IX Chapter 06 Classification of Plants.

Competency Statements:

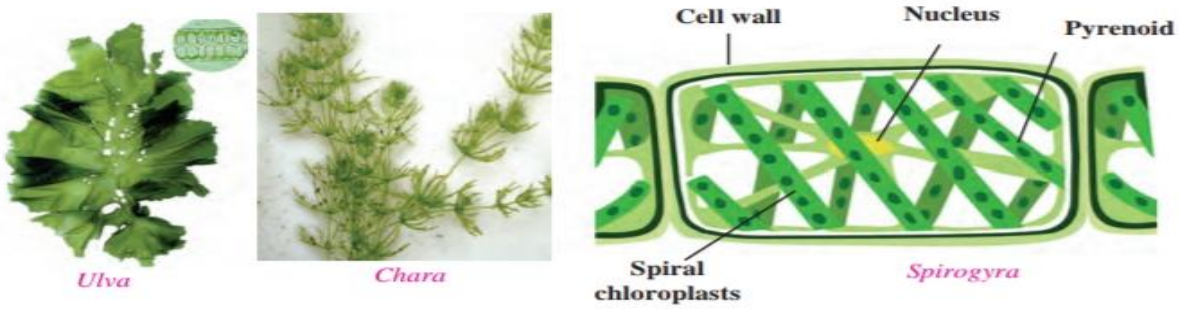
1. Classifies the plants scientifically.
2. Studies the characteristic of Gymnosperms, Angiosperms
3. Does comparative study of Dicotyledons and Monocotyledons.
4. Identifies and explains the characteristics of plants in surroundings.

Let's take a look: The group of autotrophic living organisms having eukaryotic cells with cell walls is the group of plants. Plants are autotrophic as they can perform photosynthesis with the help of chlorophyll. Botanist named Eicher in 1883 classified the kingdom Plantae into two sub-kingdoms. Viz.cryptogams and Phanerogams.



Cryptogams :

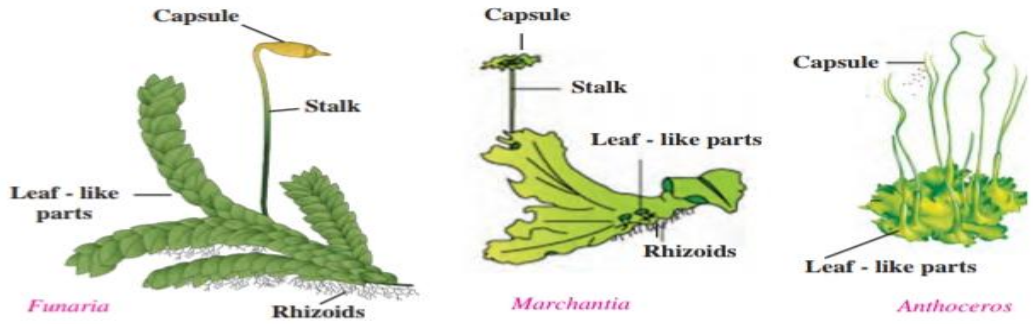
Division I – Thallophyta :



6.1 Plants of the Thallophyta division.

Grow mainly in water,but do not have specific parts like root, stem, leaves, or flowers. Autotrophic, found both in fresh water and saline water, Usually have a soft and fibre like body, called as Algae. Various types of fungi like yeasts and moulds which do not have chlorophyll are included in this group.

Division II – Bryophyta :



6.2 Plants of the bryophyta division

Amphibians, Autotrophic. They reproduce by spore formation, structure is flat, ribbon- like long without true roots, stem and leaves. Instead they have stem-like or leaf-like parts and root-like rhizoids. They do not have specific tissues for conduction of food and water.



6.3 Plants of the pteridophyta division

Division III – Pteridophyta :

Have well developed roots, stem and leaves and separate tissues for conduction of food and water. Do not bear flowers and fruits. They reproduce with the help of spores.

Phanerogams : Plants which have special structures for reproduction and produce seeds are called Phanerogams.

Division 1: Gymnosperms :- Their stems are without branches, the leaves form a crown. Male and female flowers on different sporophylls of the same plant. Seeds do not have natural coverings i.e. do not form fruits.

Ex. Cycas, Picea (Christmas tree), Thuja (morpankhi), pinus (Deodar)

Division 2 : Angiosperms :- The flowers these plants bear are their reproductive organs. Flowers develop into fruits and seeds are formed within fruits, these are covered. The plants whose seeds can be divided into two equal halves are called Dicotyledonous plants, and those whose seeds cannot be divided into equal parts are called Monocotyledonous plants.

	Dicotyledonous Plants	Monocotyledonous plants
Seed	Two cotyledons	Single cotyledon
Root	Well developed primary root (Tap root)	Fibrous roots
Stem	Strong, hard.Ex.Banyan tree	Hollow (Bamboo), False (Banana), Disc-like (Onion)
Leaf	Reticulate venation	Parallel venation
Flower	Flowers with 4 or 5 parts or in their multiples (tetramerous or pentamerous)	Flowers with 3 parts or in multiples of 3 (trimerous)

Let's Practice :

Q.1. Observe plants like Cycas, Christmas tree, Hibiscus, lily etc.and compare them. Note the similarities and differences among them.

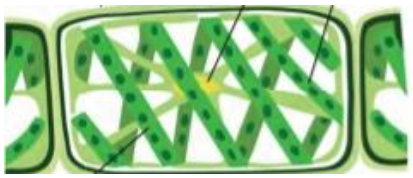
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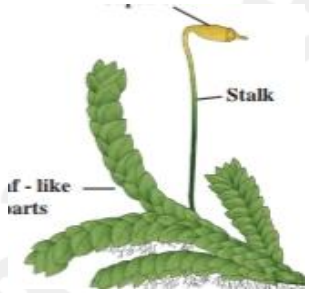
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Q.2. Write the division of given plants.Irrespective of differences in their body structure, write what is the similarity between them.







_____ _____ _____

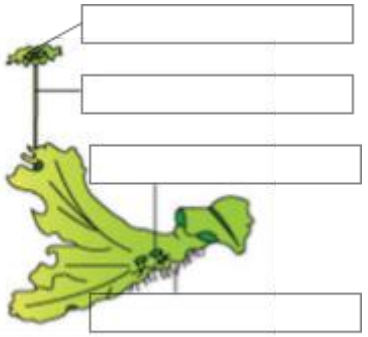
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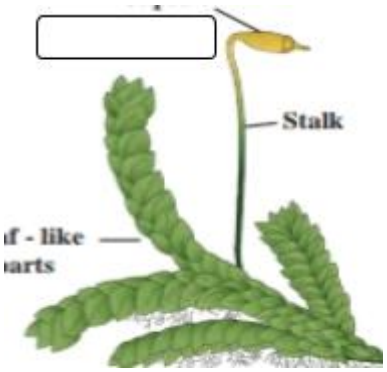
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Q.3. Label the diagram.



Marchantia

Q.4. Observe the given plant and answer the questions.



i. Identify the given plant.

_____

_____

ii.label the part

_____

_____

iii. To which division does this plant belong?

_____

_____

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Q.5. Observe seed, root, stem, leaf, flower of Mustard and Maize and verify the differences in characteristics.

Q.6. Try this. Soak the seeds of corn, beans, groundnut, tamarind, mango, wheat etc. in water for 8 to 10 hours. After they are soaked, check each seed whether it divides into two equal halves or not and categorize them accordingly.

Links for more study:

1. Classification of Plants - https://youtu.be/5ABpSew-CtA

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Activity sheet : 12

Let's Understand: Useful Microorganisms - lactobacilli, rhizobium, yeast, Harmful Microorganisms – clostridium and others.

Reference : Std, IX, Chapter 08 Useful and Harmful Microbes.

Competency Statements:

1. To know more about the fact that products like food, medicine,etc are produced in large quantities with the help of microorganisms.
2. Learn more about the microbes that are useful as well as harmful.
3. Knowledge of other pathogenic microorganisms.

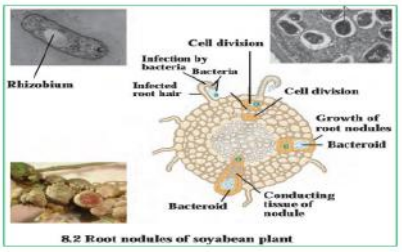
Let's take a look:

Useful Microorganisms : 1. Lactobacilli:



8.1 Lactobacilli

The Lactobacilli convert lactose, the sugar in the milk, into lactic acid. As a result milk changes into yoghurt.This process is called fermentation. Lactobacilli fermentation is useful for production of Yoghurt, buttermilk, ghee, cheese, shrikhand, cider, cocoa, pickles of vegetables, and wine making.



8.2 Root nodules of soyabean plant

2. Rhizobium : Symbiotic bacteria.

Rhizobia living in root nodules supply nitrates, nitrites and amino acids to that plant and in exchange get energy in the form of carbohydrates from it. Such a mutually beneficial relationship is called symbiosis.

Antibiotics : Carbon compounds obtained from some bacteria and fungi for destroying or preventing the growth of harmful micro- organisms are called 'Antibodies.' For Ex. Penicillin, gentamicin, erythromycin, ampicillin, amoxicillin, tetracycline,etc.

Harmful Micro- Organisms :

Fungi : If there is sufficient moisture, spores of fungi germinate on cotton fabric, gunny bags, leather, wooden items, pickles, murabba,jam, sauce, chutney etc. They use the nutrients in these food items for growth and reproduction. During this activity, fungi release mycotoxins, certain poisonous chemicals into the food and thus food becomes poisonous.

Clostridium : The bacteria which spoil cooked food are clostridium and are rod – shaped and produce bottle shaped endospores in adverse conditions.



8.4 Clostridium species

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One special characteristic of this bacteria is that they cannot withstand the normal oxygen level of air because they grow in anaerobic conditions.

Other harmful micro - organisms : Other kinds of microorganisms like bacteria, viruses, protozoa and fungi are also responsible for different diseases that affect humans.

Let's Practice :

Q.1. How are microbes related to our everyday life ?

_____

_____

_____

Q.2. Identify the bacteria in the given diagram and write two uses of it.



_____

_____

_____

_____

_____

Q.3. Write the name of four items which can be obtained with the help of useful microorganisms at your home.

_____

_____

_____

_____

Q.4. Write the names of microbes found in the following food materials.

i. Curd _____

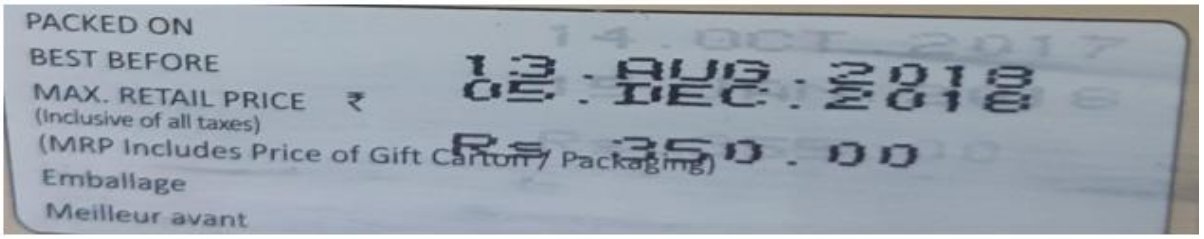
ii. Bread _____

iii. Nodules on the roots of cereals _____

iv. Idli _____

v. Dosa _____

Q.5. When you buy food, if you see the following information written on its wrapper, will you buy it ? Why ?



_____

_____

_____

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_____

_____

_____

Q.6 Give reason : Foam accumulates on the surface of 'dal' kept for a long time in summer.

_____

_____

_____

_____

_____

Links for more study:

1. Useful and Harmful Microbes - https://bit.ly/2UsH5nB
2. Introduction of Microbes - https://bit.ly/36l6FgJ
3. Association of Microbes with plants - https://bit.ly/2UsH3Mv
4. Harmful Effects - https://bit.ly/3hl1qUx
5. Microbes and Human Beings - https://bit.ly/2UsqtMK

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Activity Sheet : 13

Let's Understand : Tissues, Types of tissues,Tissue culture, Application of biotechnology.

Reference : Std. IX, Chapter 17 Introduction to Biotechnology.

Competency Statements: Understands plant tissue, animal tissue and their types. On the basis of characteristics of tissues identify the types of tissue and their functions. Explain the impact of biotechnology on agriculture management. Application of biotechnology in Floriculture, Nurseries and Forestry. Get information about Agritourism, Agro-complementary occupations.

Let's understand :

1. Tissue :A group of cells having the same origin, same structures and same function is called tissue.

2.Types of tissues :Simple tissue (Only one types of cells)and complex tissues (more than one type of cell)

3.Animal Tissues : There are 4 main types of animal tissues, namely epithelial tissue, connective tissue, muscular tissue and nervous tissue.

4.Plant Tissues :There are three types of plant tissues, Meristematic tissue, permanent tissue and Epidermis.



17.7 Various processes in tissue-culture

5. Biotechnology : i.The technique of bringing about improvements in living organisms by artificial genetic changes and by hybridization for the welfare of human beings is called Biotechnology.

ii. Genetic engineering and tissue culture are the two techniques used in the biotechnological processes.

6.Tissue Culture : i.Tissue culture is the technique in which " Ex vivo growth of cells or tissues in an aseptic and nutrient – rich medium" is done.

ii. A complete organism can be developed from a single cell or from tissue.

7.Changes in agricultural management due to biotechnology :-

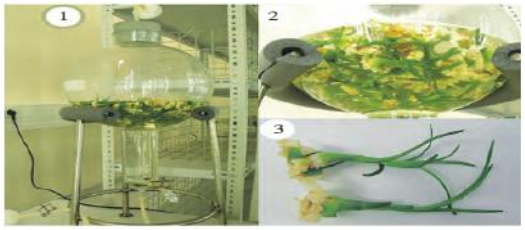
i.Chemically modified crops (GM) are being produced by introducing changes in DNA of natural crops.





ii. They have the ability to withstand environmental stress, grow in any adverse condition. iii.There is improvement in nutritive value and decrease in the loss of crops. iv.high yielding varieties of GM crops like banana, maize, rice, potato, soya bean, tomato, cotton, apple, brinjal, Papaya, beet, rose, tobacco, wheat etc. are available.

8. Application of biotechnology in floriculture, nurseries and forestry :



17.8 Bioreactor and production of plantlets

i. Tissue culture can be used to grow those plants on a large scale.

ii. Fully grown plants can be produced in a shorter duration.

iii. Plants can be grown even if means of pollination or germinating seeds are not available.

iv. Large number of seedlings can be produced in a short time.

v. Disease - free, virus - free plants can be produced.

vi. Rare and endangered plants can be grown using this technique.



9. Agritourism : If sufficient land is available the emerging field of agri-tourism would be a good business.

i.Mango, chikoo, guava, coconut, custard apple and some other regional fruit trees.

ii. Shade giving local or exotic attractive plants.

iii.Butterfly garden, Medicinal plant gardon.organic vegetables and fruits.

People visit places with such attractions in large numbers. Selling plants/seedlings.fruits and vegetables at such places can be quite profitable.

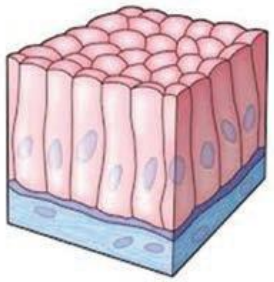
10. Agro-Complementary occupations:

A. Animal husbandry, B. Poultry farming. C.Sericulture.

Let's Practice:

Q. 1. Identify the types of tissues shown in the diagram and write its function.





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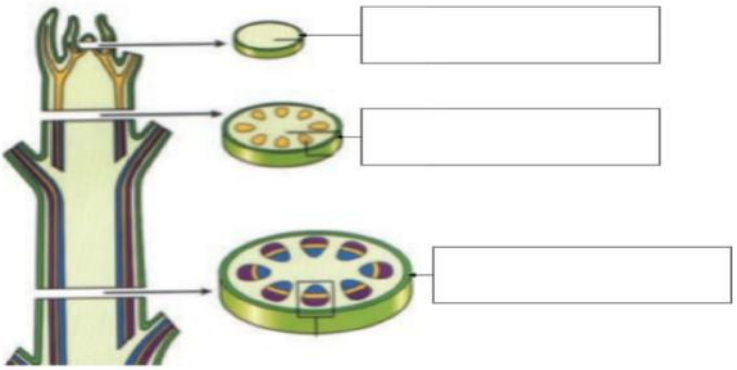
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Q.2. Label the following according to the type of plant tissue.



Q.3. Which other industries can be developed as an extension of the nurseries?

_____

_____

Q.4. name the following :

i.High yielding varieties of GM crops. _____

ii.GM crops in which pest resistant genes have been introduced. _____

iii. Local Indian varieties of cows. _____

IV.Exotic varieties of cows. _____

Q.5. Describe the life cycle of the silk moth with a neat labelled diagram.

_____

_____

_____

_____

_____

_____

Links for more study:

1. Introduction- https://youtu.be/Hf6SsiPn7_U
2. Animal Tissue- https://youtu.be/8IANWaZLIvg
3. Plant Tissue – https://youtu.be/CIM2Tz5VFU4
4. Tissues - https://youtu.be/pAuKju6eWJI

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Activity Sheet : 14

Let's Understand:

Weather Changes in weather, Meteorology, Indian Meteorological Department, Monsoon model and climate prediction Solid Waste Management Biodegradable waste, Non-biodegradable waste, Solid waste management Disaster Management First aid

Reference : Std. IX, Chapter 09 Environmental Management

Competancy Statements :

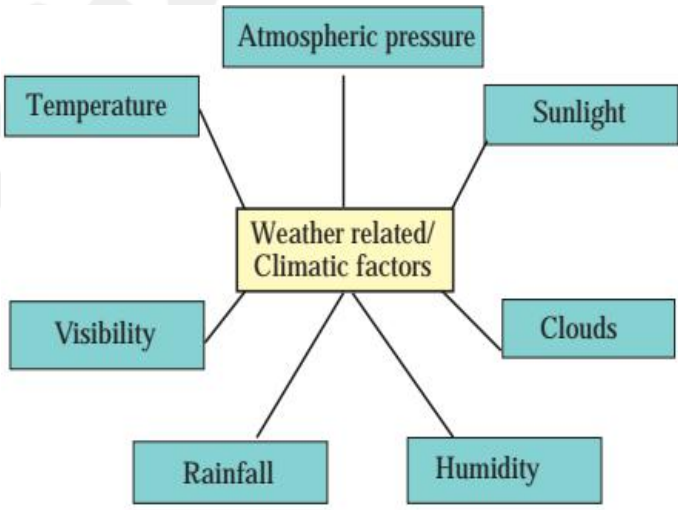
1. To know more about Climate Change, Meteorology, Indian Meteorological Department and Weather Forecast
2. To help in raising public awareness about solid waste management.
3. Learn more about disaster management.

Let's take a look:

Weather :-

The state of the atmosphere at a given time in a place is called 'weather'. Or the long-term state of the atmosphere is called 'weather'.

1. Climate does not change continuously.
2. Climate is that which remains constant in a region for a long duration.
3. The weather affects our basic needs like food, clothing, shelter as well as various occupations.



9.1 **Weather-related / climatic factors**

March 23 is celebrated as 'World Meteorological Day'. Daily weather as well as long term climatic conditions influence human lifestyle directly or indirectly.

Solid Waste Management:-

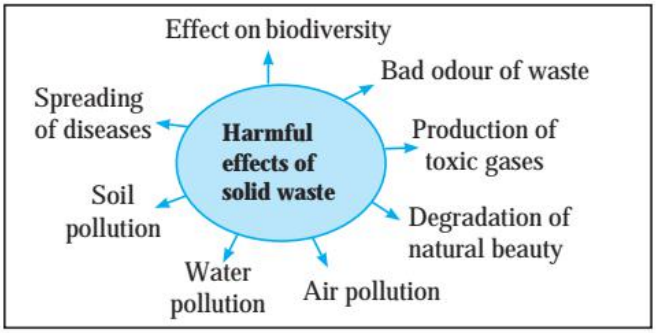
Activity: Observe the garbage in the dustbin in your classroom or at home. Make a list of the various materials in it and think about how these materials can be properly disposed of.

Waste materials are classified in two categories as Biodegradable waste and non-biodegradable waste.



9.2 Solid waste

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9.4 Harmful effects of solid waste

Necessity of solid waste management:

1. For preventing environmental pollution and to keep the surroundings clean.
2. For energy as well as fertilizer production and through that to generate work and employment opportunities.
3. To reduce the strain on natural resources through treatment of solid waste.
4. To improve the health and quality of life and to maintain environmental balance.

Seven Principles of solid waste management:-

Reuse, Refuse, Recycle, Rethink, Reduce, Research, Regulation and public awareness.

Disaster Management:

Various natural disasters like thunderbolts (lightning), floods, fire and man-made disasters like accidents, bomb explosions, chemical accidents in industries, stampedes in mass gatherings, riots, etc. occur around us from time to time. They cause large scale damage to life and property.

Disaster management is a unitary process of implementation through planning, organizational action and coordination. Disaster victims need first aid. For injuries like sprains, twisting and contusion, the 'RICE' remedy should be applied:

Rest: Allow the victim to sit in a relaxed position.
Ice: Apply an ice-pack to the injured part.
Compression: After the ice-pack treatment, the injured part should be massaged gently.
Elevate: The injured part should be kept in a raised / elevated position.

Let's Practice:

1. On which things the favourable and unfavourable effects are seen because of weather? What needs to be done to reduce this effect?

_____

_____

_____

_____

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2. Explain the differences – 'air' and 'weather'

3. How does our surroundings get polluted ?

4. What exactly is the difference between the following pictures, 'A' and 'B' ? What needs to be done to maintain the situation in picture 'B'?





5. How do you contribute to solid waste management?

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6. Write down the basics of first aid.

_____

_____

_____

_____

_____

Links for more study:

1. Environment Management Part- 1- https://bit.ly/2TBcXGz
2. Environment Management Part- 2- https://bit.ly/2Uw2fkI
3. Environment Management Part- 3- https://bit.ly/3AuEUjl
4. Environment Management Part- 4- https://bit.ly/3qVLs6O
5. Environment Management Part- 5- https://bit.ly/3dTAzwR

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Activity Sheet : 15

Let's Understand: 1.Importance of Information Communication in science and technology. 2. Opportunities in the field of computers.

Reference : Std. IX, Chapter 10 Information Communication Technology: The new Direction of Progress.

Competency Statements: 1.Use computers to explain concepts in science.

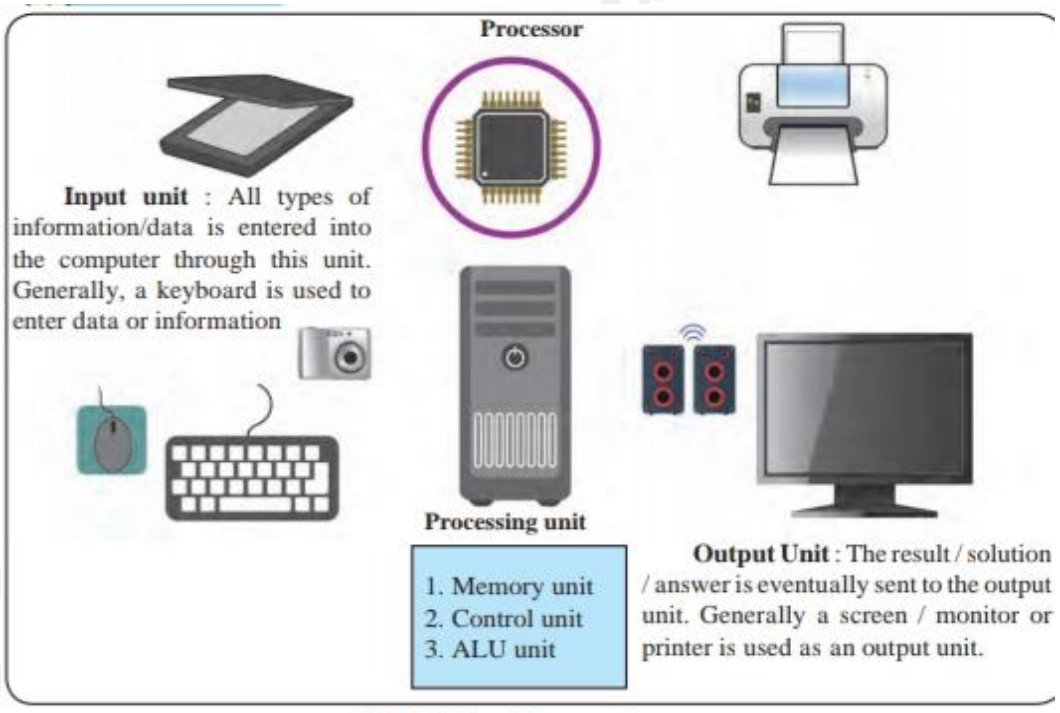
2.Information can be searched with the help of computers for solving various problems.

Let's take a look:

1.The term Information Communication Technology(ICT) includes communications devices and the use of those devices as well as the services provided with their help.

2.Computer Generations :From the first generation till now there are five generations. Today's computers are 5th generation computers.

3. Important components of a computer :-



10.1 Working of a computer

Memory: Memory is the place for storing data obtained from the input and also the generated solution or answer by the computer.

There are two types of memories.

1. Internal 2. External.

Internal memory is of two types :

i. RAM : (Random Access Memory): This is created from electronic components.

ii. ROM : (Read Only Memory):The information stored here can only be read. We cannot make changes to the original.

Operating system : This is a program which provides a means of communication between the computer and the person working on it.It is called the DOS(Disk Operating System).

Program: A program is a group of commands to be given to a computer.
Data and information : Data is information in its raw (unprocessed)form.
4.Two main components of computers :
i. Hardware: Hardware consists of all the electronic and mechanical parts used in computers.
ii. Software : Software refers to the commands given to the computer,information supplied to it (input) and the results obtained from the computer after analysis (output)
5. Microsoft Word software allows you to create and edit text documents and write equations, etc.
Microsoft Excel is used to draw graphs based on the obtained numerical information.
Microsoft Powerpoint is used to create a presentation.
6.Uses of Information communication technology in science :
i.Demonstration: Some experiments and concepts in science can be demonstrated by using simulation and animation. e..g. functioning of the nervous system.
ii.Prediction : Predictions can be made after completing and processing information e.g. meteorology
iii.Collecting scientific information : internet, emails, newsgroups,blogs, chat rooms,Wikipedia,video conferencing etc.
7. Opportunities in the computer field :
i.Software field ii.Hardware field iii.Training Iv.Marketing
8. C-DAC :- It is the leading institute in India (situated at pune) which conducts research in the field of computers. Indian supercomputer PARAM was developed here.

Let's Practice:

1. Classify the following devices into input and output devices.
   Printer, scanner, monitor, mouse, web camera, speakers, barcode scanner, touch pad, keyboard, digital pen, projector, microphone.

Input devices	Output devices

2. Which software is used to draw a graph based on the obtained numerical information ?

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_____
_____
_____
_____

3. Which information communication technologies will you use to share your knowledge with others ?

_____
_____
_____
_____

4. Which application softwares will you use for a presentation in a training program?

_____
_____
_____
_____

Links for more study:

1. Information and Communication Technology - https://youtu.be/TGsvyR_kOI4

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State Council of Educational Research and Training Maharashtra Pune 30

Preparatory Bridge Course Test: 03

Science and Technology Part 02

Class : X **Marks : 30**

Activity Sheets: 01 to 15 **Time: 1 Hour**

Instructions :
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. This test is based on activity sheets - 01 to 15
4. Draw Scientifically correct labelled diagrams.
5. Write ONLY the option number of the correct answer for each multiple-choice question. (eg. i - C)

Q 1 A) I. choose the correct alternative. **02**

i) To bring about plant growth is the main function of _____ tissue.

A. Meristematic B. Epithelial C. Connective D. Sclerenchyma

ii) The network of capillaries in Bowman's capsule is called _____.

A. central canal B. axon C. glomerulus D. nephron

II. Answer whether following statements are true or false: **01**

In a monohybrid cross, the phenotypic ratio is 9:3:3:1.

B) Answer the following. **03**

i) Find the odd one out.

Paint residue, sludge, ash, dead rat.

ii) Complete the second pair based on the correlation in the first pair.

Women : Turner's syndrome : : Men : _____.

iii) Write the name of following tissue:

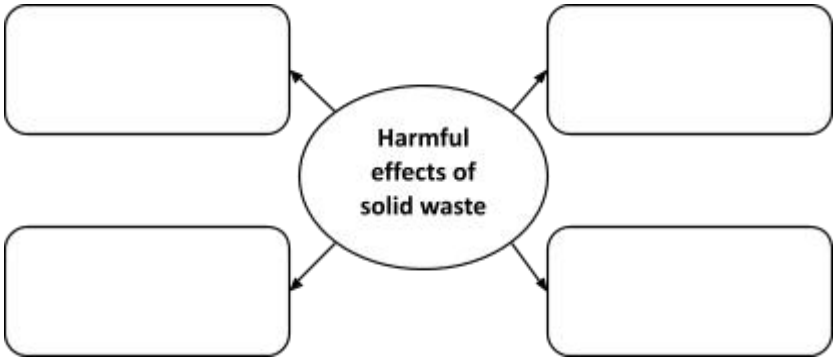
Tissue joining muscles and bones.

Q.2 A) Answer the following. (Any two) **04**

i) Give the scientific reason.

If the kidneys get adversely affected,dialysis is required.

ii) Complete the flowchart.



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iii) Identify the disorder shown in figure and describe characteristics of that disorder.



B) Answer the following. (Any Three) **06**

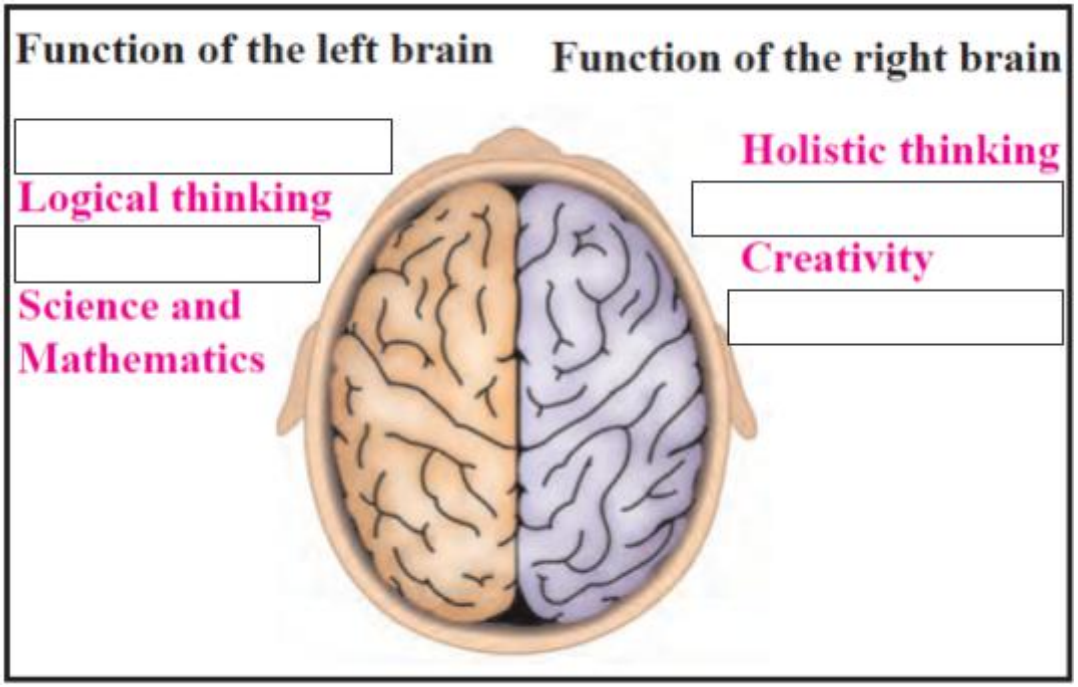
i. Distinguish between Monocots and Dicots.

ii. Define the following.

i. Antibiotics ii.D.N.A. finger- printing

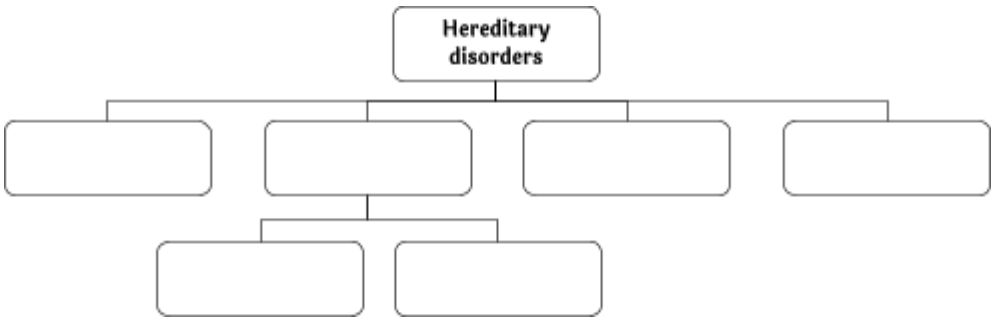
iii. Write in your own words about Agro-Complementary occupations.

iv. write the correct words in the box.



Q.3. Answer the following. (Any Three) **09**

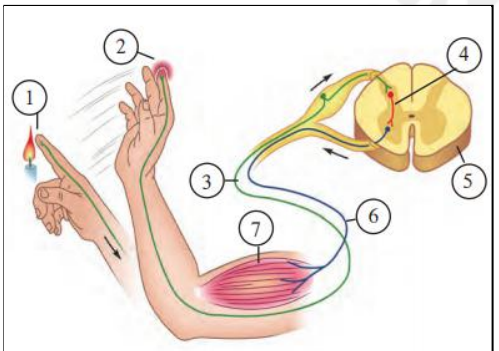
i. Complete the tree diagram below based on the types of hereditary disorders.



ii. Explain in your own words with suitable examples :
How is excretion in plants useful to human beings?

iii. Observe the figure carefully and answer the questions.

a. What is happening at 1 and 2 ?
b. Which is the nerve shown by 4 ?
c. At 7, where has the impulse reached ?



15.16 Reflex action

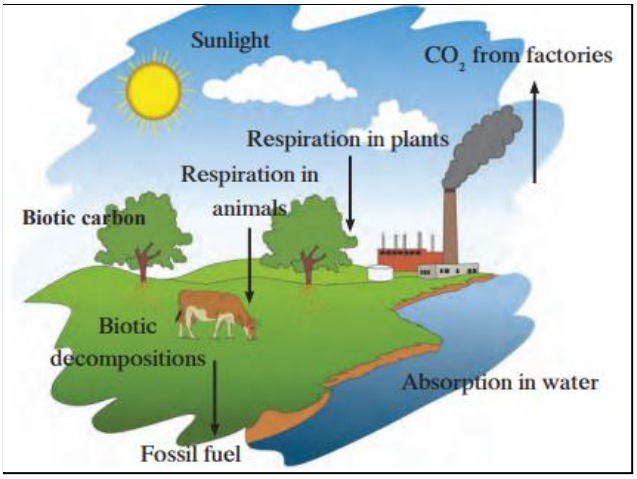
iv. Describe the structure of the DNA molecule with a suitable diagram.
v. Explain with suitable examples, the relationship between weather forecasting and disaster management.

Q. 4. Answer the following. (Any one) **05**

i. Answer the following in one sentence.
a. What difference is observed in human male and female chromosomes?
b. Name some of the dominant characters in human beings.
c. What are genes ?
e. Which changes in amino acid lead to Sickle-cell anaemia ?
f. What is meant by software ?

OR

ii. Observe the given diagram and answer the questions asked.



1) Name the cycle shown in the above figure. (1)
2) Write whether this cycle is important. Why? (2)
3) Write the main processes involved in this cycle. (2)

* * *