ജില്ലാ വിദ്യാഭ്യാസ പരിശീലന കേന്ദ്രം

ഡയറ്റ് ആലപ്പുഴ

# നിറകതിർ 2022

## SSLCറിവിഷൻസഹായി

പൊതുപരീക്ഷയ്ക്കായി കൂടുതൽ ശ്രദ്ധ നൽകേണ്ട പാഠഭാഗങ്ങളെ അടിസ്ഥാനമാക്കി തയ്യാറാക്കിയത്

## ജീവശാസ്ത്രം

## ആമുഖം

കോവിഡ് സൃഷ്ടിച്ച പ്രതിസന്ധികൾക്കിടയിലും ആലപ്പുഴ റവന്യൂ ജില്ലയിലെ പൊതു വിദ്യാലയങ്ങൾ തങ്ങളുടെ അക്കാദമികവും സാമൂഹ്യവുമായ ഉത്തരവാദിത്വങ്ങൾ വിജയകരമായി നിർവ്വഹിച്ച വരികയാണല്ലോ? ജില്ലയിലെ പൊതു സമൂഹവും, തദ്ദേശ സ്വയംഭരണ സ്ഥാപനങ്ങളും, ജനപ്രതിനിധികളും, വിദ്യാഭ്യാസ വകുപ്പിന്റെ വ്യത്യസ്ത ഏജൻസികളും, വിദ്യാലയങ്ങൾക്കൊപ്പമുണ്ട്.

ജില്ലയിലെ പത്താംതരം വിദ്യാർത്ഥികളുടെ പൊതു പരീക്ഷാ തയ്യാറെടുപ്പിനെ സഹായിക്കുന്ന ഒരു വായനാ സാമഗ്രിയുടെ ആവശ്യകത ഇക്കൊല്ലവും പരക്കെ ഉന്നയിക്കപ്പെടുകയുണ്ടായി.ഇതിന്റെ അടിസ്ഥാനത്തിലാണ് "നിറകതിർ 2022" ഡയറ്റ് തയ്യാറാക്കുന്നത്. കേരള പൊതുവിദ്യാഭ്യാസ വകുപ്പ് എസ്.എസ്.എൽ.സി പരീക്ഷയുമായി ബന്ധപ്പെട്ട് നൽകിയിട്ടുള്ള മാർഗ്ഗ നിർദ്ദേശങ്ങളെ ഉൾക്കൊണ്ടാണ് ഇതിലെ ഉള്ളടക്കം തയ്യാറാക്കിയിട്ടുള്ളത്.

വളരെ കുറഞ്ഞ സമയത്തിനുള്ളിൽ തന്നെ എല്ലാ വിഷയങ്ങളിലും വായനാ സാമഗ്രി തയ്യാറാക്കാൻ കഴിഞ്ഞത് ജില്ലയിലെ അദ്ധ്യാപകരുടെ ആത്മാർത്ഥ പരിശ്രമം കൊണ്ടുമാത്രമാണ്. മികച്ച ആത്മവിശ്വാസത്തോടെ എസ്.എസ്.എൽ.സി. പരീക്ഷയെ അഭിമുഖീകരിക്കാൻ "നിറകതിർ 2022" സഹായിക്കുമെന്ന് പ്രതീക്ഷിക്കുന്നു.

**ഈ സംരംഭത്തെ സഹായിച്ച എല്ലാവർക്കും നന്ദി.**

ഡോ. കെ.ജെ. ബിന്ദു
പ്രിൻസിപ്പൽ ഇൻ ചാർജ്
ഡയറ്റ് ആലപ്പുഴ

എം. അജയകുമാർ
സീനിയർ ലക്ചർ, ഫാക്കൽറ്റി ഓഫ്
ഐ.എഫ്.ഐ.സി
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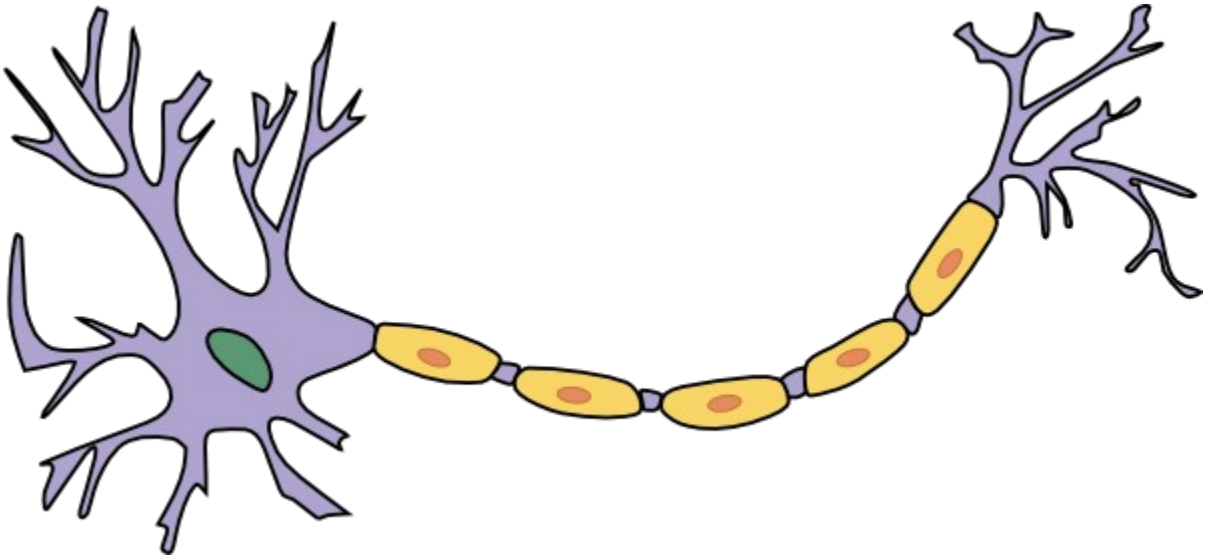
# CHAPTER 1
# SENSATIONS AND RESPONSES

This chapter deals with the nervous system which controls and coordinates the metabolic activities in living organisms.

## MAIN IDEAS AND CONCEPTS

1. **Structure of neuron**

**Types of nerves**
**Structure and function of brain**
**Diseases affecting nervous system**
**Synapse**
**Reflex action**
**Spinal cord structure and function**



1)DENDRITE-BRANCHES OF DENDRON.PART THAT RECEIVES IMPULSES FROM ADJACENT NEURON.

2)DENDRON- SHORT FILAMENT FROM CELL BODY.CARRIES IMPULSES FROM DENDRITES TO THE CELL BODY.

3)AXON-LONGEST FILAMENT FROM THE CELL BODY.CARRIES IMPULSE FROM THE CELL BODY TO THE OUTSIDE.

4) AXONITE- BRANCHES OF AXON. CARRIES IMPULSE TO SYNAPTIC KNOB.

5)SYNAPTIC KNOB- TIP OF AXONITE. SECRETES NEUROTRANSMITTER.

| Nerves and their peculiarities | Functions |
|---|---|
| Sensory nerve (formed of sensory nerve fibres) | carries impulses from various parts of the body to the brain and the spinal cord. |
| Motor nerve (formed of motor nerve fibres) | carries impulses from brain and spinal cord to various parts of the body. |
| Mixed nerve (formed of sensory nerve fibres and motor nerve fibres) | carries impulses to and from the brain and spinal cord. |

| Disease | Causes | Symptoms |
|---|---|---|
| Alzheimer's | Accumulation of an insoluble protein in the neural tissues of the brain. Neurons get destroyed. | Loss of memory, inability to recognize friends and relatives, inability to do routine works. |
| Parkinsons | Destruction of specialised ganglions in the brain. Production of dopamine, a neurotransmitter in the brain gets reduced. | Loss of body balance, irregular movement of muscles, shivering of the body, profuse salivation. |
| Epilepsy | Continuous and irregular flow of electric charges in the brain. | Epilepsy due to continuous muscular contraction, frothy discharge from the mouth, clenching of the teeth following which the patient falls unconscious. |

## SAMPLE QUESTIONS

### 1) Find the odd one out and find common features of others

A) cerebrum,cerebellum,medulla oblongata,central canal

B) dendrite,thalamus,axon,synaptic knob

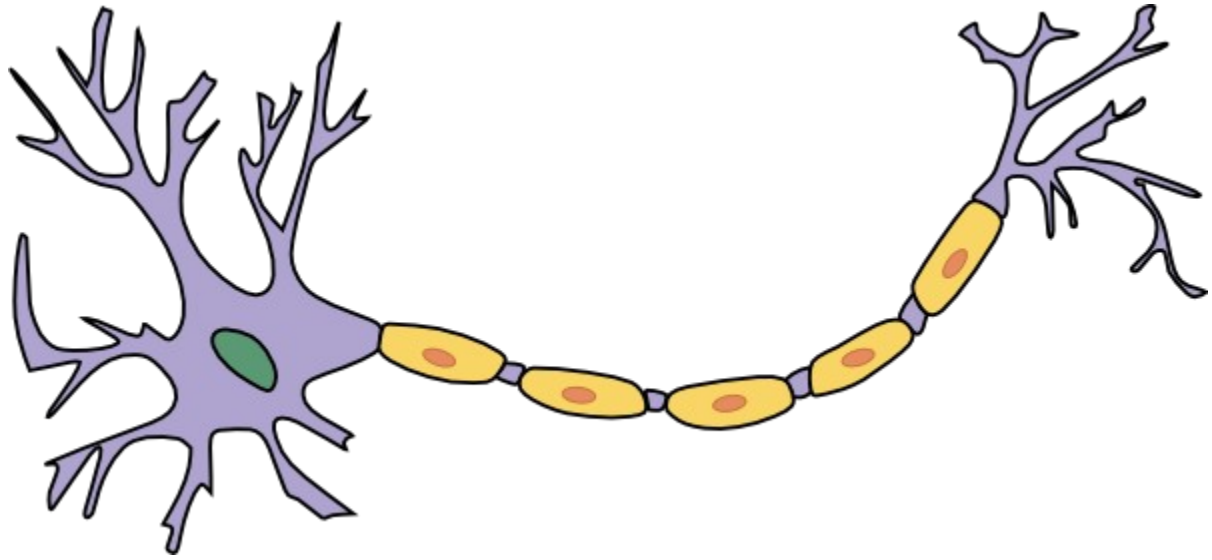
### 2)Complete the word pair by analysing the relation

A)cerebrum :centre of thought ; cerebellum :_____

## 3)Complete the table

| A | B |
|---|---|
| SENSORY NERVE | i |
| ii | |
| MIXED NERVE | iii |

## 4) Redraw the diagram and label the parts performing the functions mentioned below :

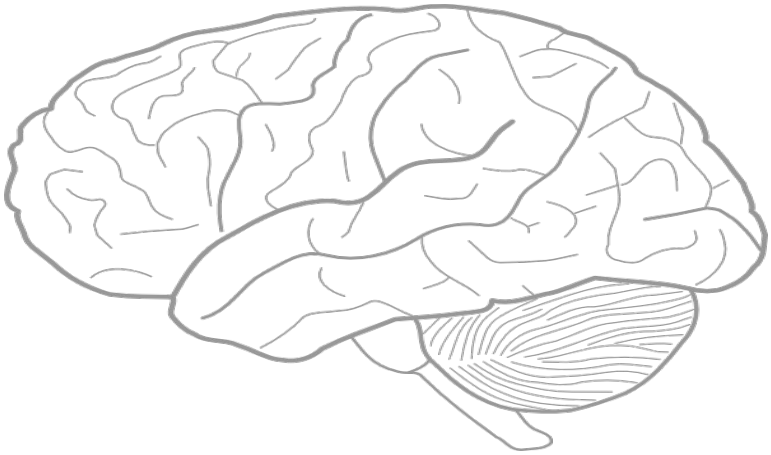


A) receives impulses from adjacent neuron

transports impulses from the cell body

transports impulses to synaptic knob

## 5)Redraw the diagram and label the parts performing the functions mentioned below



a)centre of sensory responses,controls voluntary activities
b) acts as relay station of impulses to and from cerebrum
c) plays a major role in maintenance of homeostatis

**6 )Complete the illustration**

## NERVOUS DISORDERS

7)Find the odd one out and write common features of others

Dendron, synapse, axonite, dendrite, axon

8) complete the word pair

a) maintenance of homeostasis: hypothalamus.
Maintains equilibrium of body : - .....

b) cerebrum :- cerebral reflex

Spinal cord.:.....

c) cranial nerves : 12 pairs

Spinal nerves : .....

9) balu withdrew his leg on accidentally touching the fire

A) name this spontaneous involuntary action?
B) explain the actions with the help of a flow chart.

## ANSWERS

1 A) central canal.others are parts of the brain

B)thalamus. Others are parts of neuron

2 A) coordinates muscular activities and maintains equilibrium of body

3 i) carries impulses from various parts of body to brain and spinal cord

ii) motor nerve

iii)carries impulses to and from brain and spinal cord.

4 a)dendrite
b)axon
c)axonite

5a)cerebrum
b)thalamus
c)hypothalamus

6 a)parkinsons disease
b)destruction of neurons due to deposition of insoluble protein
c)loss of body balance,irregular movement of muscles
d)epilepsy due to continuous muscular contraction
e)frothy discharge from mouth .patient becomes unconscious.

7.synapse.All others are the parts of neuron
8A,cerebellum
B,Spinal reflex

9)reflex action
b) receptors are stimulated, impulses are formed ,
Sensory nerve carrries impulses to spinal cord ,
Interneuron binds sensory neuron and motor neuron,
Motor neuron carries impulse to related muscle,
Withdrawal of leg due to action of related muscles.

# CHAPTER 2 WINDOWS OF KNOWLEDGE

Sense organs play an important role in analysing the surroundings and responding accordingly

1)structure of eye (cornea, iris, pupil, lens, retina, yellow spot, blind spot ,optic nerve, peculiarities, function)
2)diseases affecting the eye

3)rod cells and cone cells
4)flowchart on sight,taste and smell

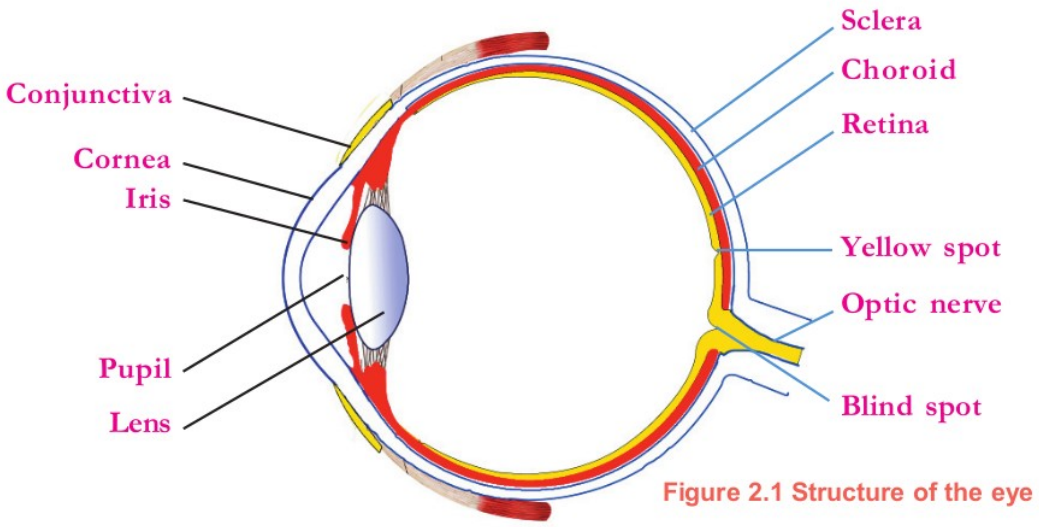


Figure 2.1 Structure of the eye

| Part | Peculiarity | function |
|---|---|---|
| 1)cornea | Transparent anterior part of sclera | Refracts light rays to focus on retina |
| 2)iris | Part of choroid seen behind cornea | Melanin pigment gives iris a dark colour |
| 3)pupil | Aperture seen at the centre of iris | Controls the intensity of light |
| 4)lens | Transparent elastic,convex | Focus light rays to the retina |
| 5)retina | Layer containing photoreceptors | Helps in image formation |
| 6)yellow spot | Part of retina | Point of maximum |

| | | |
|---|---|---|
| | containing plenty of photoreceptors | visual clarity |
| 7)blind spot | Part of retina where optic nerve begins | There is no vision as photoreceptors are absent |
| 8)optic nerve | Sensory nerve | Transmits impulses from photoreceptors to visual centre of brain |

| | Rod cell | Cone cell |
|---|---|---|
| Pigment | Rhodopsin | Photopsin |
| Shape | Rod | Cone |
| Function | Vision in dim light | Vision in bright light,helps to distinguish colours |

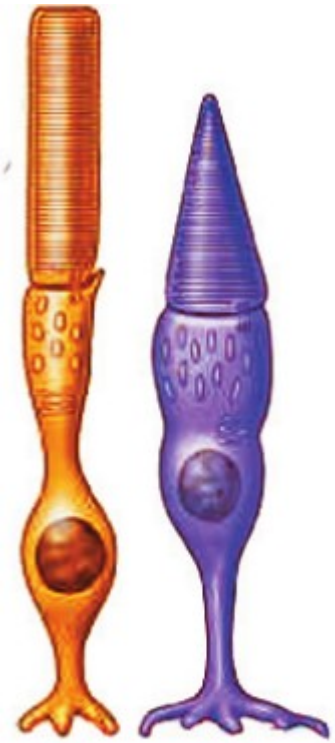


Figure 2.4
Rod cell and
Cone cell

Disorders affecting eye

A)**Night blindness**

1)objects cannot be seen in dim light

2)deficiency of vitamin a results in low production of retinal

3) include vitamin A rich food in diet

**Colour blindness**

1)unable to distinguish red, and green, colours

2) defect of cone cells

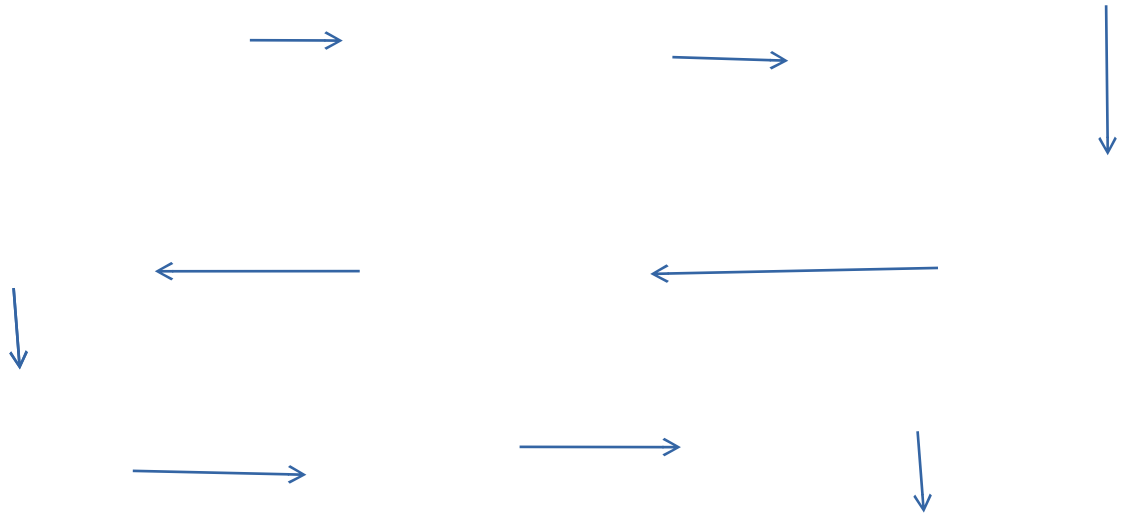
3)cannot employ persons with this disease as pilots,and drivers

4 It is a genetic disease

C)xerophthalmia
1)conjunctiva and cornea become dry and opaque
2)prolonged deficiency of vitamin A

3)ultimately leading to blindness
4)remedy-include vitamin A in diet

## FLOW CHART OF VISION



Flow chart oF taste

1. Food particles dissolve in saliva

Chemoreceptors are stimulated

Impulses are formed
Impulses reach cerebrum
Sensation of taste

## SENSATION OF SMELL

A)aromatic particles diffuse in air and enter nostrils
B) aromatic particles dissolve in mucus

C)olfactory receptors are stimulated
D)impulses are formed
E)olfactory nerve carries impulses to cerebrum
F)sensation of smell

## MODEL QUESTIONS

1) If there is an error in the flow chart given below, please correct it

a Ear canal -> cochlea-> ear drum -> auditory nerve

Ans.Ear canal->ear drum ->cochlea-> auditory nerve

Modify the illustration by adding the oval window and the ear ossicles

Ans.. Ear canal -> Eardrum > ear ossicles -> Oval window -> Cochlea > auditory nerve.

2) Smell detection steps are given. Write them down in order.

a) olfactory particles mixed with air enter the nose.

b) olfactory receptors are stimulated and impulses are generated.

c) Feel the smell.

d) impulses reach the cerebellum via the olfactory nerve.

e) olfactory particles dissolve in the mucus inside the nose.

Ans.a,e,b,d,c

3) Prepare 2 placards to be used in the rally organized by the School Science Club to highlight the importance of eye donation.

4) Which fluid is formed from blood in the eye as like cerebro spinal fluid in the brain?
What is the purpose of this fluid ?

Ans.aqueous humour.provides oxygen and nourishment to the tissues of the eye

5) Understand the word meaning and fill in the blanks.

a) The transparent anterior part of the sclera - the cornea

Hole in the center of the iris - .....

Ans: Pupil.

6) Write any 2 health habits that can be suggested in a seminar on "Eye Health Care" for ensuring eye health .

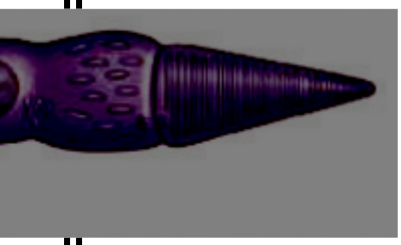
☞Ans Excessive use of mobile phone,computer etc must be avoided
food material rich in vitaminA must be included in the diet

**7)Analyse the illustration and answer the questions**

i) identify A

ii) which i visual pigment is present in A?

A.



iii) identify the disease caused due to deficiency of A?

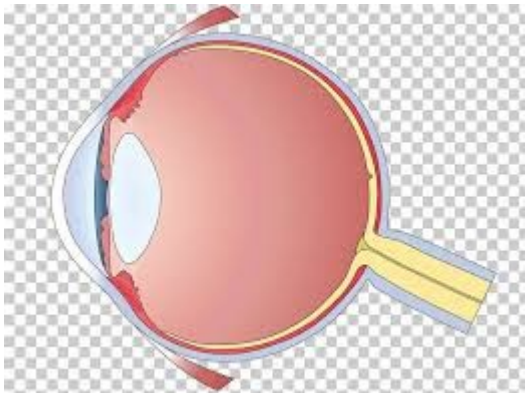
8)complete the flow chart of vision using the terms given below

Vision pupil, opticnerve,lens , acqueos fluid
Impulse, cerebrum, cornea ,retina,light,vitreous fluid

9) Rearrange the table suitably

| A | B | C |
|---|---|---|
| Night blindness | Continuous deficiency of vitamin A | Conjuniva and cornea become dry and opaque |
| Colour blindness | Deficiency of vitamin A results in low production of retinal | Cannot see objects in dim light |
| Xerophthalmia | Caused due to destruction of cone cells | Cannot distinguish red,green colours |

10)Redraw the diagram and label the parts mentioned below



a)part of retina containing maximum amount of photoreceptors
b)aperture at the centre of iris
c)part where image formation takes place

11)rearrange steps so as to make flowchart on taste

- Nerves carries impulse to cerebrum

Sensation of taste
Enters taste receptors
Food particles dissolve in saliva
Chemoreceptors are stimulated.
Impulses are formed

# CHAPTER 3

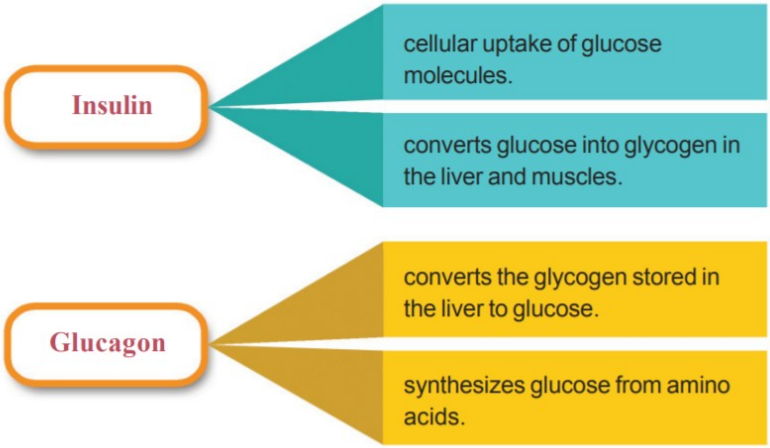
# Chemical messages for homeostasis.

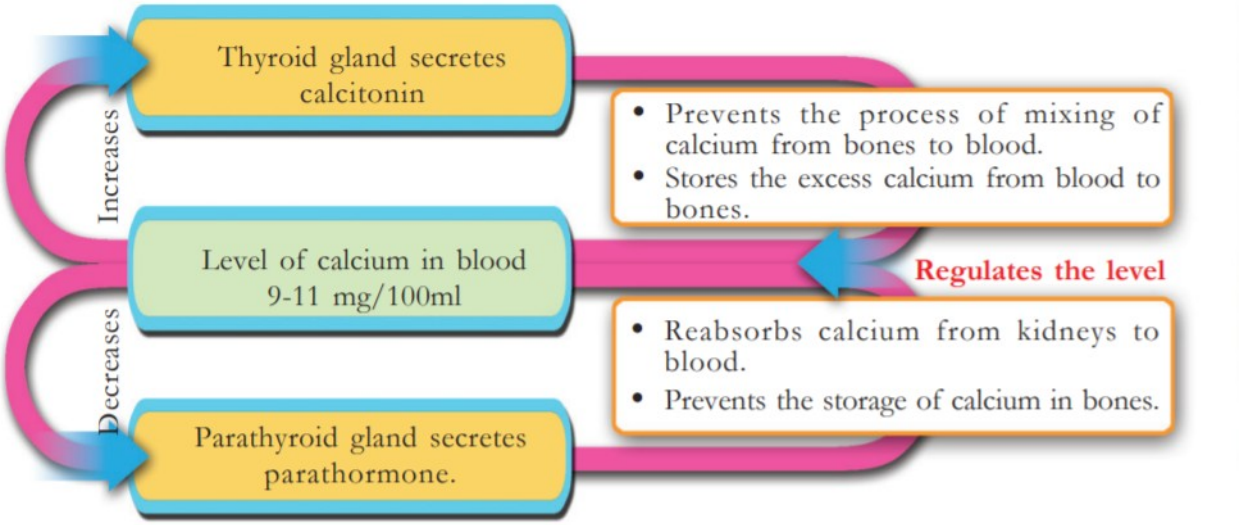
The endocrine system is an organ system that controls and coordinates all activities in the body. This system includes endocrine glands and their secretions called hormones. Hormones are chemical messengers that regulate cellular activities. Endocrine glands do not have particular ducts to carry hormones to various tissues. Hence they are known as ductless glands. Hormones are transported through blood.

In this chapter we study about action on hormones in target cells, effect of hormonal imbalances and the functions of various hormones, their deficiency diseases, plant hormones and functions and artificial plant hormones.

**Focus point**

**i)** Regulation of glucose level in blood – pancreas, diabetes mellitus
Regulation of calcium level in blood- thyroid gland, parathyroid gland.
Defect of growth hormone- acromegaly, gigantism, dwarfism
Pheromones
Plant hormones



Growth of the body takes place under the control of pituitary hormone responsible for growth.
This hormone is called somatotropin.
If the production of somatotropin increases during the growth phase. It leads to the excessive growth of the body. This condition is called gigantism.
When its production decreases during the growth phase, it leads to dwarfism.
If somatotropin is produced excessive after the growth phase acromegaly is caused. It is characterized by growth of bones on the face, jaws and fingers.

**Pheromones**

Certain animals secrete some kind of chemical substances to the surroundings to facilitate communication, they are called pheromones.

**Functions:**

It helps in attracting mates.
Informing the availability of food.
Determining the path of travel
Signaling dangers

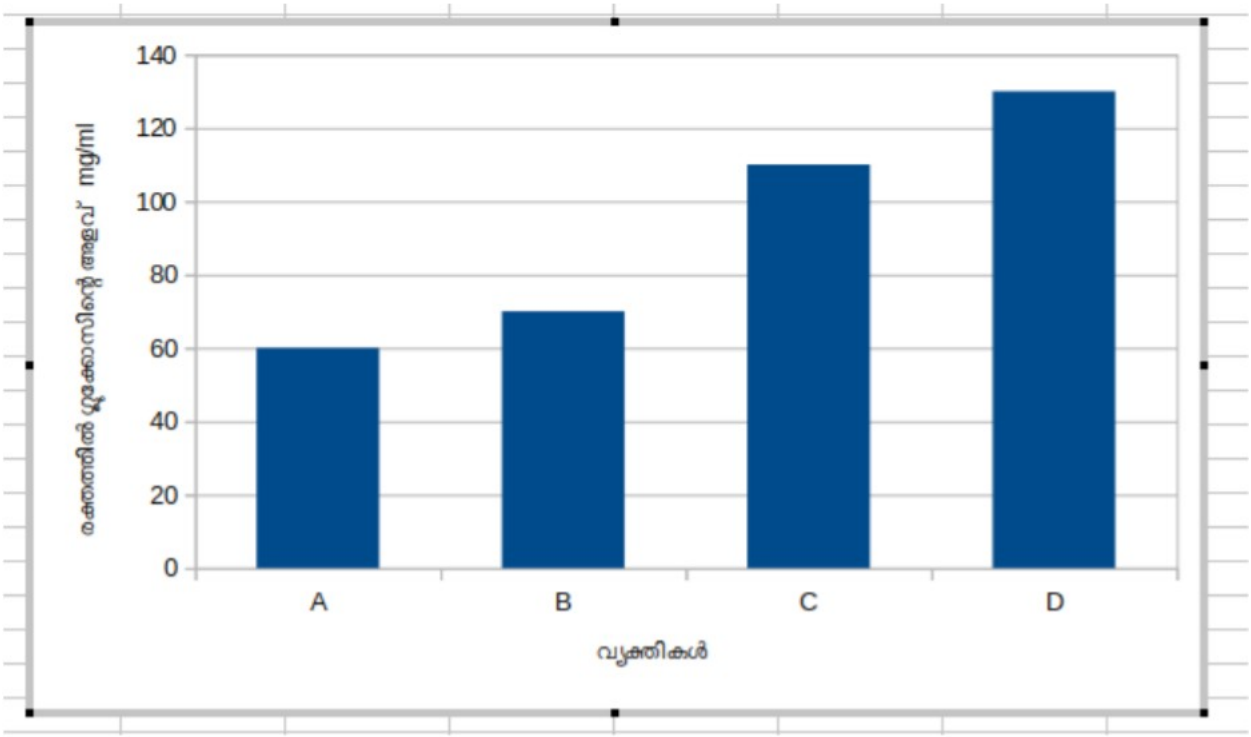
| **Animals** | **Pheromones** |
|---|---|
| Musk deer | Muscone |
| Civet Cat | Civeton |
| Female silk worm | bombykol |

| **Plant Hormones** | **Functions** |
|---|---|
| **Auxin** | Cell growth, cell elongation, promoting the growth of terminal buds, fruit formation |
| **Cytokinin** | Cell growth, cell division, cell differentiation. |
| **Gibberellin** | Stimulates break down of stored food to facilitate germination, sprouting of leaves |
| **Abscisic acid** | Dormancy of embryo, dropping of ripened leaves and fruits. |

| | |
|---|---|
| **Ethylene** | Ripening of leaves and fruits, excess amount of ethylene causes dropping of leaves and fruits. |

**Sample Questions:**

Q1. Following graph indicates the fasting blood sugar levels of various persons: Analyze the graph and give answer to the question below.




1.

A,Which individuals are having normal level of glucose in blood.

B,Which individual is diabetic? What are the symptoms of this disease?

C,When is international diabetic day?

Ans.A.BandC

B.D Incrased appetite and thirst and frequent urination

November 14

2. Complete the table suitably.

| A | B | C |
|---|---|---|
| gigantism | i) | Excessive growth of the body |
| ii) | decreases the production of somatotropin | Retarded growth |
| Acromegaly | iii) | iv) |

Ans.i...production of somatotropin increases during growth phase

ii.dwarfism

iii.excessive production of somatotropin after growth phase

iv.growth of the bones on the face,jaws and fingers

3. Honey bees and termites often leave in colonies. What chemical messages help them in achieving this.?

Ans,pheromones

. What are the other functions of this chemical messages?

Ans,help in attracting mates;informing the availability of food;determining the path of travel;signalling dangers

4, Why endocrine glands are called ductless glands?

Ans,because they pour their secretion in to blood.they dont have a duct to pour

5. Name the endocrine part of pancreas.

Ans,Islets of Langerhans

6. Identify the word relationship and complete:

hypothyroidism : Cretinism

hyposecretion of ADH: _____

Ans, Diabetes insipidus

7. Name One use of artificial pheromone in agriculture

Ans,for biological pest control

8 Ethephone when used in rubber get converted into X. X increases the latex production. Identify X?

Ans,Ethylene

9. A particular hormones production in humans increases at night and decreases during day. Identify the hormone?

Ans,melatonin

10. Name two hormone secreted by the posterior lobe of the pituitary.

Ans,ADH and Oxytocin

13. Name the endocrine gland which is active during childhood and located behind the sternum.

Ans, Thymus

14.Match column B according to A

| A | B |
|---|---|
| Prevents the mixing of calcium into the blood from bones | cortisol |
| Helps in the reabsorption of water in kidney | progesterone |
| Helps in the retaining of embryo in uterus | parathormone |
| Slow down the activity of immune system | ADH |

# 4 KEEPING DISEASES AWAY

In this chapter we learn about various disease causing microbe which affect humans and other organisams,the diseases caused by them,their symptoms,spreading methods,and the precautionary methods to avoid them

FOCUS AREA

TUBERCULOSIS,AIDS,MALARIA,-Pathogens,Symptoms,mode of transmission

GENITIC DISEASES-SICKLE CELL ANAEMIA

Cancer-causes and treatment

Lifestyle diseases

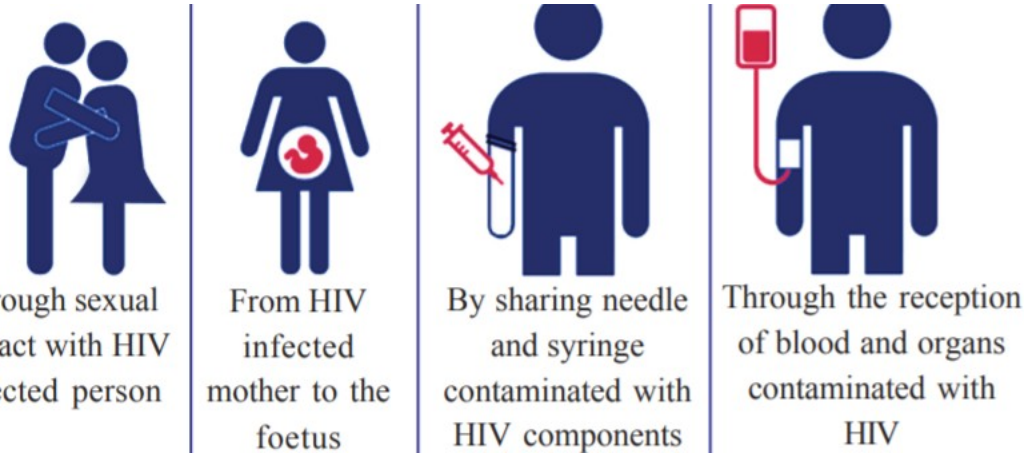
Animal diseases,plant disesaes

| | |
|---|---|
| Pathogen | *Mycobacterium tuberculosis.* |
| Major Symptoms | Loss of body weight, fatigue, persistent cough |
| Transmission of Disease | When the patient speaks, coughs or sneezes, the pathogens spread into the air and thereby to others. |
| Organs/Body parts Affected | Tuberculosis mainly affects the lungs. But kidneys, bones, joints, brain etc. are also affected by this disease. |
| Treatment | By administering antibiotics |
| Vaccine | BCG is used as preventive vaccine against tuberculosis. |

## AIDS

It Is a viral disease,causative organism---HIV .It enters the body and multiply with the genetic mechanism of lymphocyte. As aresult lymphocytes number dicreases and persons immunity becomes weak

**Various ways by which AIDS spread**



## AIDS does not spread...

- by touch, shaking hands, coughing, sneezing etc.
- through insects like mosquitoes, houseflies etc.
- by staying together and sharing food.
- by using the same toilet.
- by taking bath in the same pond.

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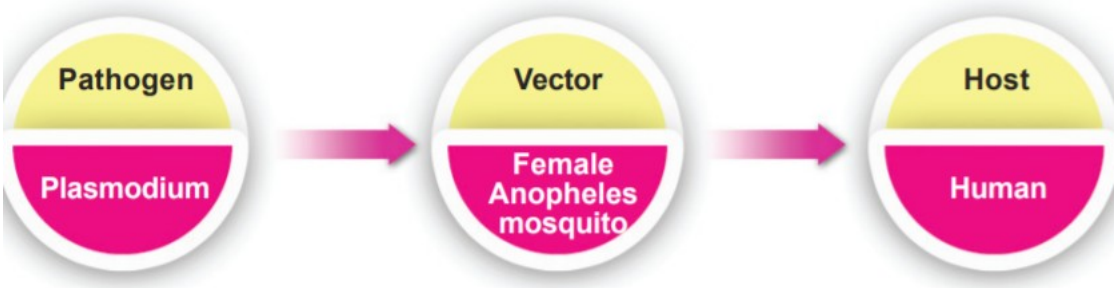
MALARIA

SYMPTOMS

High fever with shivering and profuse sweating are the major symptoms of malaria. Other symptoms include headache, vomitting, diarrhoea, anaemia.

MALARIA MODE OF SPREAD




HAEMOPHILIA

Defect in the gene coding for plasma protein help in the clotting of blood result in haemophilia.As aresult heavy bleeding occurs for aminor cut or wound result in the loss of blood.It is a genetic disease Injecting the protein needed Is the temporary cure

CANCER CAUSES AND TREATMENT

Cancer is caused by the uncontrolled division of cells and their spread to other tissues. The normal cells get transformed into cancerous cells when the control system of cell division fails. This may be due to environmental factors, smoking, radiations, virus,

And hereditary factors

TREATMENT METHODS

SURGERY,CHEMOTHERAPY AND RADIATION THERAPY

MODEL QUESTIONS

Given below are the symptoms of diseases caused to two individuals.Analyse it and answer the following questions

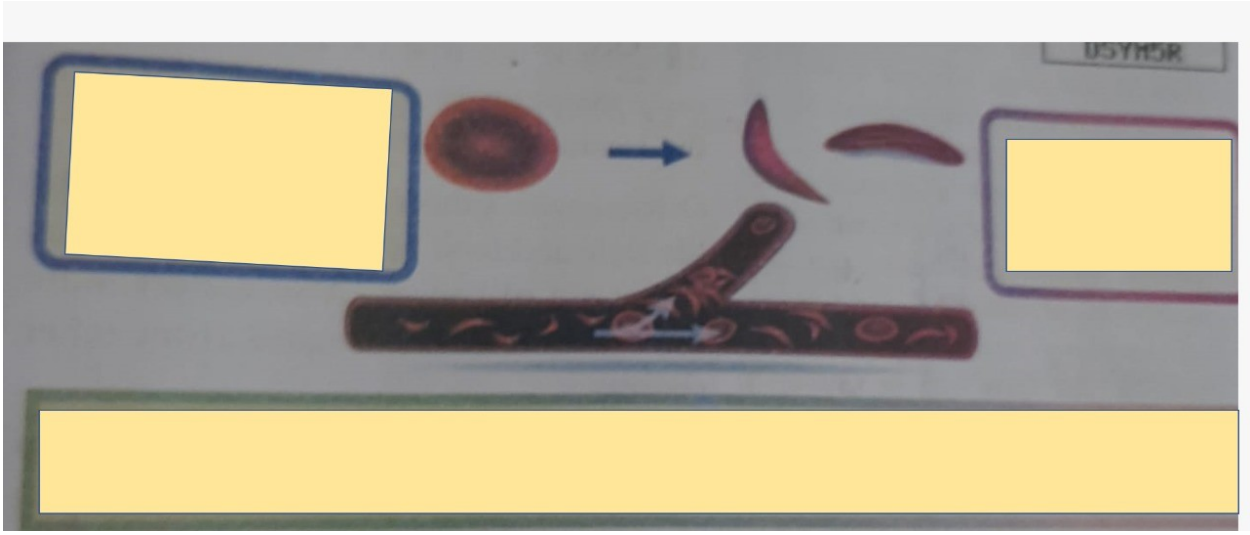
| A | B |
|---|---|
| **Loss of body weight,fatigue and persistent cough** | **High fever with shivering and profuse swetting** |

a,Identify the diseases A and B and write its causative organisms
b. Which organ is affected by A?.Which vaccine is used against this?
c.Name the vector for B
2.Deepu's .mother visited school to meet the class teacher and speek about a particular defect he is suffering from. According to her; deepu for a minor cut itself excessive bleeding occurs
a,Name the defect he is suffering from
b,What is the cause of this defect?
c.Which category of desease ,the defect belongs?
3.How do the normal cells becomes cancerous? Mention the various treatment methods of cancerous
4.Given below are the names of certain diseases.Identify the fungal diseases among them
Malaria,Ringworm,Filariasis,Athelets foot
5,Among the given indicators identify the communicable diseases;causative organism and the category of diseases
a.T he disease manifest as round,red blisters on the skin
b,liver cirrhosis,imparts dark yellow color to the mucus membrane,white prtion of the eyes and the nails
c,high fever with shivering and profuse swetting

d,the number of lymphocyte dicrease considerably and reduces the immunity of the body
6.From the given below names of the diseases identify bacterial diseases
tuberculosis, tetanus, nipah,diphtheria
7.identify the virus which multiply by using the genitic mechanism of lymphocytes
8,write down two health issues caused to brain due to tobacco smoking
9,identify the word pair rellationship and complete the blanks

10,Malaria; culex mosquito;Dengue fever; …….

11,Observe the illustration and answer the following questions



a.which disease is indicated by the above illustration.give reason for the transformation of RBC
b.how does it affect the body?

12, The following symptoms are noticed in a patient by the doctor
The mucus membrane of nose and pharynx is affected
Fever,throat pain,swelling of the lymph gland in the throat
a,Identify the diseases
b.explain the transmission of the diseases
13, Name a.serious viral disease causing to liver.write its symptoms
14.A disease is prevented by BCG vaccination
a.what is the scientific name of its causative organisms
b.write two major symptoms of this diseases

15 .some fungal diseases symptoms are given below.identify them and tabulate them accordingly
A.A round,redblisters on the skin;
Bappearance of reddish scaly rashes that cause itching

ANSWER KEY
1,a.disease A is Tuberculosis and B is Malaria
causative organism for a is Mycobacterium tuberculosis
b is Plasmodium
b organs affected—lungs,kidneys,bones,joints and brain
vaccine used against A is BCG
C,Vector for B is female anaphilous mosquito
2,haemophilia
the gene which control blood clot is defective
genitic disease
3,The normal cell get transformed in to cancerous when the control system of cell division fails
surgery,chemotherapy,radiation therapy
4.ring worm,athlets foot
5.a—ring worm
causative organism fungi
skin disease
b,hepatitis
virus.
Liver diseases(viral diseases)
c,malaria
plasmodium
protozoic diseases
D,AIDS
HIV
VIRAL DISEASES
6,Tuberculosis;tetanus;diphtheria
7,HIV
8,stroke ,addiction to tobacco
9,Ades
10,a,sickle cell anaemia
changes occur in the structure of haemoglobin in red blood cell due to deformities in the sequencing of amino acids
The oxygen carrying capacity of RBC decreases.The sickle shaped RBCget collected in the blood vessels and block the flow of blood in them

# CHAPTER 5
# SOLDIERS OF DEFENCE

**Defense is the ability of the body to prevent the entry of pathogens and to destroy the pathogens that have entered the body. This is achieved by immune system. Our body has a variety of immune systems.**

**Our body is equipped with a variety of immune systems.**

# Defense mechanism in our body

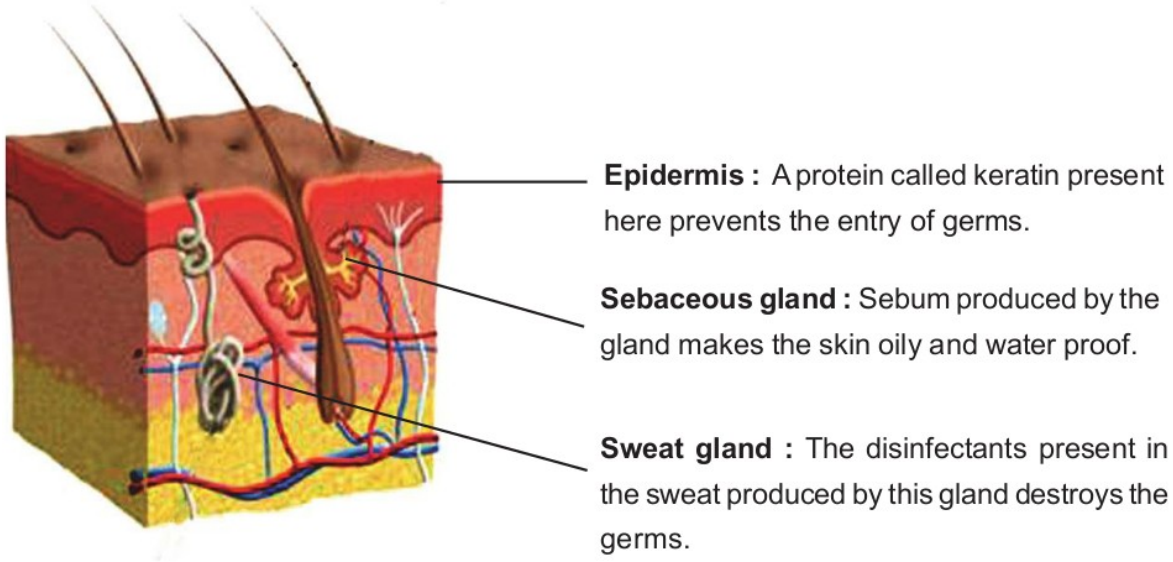



Figure 5.1 The skin and its defense mechanism

**The body's defense mechanisms are:**

1. **Body coverings and secretions (skin and mucous membranes)**
2. **Body secretions (mucus, mucus, tears, earwax, lysozyme, HCL)**
3. **Body fluids (blood, lymph)**

**Body fluids and immunity**

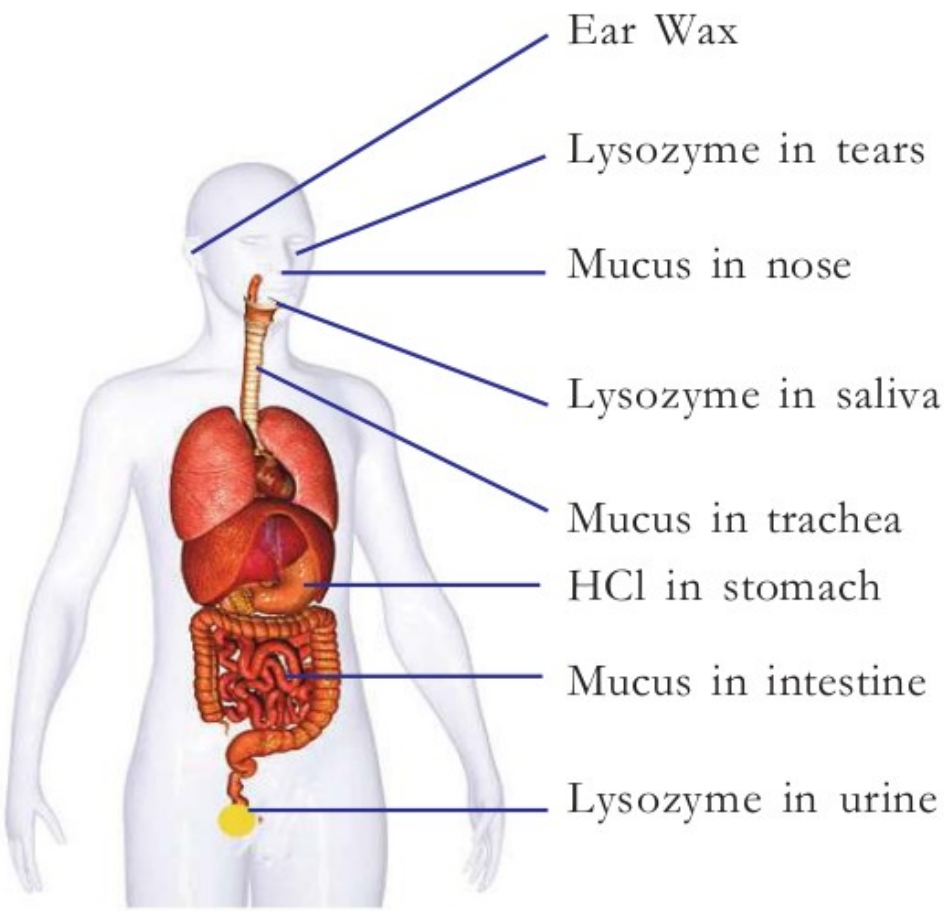



Illustration 5.2 Body secretions and Defense mechanisms

**Prevention Strategies**

**1. Phagocytosis**

**2. Fever is a preventive measure**

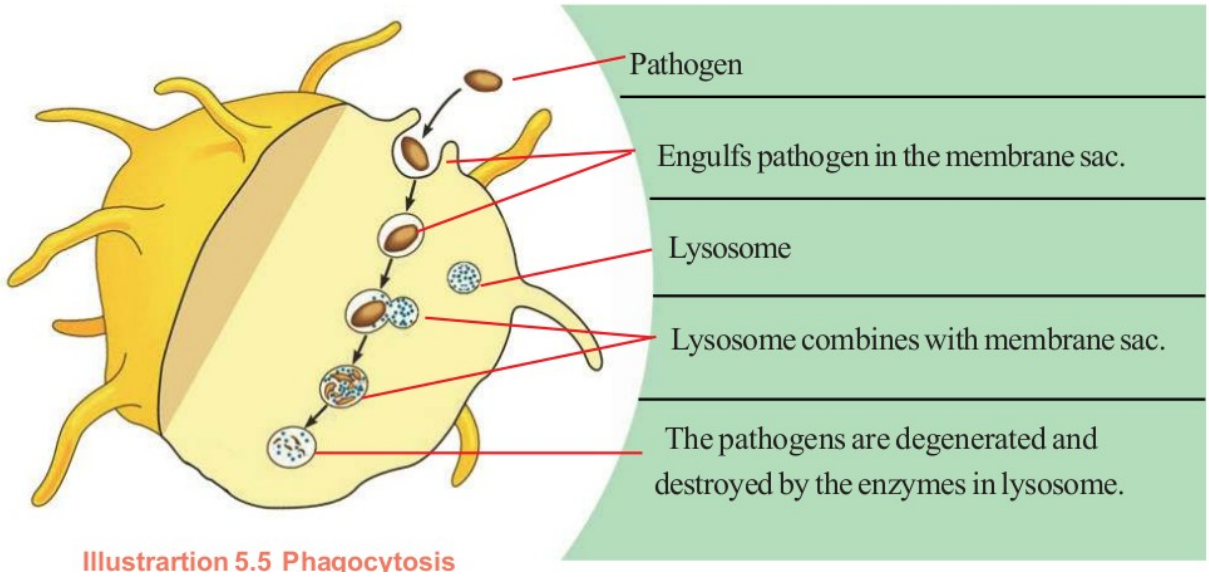
**Phagocytosis**

**Phagocytosis is the process by which germs are swallowed and destroyed.**

**Phagocytes are cells that cause phagocytosis.**

**The white blood cells / monocyte and neutrophils and macrophages are phagocytes.**

## Different stages of phagocytosis




Illustrartion 5.5 Phagocytosis

## Fever flow chart

### Role of B and T Lymphocytes

Pathogens enter the body.

▼

The presence of toxins produced by the pathogens stimulates the white blood cells.

▼

The chemical substances produced by the white blood cells raises the body temperature.

▼

The rise in body temperature reduces the rate of multiplication of pathogens. Increases the effect of phagocytosis.

**B Lymphocytes are produced in bone marrow and matured in bone marrow. They produce proteins called antibodies which act against antigents.**
**Antibodies destroy the pathogens in three different ways:**
**1.Destroy the bacteria by distegrating their cell membrane**
**2.Nuetralize the toxin of the antigen.**
**3.Destroy the pathogen by stimulating other white blood cells.**

**T Lymphocytes**

**1.Stimulate other defense cells of the body.**
**2. destroy the cells affected by virus**
**3.Destroy cancer cells.**

**Immunization is the artificial method of activating the defense cells against pathogen.**
**Vaccines**
**Vaccines are substances that are used for artificial immunization.**
**Alive or dead or neutralized germs,Neutralised toxins or cellular parts ofthe pathogen are the component of each vaccine.**

| Vaccine | diseases |
|---|---|
| B. C. G | tuberculosis |
| O. P. V | polio |
| Pentavalent | diphtheria, tetanus, pertussis, |
| Hepatitis-B | HIB |
| M. M. R | mumps, meseals, rubella |
| TT | Tetanus |

## Antibiotics

Chemicals extracted from microorganisms
Used to destroy, bacteria are called antibiotics.
Antibiotics were first discovered in 1928 by Sir Alexander Fleming.

Side effects of regular use of antibiotics

1,regular use develops immunity in pathogens against antibiotics
2,destroys useful bacteria in the body
3,reduces the quantity of some vitamins in the body

## Different blood groups

The basis of blood grouping is the presence of antigen A and antigen B in red blood cells. The blood group of a person is named according to the antigen present in that person's blood. In blood transfusion, certain antibodies present in the blood plasma are of special importance. In blood group A, antibody **b** and in group B, antibody **a** are present. In addition to antigens A and B, another antigen called D or Rh factor is present in the cell membrane of red blood cells of certain persons. The blood groups in which Rh factor is present are known as positive blood groups and those without Rh factor are called negative blood groups.

When a foreign antigen reaches one's blood, it stimulates the defense mechanism. On receiving unmatching blood, the antigen present in the donor's blood and the antibody present in the recipient's blood will react with each other and form a blood clot. Hence, everyone cannot receive blood from all blood groups.

1.
Tabulate the defenses listed below and categorize them under ihe given heading
. (mucous , blood, saliva, lymph, HCL, lysozyme)

| BODY FLUIDS | BODY SECRETIONS |
|---|---|
| | |
| | |
| | |

2. Given below are the different stages of phagocytosis.
Sort them in order
A) Lysozyme
B) pathogens

C) Lysozyme combines with membranes sac.
D) Engulfs The pathogens in the membrane sac
E) The pathogens are degenerated and destroyed by the enzymes in the lysozyme
3. As the body temperature rises, in what way does it help the immune system?
4. Which of the following is not suitable for vaccine ?

1)vaccines are the substances used for artificial immunization
2)They act as antigen that stimulate defense mechanism of the body
3)They produce antibiotics against antigen that entered the body.
4) Inactivated,dead, neutralised toxins, or cellular parts of the pathogens are the contents of vaccine.

5. What are the side effects of regular use of antibiotics?
6. 'Not everyone can accept all the different types of blood group '. Why?!
7. The table given below shows the various body secretions and the parts that produce them.
Complete them correctly

| BODY PART | body secretion |
|---|---|
| Ear | A |
| B | HCL |
| EYE | C |
| INTESTINE | D |
| | |

## Chapter 6
## Unravelling genetic mysteries

## Monohybrid cross

**genitic cross in which parents differ by single pair of contrasting characters are crossed is called monohybrid cross**

**Tall pea plant Dwarf pea plant**

**TT tt**

**Tt**

**F1 -Tall**

**f1 on selfing to get f2**

**Tt xTt**

| | T | t |
|---|---|---|
| T | TT | Tt |
| t | | |

| | |
|---|---|
| Tt | tt |

**In a monohybrid cross Mendel got only one of the parental quality in the F1 progeny.when he self pollinated the F1 to get F2 he found that the trait remain hidden in the F1 generation appeared in the F2.so he formulated the following inferences**

**A character is controlled by the combination of two factors**

**One trait is expressed and the other trait remain hidden in the F1**

**the trait that hidden in the first generation appear in the second generation**

**the ratio of the dominant and the recessive traitin the second generation is 3:1**

**he concluded that each trait is controlled by two factors ,during gamete formation they segregate without getting mixed**

## structure of DNA

**Two Scientists James Watson and Francis Crick presented a double helical(staircase model ) of DNA in 1953.As per the double helical model,DNA molecule contains two poly nucleotide strands.Each nucleotide contains a sugar molecule,a phosphate molecule and a nitrogen base.In DNA Deoxyribose is the sugar.DNA hasfour kinds of nitrogen bases,namely adenine,thymine,guanine and cytocine.so DNAhas four different kinds of nucleotides also.In DNA thebaseadenine pairs with thymine and guanine pairswith cytocine only**

**RiboNucleic Acid**

**Like DNA RNA is also made up of nucleotides**

**The sugar present in RNA is Ribose**

**Thymine nitrogen base is replaced by uracil in RNA**

**RNA is single stranded**

**DNA**

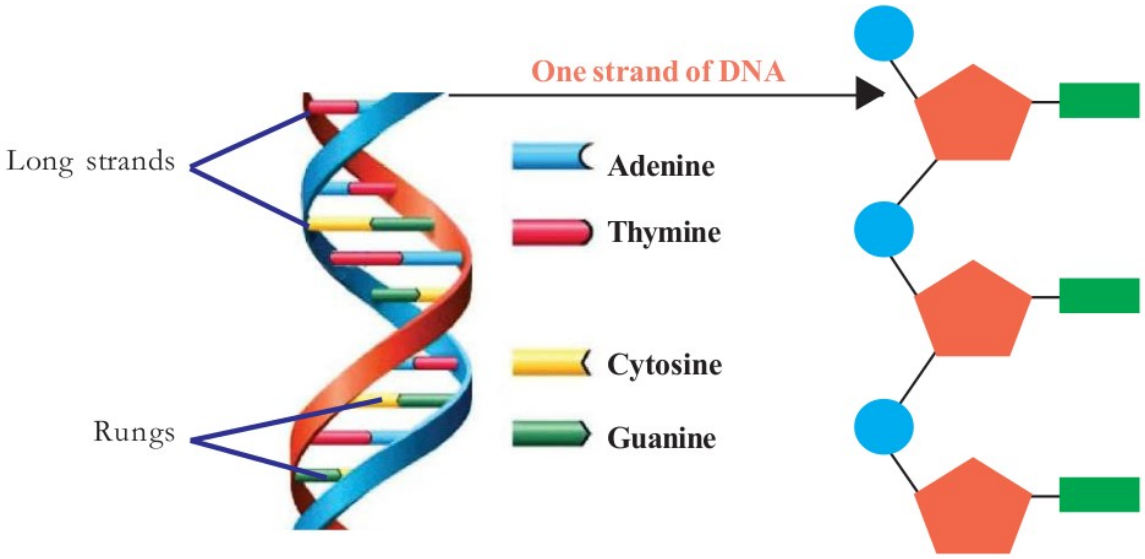



Illustration 6.4 Structure of DNA

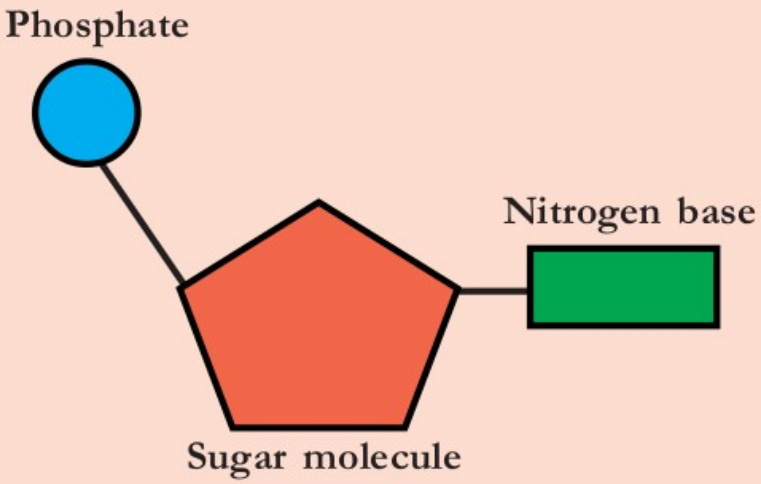



Illustration 6.5 Nucleotide

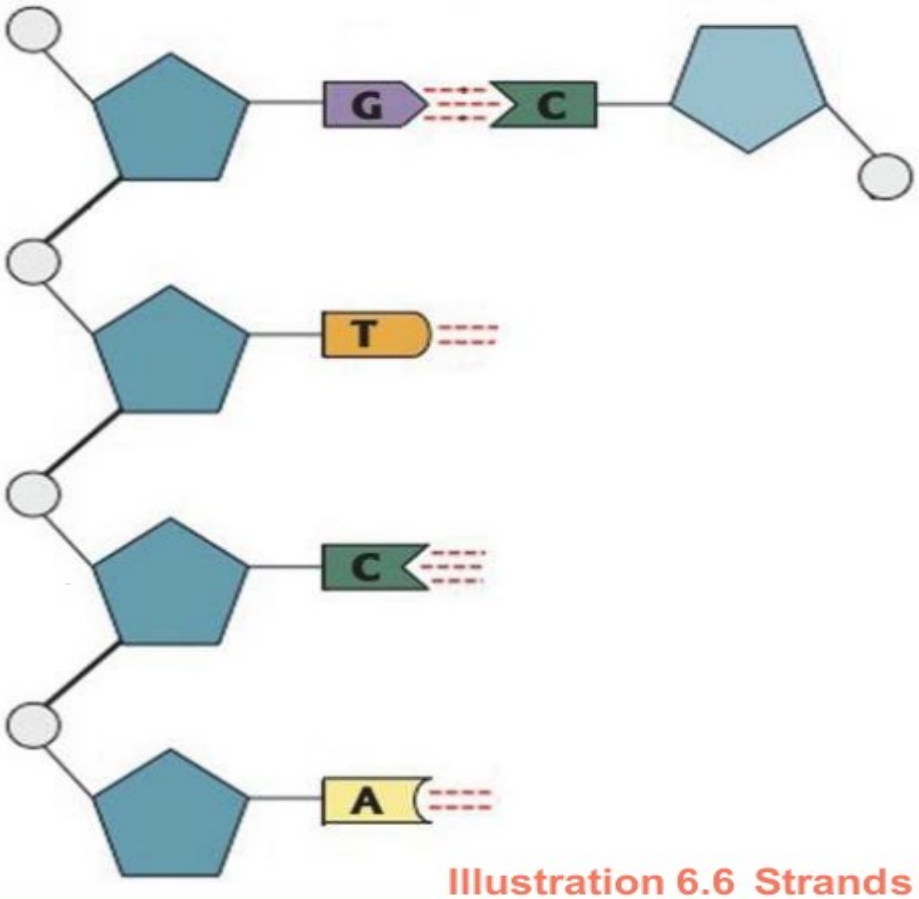



Illustration 6.6 Strands of DNA

## Activity of Genes

- m RNA is formed from DNA.

This mRNA that copies the message of DNA comes out of nucleus and arrives at Ribosome

tRNA brings different types of amino acids
to ribosome

Based on the information in mRNA, Protein is produced by adding anino acids.

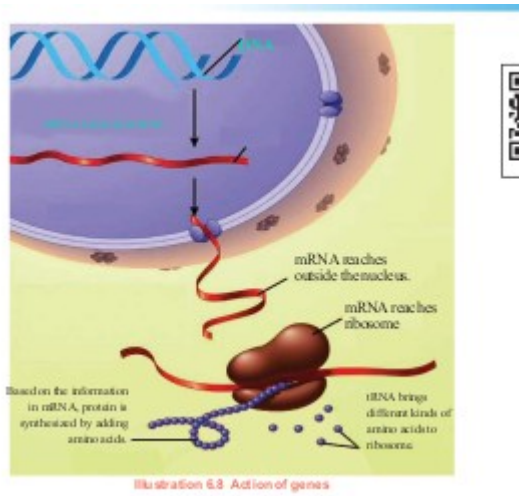


Illustration 6.8 Action of genes

## SEX DETERMINATION IN HUMAN BEING

In females, 22 pairs of somatic chromosome and a pair of sex chromosomes are seen

In males 22 pairs of somatic chromosome and X and Y sex chromosomes are seen

Males produce two types of gamates at the time of gamate formation.
Gamate with X chromosome and gamate with Y Chromosome
The sex of the child is determined by the X, Y chromosome of the males.
Sex determination

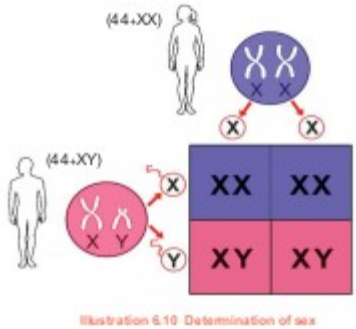


Illustration 6.10 Determination of sex

# CHAPTER 7

# GENETICS OF THE FUTURE

## GENETIC ENGINEERING

**Genetic engineering is the technology of controlling traits of organisms by bringing about**

**desirable changes in the genetic constitution of organisms**

The basis
of this is the discovery of the fact that genes can be cut and joined.

Enzymes are used to cut and join genes. The enzyme restriction endonuclease is used to cut genes. This enzyme is known as 'genetic scissors'. The enzyme ligase is used for joining. This enzyme is called 'genetic glue'.

VECTORS IN GENETIC ENGINEERING

A gene from one cell is transferred to another cell by using suitable vectors. Vectors which contain ligated genes enter target cells. Plasmids in bacteria are generally used as vectors. In

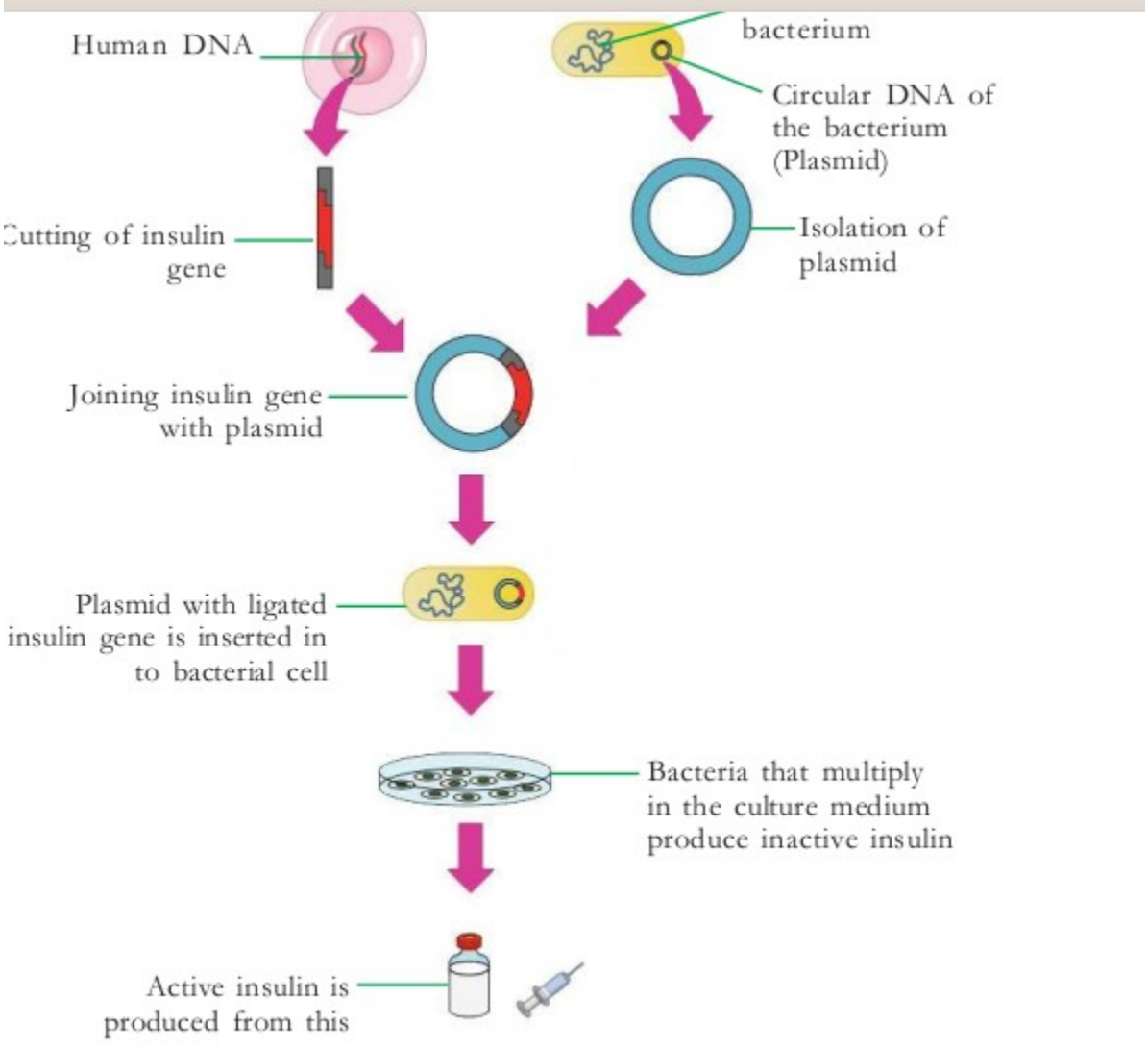



Illustration 7.1 Production of insulin through genetic engineering

GENE THERAPY

The technique ofcorrecting a defective or non functional gene with functional gene

This has triggered great hope in the control of genetic diseases

## DNA Finger printing

The difference in the fingerprint of each person, the arrangement Of nucleotides in each person also differs. This discovery became The basis of DNA testing. Hence this technology is also called DNA finger printing.

DNA finger printing is helpful To find out hereditary characteristics, To identify real parents in cases of Parental dispute and to identify persons Found after long periods of missing due To natural calamities or wars. DNA of The skin, hair, nail, blood and other Body fluids obtained from the place of Murder, robbery etc., is compared with the DNA of suspected Persons. Thus, the real culprit can be identified from among the Suspected persons through this method.

## MODEL QUESTIONS

## ANALYSE THE NEWSREPORT GIVEN BELOW AND ANSWER THE QUESTIONS GIVEN BELOW

1) WHAT IS THE BASIS OF THIS TESTING?
2)WHAT ARE THE SCOPES OF THIS?

2,
FILL UP THE TABLE GIVEN BELOW SUITABLY

| A | B | C |
|---|---|---|
| LIGASE | P | JOIN GENES |
| Q | GENETIC SCISSORS | R |
| PLASMID | VECTOR | S |

# _ CHAPTER 8

## THE PATHS TRAVERSED BY LIFE

### Chemical evolution theory

**.The hypothesis that evolved into the theory of chemical evolution is that life originated as a result of the changes that occurred in the chemical substances in seawater, under specific conditions in primitive earth. This theory is generally accepted by the scientific world due to its experimental evidences. The Russian scientist A.I. Oparin (1924) and the British scientist J.B.S.Haldane are the proponents of this theory**

## THEORY OF CHEMICAL EVOLUTION

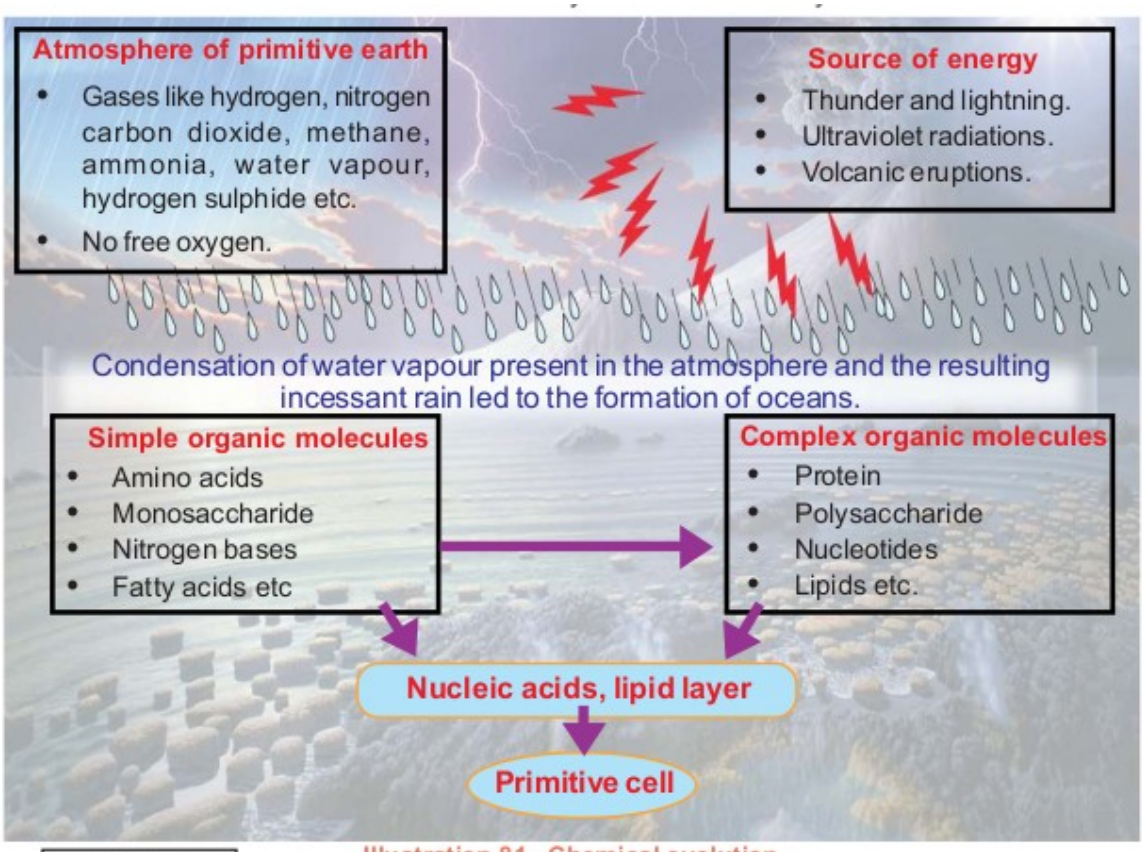



Illustration 81. Chemical evolution

## main concepts of theory of natural selection by Darwin

1.Every species produce more number of offsrings than that can survive on earth
2they struggle or compete each other for food and shelter
3during this struggle only those with favourable variations will survive(survival of the fittest)
4.others are eliminated
5,these variations are inherited and accumulated overgeneration and  new species will originate

# questions

**1) arrange proprly the stages of chemical evolution**

**A .** thunder,lightning,ultraviolet radiations,volcanic eruptions
**B. primitive cell**
**C. protein,polysacharide,nucleotide,lipids**

**D. amino acids,monosacharides,nitrogen bases,fatty acids**

**E. hydrogen,nitrogen,carbon dioxide methane,ammonia,watervapour,hydrogen sulphide**

**F.** nucleic acids,lipid layer

## ANSWER KEY

**1) E-A-C-F-B-D**

**Model Question Paper**

**Time limit : 2 hrs**

**Marks : 40 marks**

**Part I**

**Answer any four questions from the following ( Score 1 Mark each )**

1.Identify the odd one out and list the common features of others
Dendron, Axon, Ampulla, Dendrite

2. Name the part of the neuron from where neurotransmitter is secreted.

3. "The Technique of genetic engineering has made great hope in the control of genetic diseases". Identify the method used from the list below. DNA synthesis, genetic scissors, genetic glue, gene therapy.

4. Define homologous organs.

5. Name the type of lymphocyte which destroy the bacteria by disintegrating their cell membrane

6. Honey Bees and termites often found to live in colonies. What helps them for this?

**Answer All 7-9 (1 marks)**

7.Give Common name for the hormone by which hypothalamus controls the pituitary gland

8. Name two major symptoms of malaria

9. Arrange the following in order of geological timescale and name the geological timescale**.**
Primitive cell
Origin of eukaryotes

**Answer one question (2 mark)**

10.Observe the changes that occur in the red bloods cells of sickle cell anaemia patients. Give answer to the following questions**.(2marks)**
A. what does A and B indicate
B. How does this defeat arise

**Answer anyone 11-12 (2 marks)**

11.What is the actual cause of uncontrolled division of cells in cancer? Name any two factors responsible for it.

12.Following are the various steps in flammatory response. But it is not given in order. Arrange them proper sequence
a) Blood capillaries dilate
b) Germs enter through wound
c) Neutrophils and monocytes engulf and destroy germs.
d) Chemicals are produced
e) white blood cells reach the wound site through the walls of capillaries

**Answer any three (3*3= 9 marks)**

13.Give any four scope of DNA Finger printing.

14."DNA does not participate directly in protein synthesis. Illustrate it by explaining the steps of protein synthesis."

15.Who proposed the chemical evolution theory? Mention the peculiarities in the atmosphere of primitive earth.

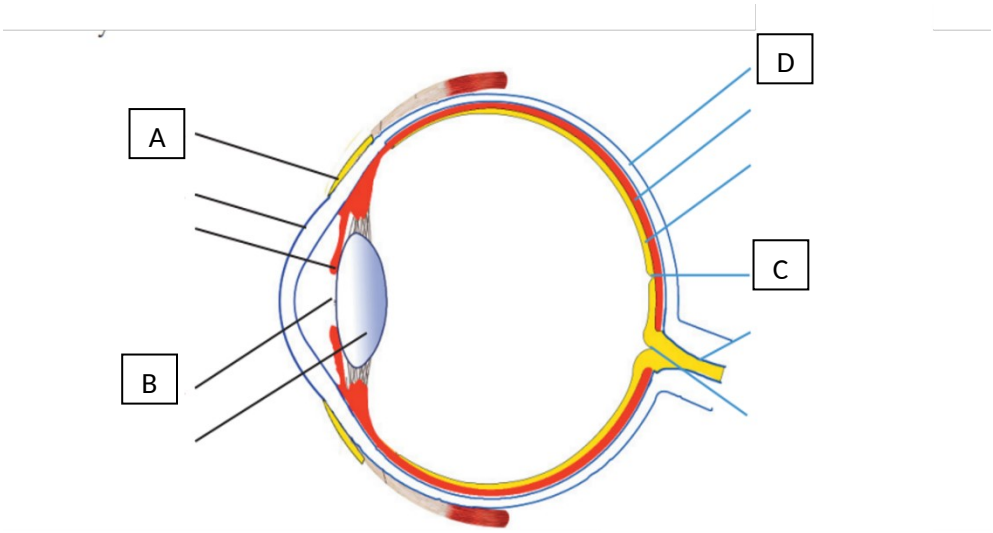
16. Give the causes of night blindness, xerophthalmia and colour blindness.

17. Complete the table (3marks)

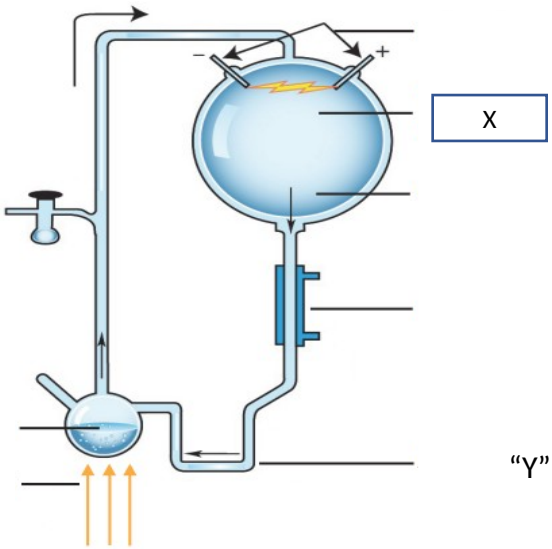
| Parts of ear | Functions |
|---|---|
| Ear Ossiscles | A |
| Eustachian Tube | B |

**Answer any two(4marks)**

18.Identify parts A, B, C, D & write its function.



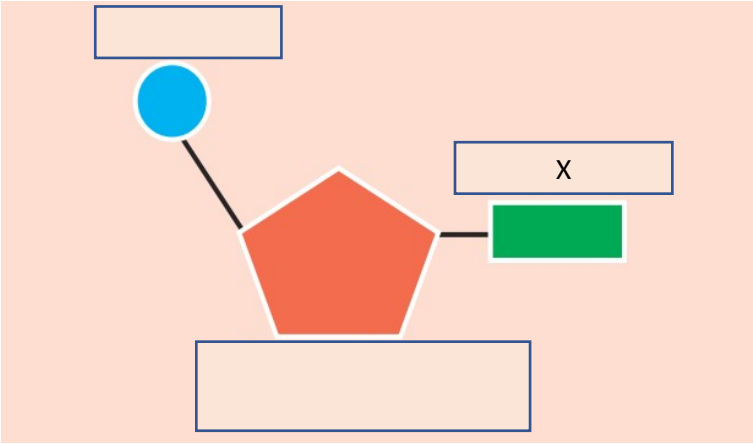

19.Observe the illustration and answer the questions below:




"Y" get sedimented

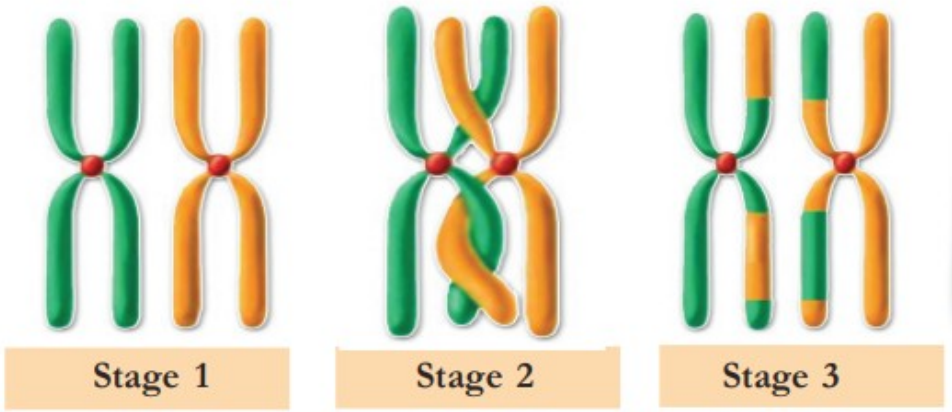
a) Which experiment is shown here?
b) Name the scientist who carried out this.
c) Write the contents marked as in X.
d) Identify " Y "

20.a) Identify the molecules represented here.
b)Name its components.
c) which biomolecule it is present
d) What are the different forms of X?



Answer anyone from 21-22: (4*1 – mark )

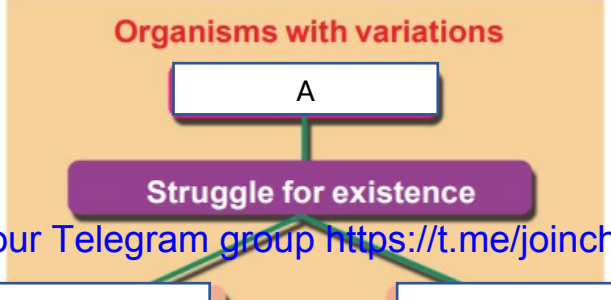
21.Identify the process shown in the illustration. Explain its significance in evolution?

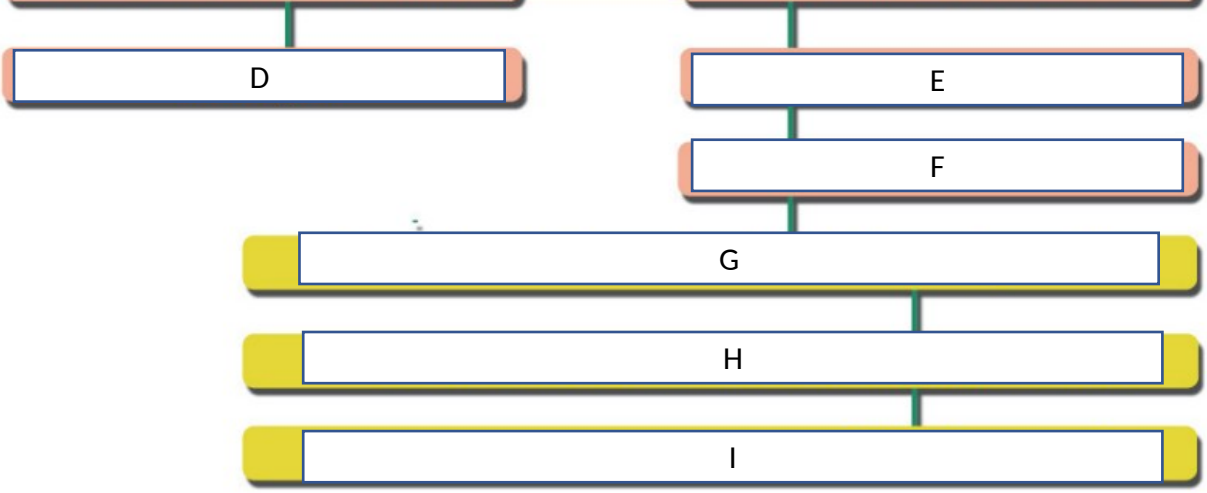



22. Identify this logo. What is its relevance? When did it start? What is gene mapping?


Answer anyone from 23-24:

23. Complete the marked blanks sequentially. Which biological theory is marked by this illustration:






24. When Mendel crossed pea plants with axial flowers and terminal flowers in the first generation only one of the quality was expressed. When the first generation was self fertilized, he got in the second generation. 651 axial flowers and 207 terminal flowers approximately.

a) Write the character experessed in the F1 Generation and its genetic constitution. Tabulate the cross till F2.
b) Write the inferences formulated by mendel from such experiment.