STANDARD X QEPR

Quality Education Pupil's Right

Orukkam 2017

An Intensive Learning Material

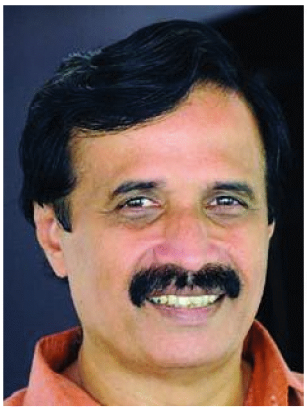
Biology

Department of General Education , Kerala

Orukkam Activities - Guidelines

Orukkam 2017, which is an intensive learning material, is an examination aid for Standard X students. It aims at achieving best results to all students in the SSLC Examination through a systematic process. Each unit is analysed, answers explained and on the basis of these the students may undergo a process on the discourses. During the process of the activities, students may self-assess their answers and analyse them based on the process mentioned in this book. Teachers may share the problems that arise during the process and help the students to overcome such problems. The activities in this book is to be completed time bound and should help the students to inculcate the process. Heads, teachers, students and parents should come cooperate and associate on the implementation of this process and assure the best result in their schools. Hope all of you will do the best.

All heads of institutions should ensure that the programme of this learning material has started in the school from January 11, 2017.
Convene a meeting of SRG in the first week of January and plan the activities.
PTA, MPTA, SMC, meetings should be held in the school to ensure their support.
Provide food for students.
Each teacher should explain how the material can be effectively imparted in the classroom.
Programmes similar to this can be held in class 8 and 9.
Let's work together to achieve the goal of Excellence.



PROF. C. RAVEENDRANATH
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സന്ദേശം

കേരളത്തിലെ സ്കൂൾ വിദ്യാഭ്യാസം നേരിടുന്ന പ്രശ്നങ്ങൾ പഠിച്ച് അവ പരിഹരിക്കുന്നതിനുള്ള ക്രിയാത്മക പ്രവർത്തനങ്ങൾ നടപ്പിലാക്കുക എന്ന ലക്ഷ്യത്തോടെ 2006ൽ ആരംഭിച്ച **ഗുണമേന്മയുള്ള വിദ്യാഭ്യാസം കുട്ടികളുടെ അവകാശം** (Quality Education Pupil's Right - QEPR) എന്ന പദ്ധതി പത്തുവർഷം പൂർത്തിയാക്കുകയാണ്. സ്കൂളുകളിലെ ലാബ്, ലൈബ്രറി സൗകര്യങ്ങളുടെ മെച്ചപ്പെടുത്തൽ, പോഷകസമൃദ്ധമായ ഉച്ചഭക്ഷണം, കൃത്യമായി ആസൂത്രണം ചെയ്ത് നടപ്പിലാക്കുന്ന പഠനപ്രവർത്തനങ്ങൾ, ഫലപ്രദമായ മോണിറ്ററിംഗ് എന്നിവയിലൂടെ പിന്നോക്കം നിന്നിരുന്ന വിദ്യാലയങ്ങൾ ശ്രദ്ധേയമായ പുരോഗതി കൈവരിച്ചു കഴിഞ്ഞു. കൂട്ടായ പരിശ്രമങ്ങളിലൂടെ ലഭിച്ച നേട്ടങ്ങളെ സ്ഥായിയായി നിലനിർത്തുകയും ആധുനിക സാങ്കേതികവിദ്യയുടെ സാധ്യതകൾ കൂടി ഉപയോഗിച്ചു സ്കൂളുകളുടെ നിലവാരം കൂടുതൽ മികവുറ്റതാക്കി അന്താരാഷ്ട്ര നിലവാരത്തിലേക്ക് ഈ പൊതു വിദ്യാലയങ്ങളെ എത്തിക്കുകയും ചെയ്യേണ്ടിയിരിക്കുന്നു. ഈ ഉദ്ദേശ്യത്തോടെ ഒട്ടേറെ പ്രവർത്തനങ്ങൾ ഇപ്പോൾ ആരംഭിച്ചുകഴിഞ്ഞിട്ടുണ്ട്. സ്കൂളുകളുടെ ഭൗതീകസൗകര്യങ്ങളോടൊപ്പം അക്കാദമിക നിലവാരവും ഉയർത്തുന്നതിനുള്ള ശ്രമത്തിന്റെ ഭാഗമാണ് **ഒരുക്കം** എന്ന ഈ കൈപുസ്തകം. കുട്ടികൾക്ക് ഈ പഠനസഹായി ഏറെ സഹായകരമാകുമെന്ന് പ്രതീക്ഷിക്കുന്നു. ഈ ഉദ്യമത്തിന് എല്ലാ ഭാവുകങ്ങളും നേരുന്നു.

സി.രവീന്ദ്രനാഥ്

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ആമുഖം

കേരളത്തിലെ സ്കൂളുകൾ മികച്ച വിജയത്തിലേക്ക്

തെരഞ്ഞെടുക്കപ്പെട്ട വിദ്യാലയങ്ങളിൽ 2006ൽ ആരംഭിച്ച **ഗുണമേന്മയുള്ള വിദ്യാഭ്യാസം കുട്ടികളുടെ അവകാശം (QEPR)** പദ്ധതി അതിന്റെ ലക്ഷ്യം നേടി മുന്നേറുകയാണ്. അക്കാദമികവും ഭൗതികവുമായ തലങ്ങളിൽ നിരവധി മുന്നേറ്റങ്ങൾ കൈവരിക്കുവാൻ ഈ പദ്ധതിയിലുൾപ്പെട്ട വിദ്യാലയങ്ങൾക്ക് കഴിഞ്ഞിട്ടുണ്ട്. കേവല വിജയമല്ല മറിച്ച് മുഴുവൻ വിദ്യാർത്ഥികളെയും മികച്ച ഗ്രേഡിന് ഉടമകളാക്കുക എന്ന ലക്ഷ്യമാണ് നമ്മൾ ആഗ്രഹിക്കുന്നത്. ഈ ലക്ഷ്യം മുന്നിൽ കണ്ടുകൊണ്ട് ഒട്ടേറെ പ്രവർത്തനങ്ങൾ ആവിഷ്കരിച്ചു നടപ്പാക്കി വരുകയാണ്.

മികച്ച വിജയം ലക്ഷ്യമാക്കി 2017 ജനുവരി 11 മുതൽ എല്ലാ ക്യൂ.ഇ.പി.ആർ വിദ്യാലയങ്ങളിലും പ്രത്യേക പഠനപാക്കേജുകൾ നടത്തുവാൻ തീരുമാനിച്ചിട്ടുണ്ട്. ഈ പരിപാടിയുടെ കാര്യക്ഷമമായ നടത്തിപ്പിന് വേണ്ടിയാണ് **ഒരുക്കം** എന്ന പഠനസഹായി തയ്യാറാക്കിയിട്ടുള്ളത്. മാറിയ പാഠപുസ്തകം കുട്ടികളിലുണ്ടാകാവുന്ന മാനസിക പിരിമുറുക്കങ്ങളിൽ നിന്ന് കുട്ടികളെ മോചിപ്പിക്കുന്നതിനും അവരിൽ ആത്മവിശ്വാസം ഉണ്ടാക്കുന്നതിനും സർഗ്ഗാത്മകമായ പുനരനുഭവപ്രവർത്തനങ്ങൾ, മൂല്യനിർണയ പ്രവർത്തനങ്ങൾ, അവയുടെ വിശകലനങ്ങൾ എന്നിവ ഉൾക്കൊള്ളുന്ന **ഒരുക്കം** പ്രയോജനപ്പെടും എന്നതിൽ സംശയമില്ല.

വിദ്യാർത്ഥികൾ, രക്ഷിതാക്കൾ, പ്രാദേശിക ഭരണകൂടങ്ങൾ, വിദ്യാഭ്യാസ പ്രവർത്തകർ തുടങ്ങിയവരുടെ കൂട്ടായ പരിശ്രമത്തിലൂടെ ഗുണനിലവാരത്തോടെ മികച്ച വിജയം നേടിയെടുക്കാനുള്ള വർഷമായി 2017 മാറട്ടെ എന്നും ഈ ലക്ഷ്യം നേടാൻ എല്ലാ വിദ്യാലയങ്ങൾക്കും കഴിയട്ടെ എന്നും ആശംസിച്ചുകൊണ്ട്

വിജയാശംസകളോടെ

കെ. വി. മോഹൻ കുമാർ ഐ.എ.എസ്
പൊതു വിദ്യാഭ്യാസ ഡയറക്ടർ

PREFACE

The learning module "ORUKKAM" is specially designed and devoloped for ensuring maximum performance in the SSLC Examination March 2017. The inspiratory motive behind the devolopment of this learning module is the feedback itself about the material of the previous year . Of course , it is sure that the students those who go through this material will become more confident to achieve maximum grade in Biology.

Wish you all the best

The major concepts in all the units are enlisted first and are followed by suitable actvities ensuring the comprehension of the concepts in a sequential order. The prescribed activities in the module is to be excercised in time bound manner .The sample question paper at the end of this material is to utilised to ensure the attainment of concepts among students with remedial persepective.

Instruction to the teachers

- All activities are to be completed in a time bound manner.
- All students should get personal copies of the activity sheet for completing the same with in the time prescribed.
- Students should be given opportunities of self assessment and peer assessment.
- Self assesment of the student has to be examined and remedial measures has to be ensured.
- The sample question paper is to be used as tool for assesment of the student.

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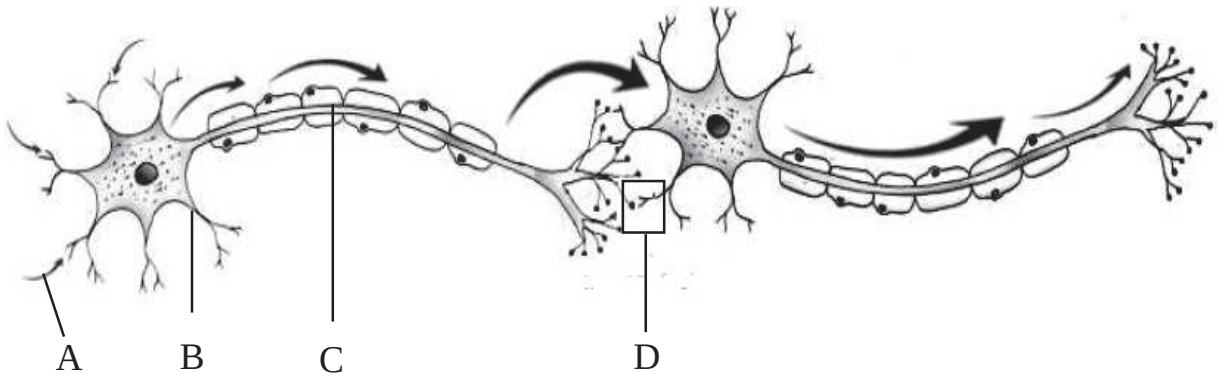
1 Sensations and Responses

Major concepts

- Neuron - Structure and function
- Generation of impulses
- Brain -Structure and function
- Spinal cord -Structure and function
- Reflex actions
- Autonomous nervous system - Sympathetic and Parasympathetic system
- The diseases affecting nervous system

Activity 1

Redraw the illustration and answer the questions given below.

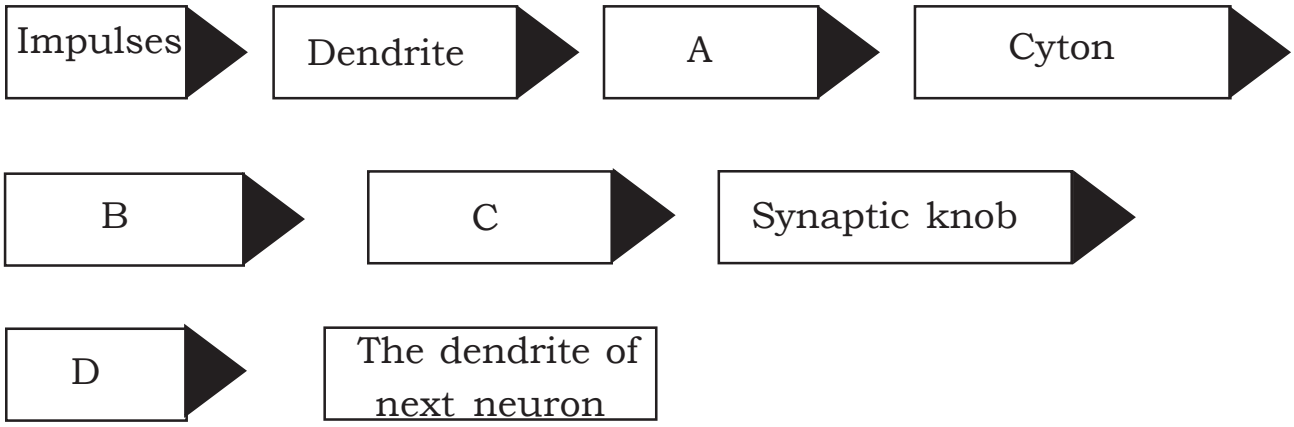


(a) Identify the parts A, B, C?

(b) Identify the part indicated by D? How impulses are transmitted through this part?

(c) Write the role of myelin sheath in the transmission of impulses?

(d) The flowchart related to the transmission of impulses from one neuron to another is given below. Complete the flowchart?



Activity 2

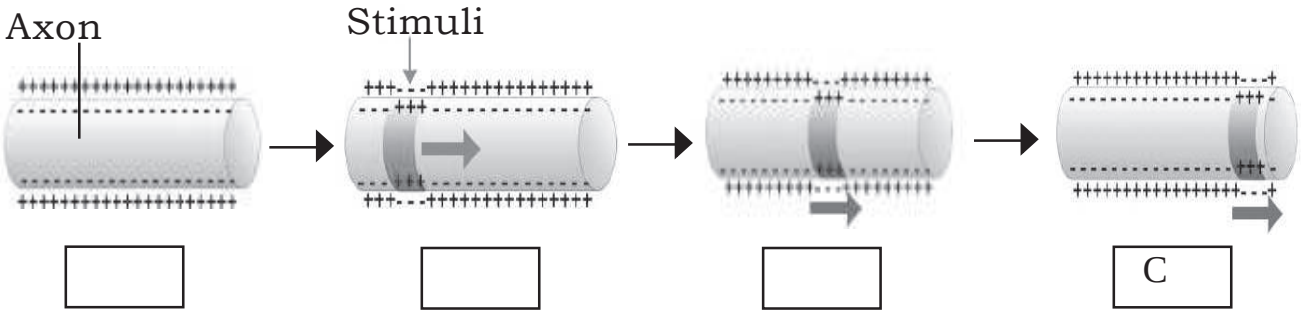
The statements related to the generation and transmission of impulses are given below. Select the letters related to each statement and label in the figures given below.

A. The charge difference in the axon membrane stimulates its adjacent parts and the part which is stimulated regain in its original state.

B. There exists the positive charge on the outer surface and negative charge inside the plasma membrane of the neuron.

C. The momentary charge difference proceeds, impulses get transmitted through axon.

D. When stimulated, the outer surface of the plasma membrane becomes negatively charged while the inner suface becomes positively charged.



Activity 3

Redraw the picture, identify and label the parts which have the following functions.

(a) The part which controls involuntary actions.

(b) The part which coordinates muscular activities.

(c) The part which helps to feel senses.

(d) The part which acts as the relay station of impulses.

(e) The part which plays a major role in the maintenance of homeostasis.

B. Identify the parts of brain related to the following actions.

(a) Maintains the equilibrium of the body.	
(b) Controls breathing.	
(c) The three - layered membrane which helps in the protection of brain.	
(d) The Production centre of oxytocin and Vasopressin	
(e) Centre of thought, intelligence and memory.	

Activity 4

Arrange the statements related to the actions of autonomous nervous system in the illustration given below. Give title to the illustration.

A. The pupil in the eye dilates.

B. Urinary bladder contracts.

C. Glucose is converted to glycogen.

D. Gastric acivities slow down.

E. The pupil constricts.

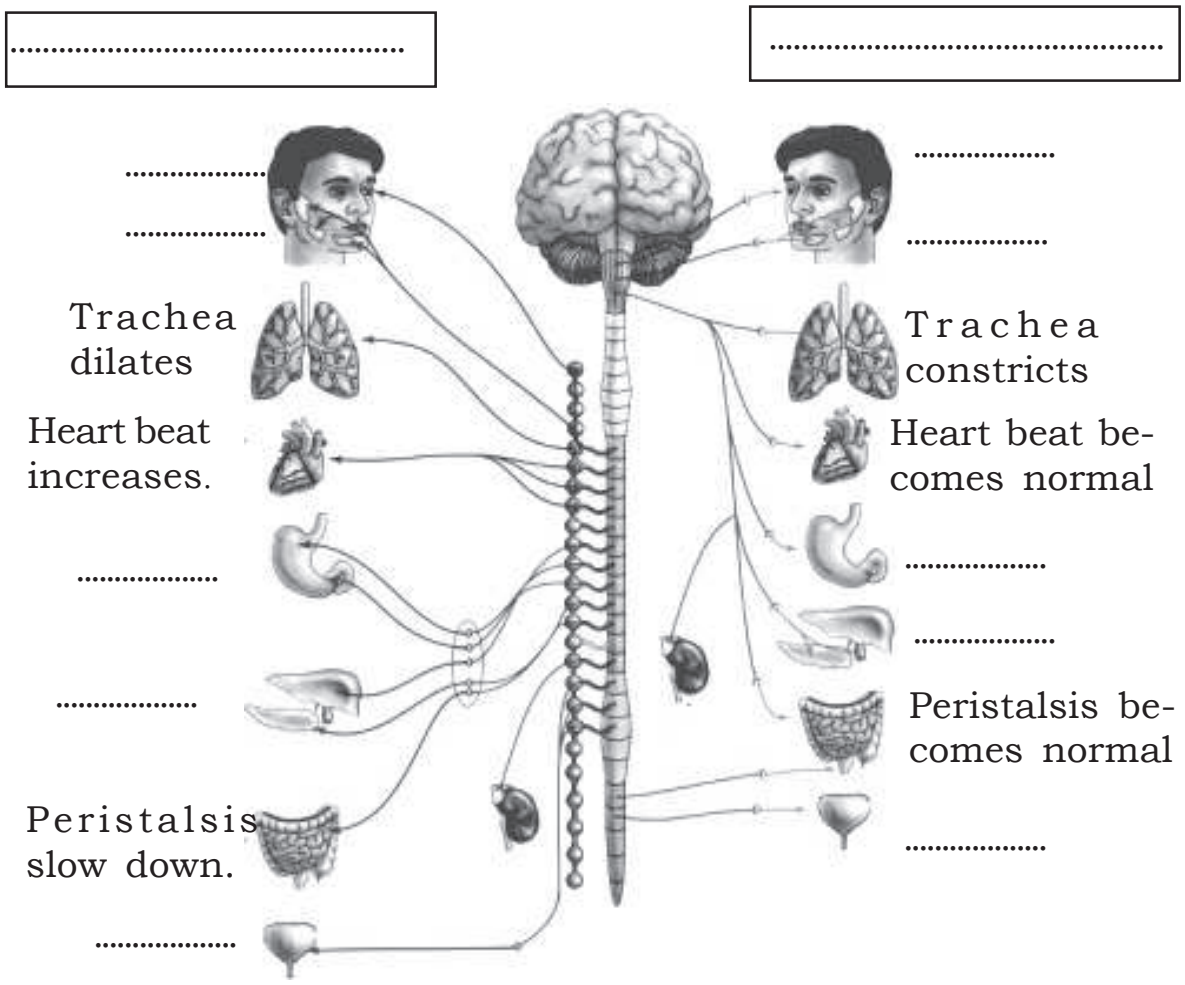
F. Gastric activities become normal.

G. Production of saliva decreases.

H. Glycogen is converted to glucose.

I. Production of saliva increases.

J. Urinary bladder retains to normal state.



Activity 5

A	B
The leg is pulled back when its touch on a thorn.	Blink our eyes when objects suddenly come towards our eye.

(a) How these responses are known as?

(b) Prepare a flowchart related to the pathway of impulses mentioned in A?

Evaluation
Questions

1. Write the different types of nerves and their functions like the example given below.

A.Mixed nerve	Carries impulses to and from the brain and spinal cord.
B.....	....
C.	....

2. The symptoms of a disease that affecting nervous system is given below.

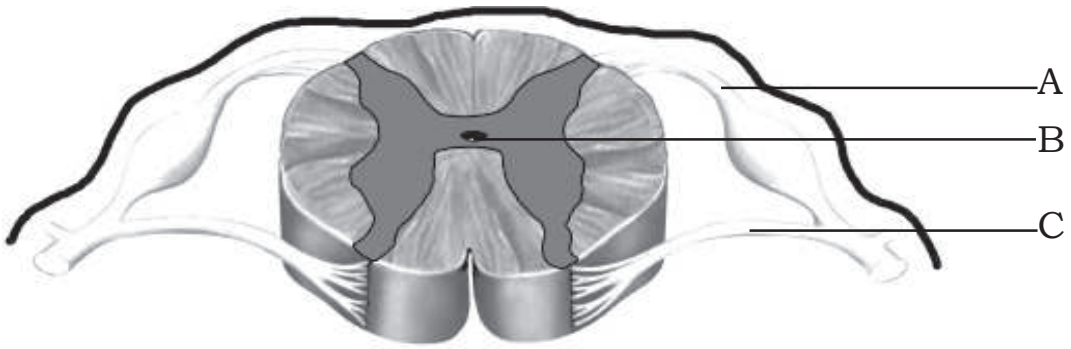
Loss of body balance, irregular movement of muscles, shivering of the body, profuse salivation.

(a) Identify the disease?

(b) Write the causes of the disease?

(c) Explain the other diseases that affecting nervous sysytem with their cause and symptoms?

3. Observe the figure and answer the questions given below.



(a) Identify the parts indicated as A, B, C?

(b) Write the name of the fluid filled in B?

(c) How spinal cord is protected?

2 Windows of Knowledge

Major concepts

- Ear -structure and function
- Sense of vision
- Eye defects and diseases
- Sense of hearing
- Maintenance of body balance
- Sense of taste
- Sense of smell
- Receptors in other organisms

Activity 1

Choose the correct pairs related to the eye defects from the pairs given below.

a) Cataract - Reabsorption of aqueous humor does not occur
b) Glaucoma - Rectified by Repalcing te lens
c) Colour blindness - Infection of conjunctiva
d) Cataract - Lens of the eye becomes opaque
e) Conjunctivitis - Rectified by Laser surgery
f) Glaucoma - Rectified by Laser surgery
g) Colour Blindness - Inability to distinguish colours

Activity 2

Redraw the diagram and label the parts based on the functions given below.

a) The part which is adjusted with the intensity of light.
b) The part where photoreceptors are present.
c) The transparent anterior part of the sclera.
d) The muscles which help to alter the curvature of the lens
e) Transmits impulses from photoreceptors to the visual centre in the brain.
f) The chamber which is filled with a jelly like substance.
g) The layer made up of connective tissues which gives firmness to the eye.

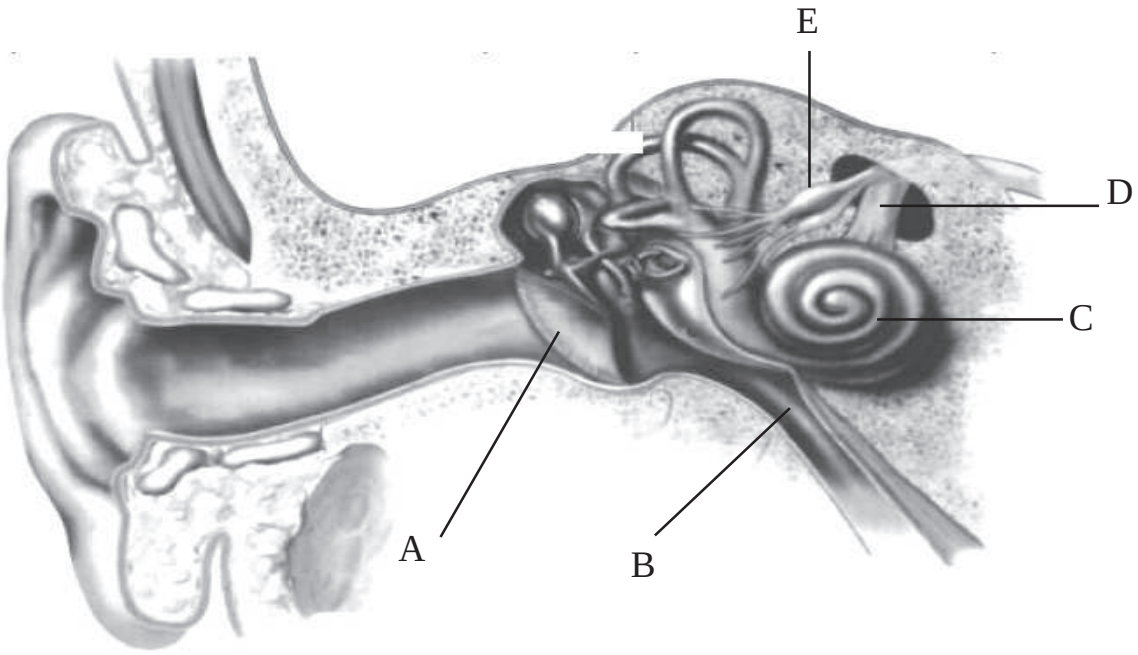
Activity 3

Rearrange the flowchart related to sense of vision.

Light → Lens → Pupil → Vitreous humor → Aqueous humor → Optic nerve → Retina → Cerebrum → Cornea → Impulse → Sense of vision

Activity 4

Observe the figure and answer the questions given below.



a) Identify the parts A, B,C, D, E.

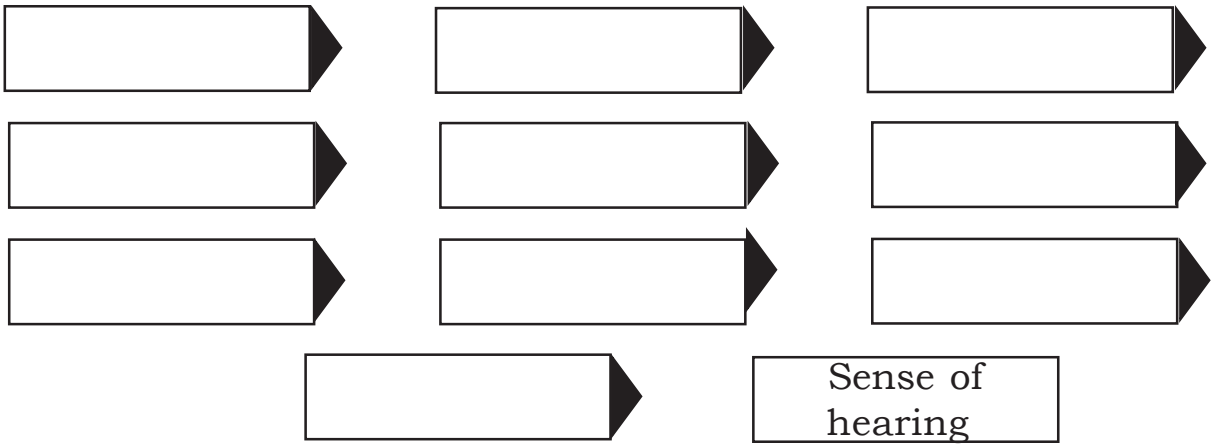
b)Complete the table.

Part	Function
Tympanum	.....
.....	Helps in mainitaining balance of pressure on either side of the tympanum.
Cochlea	.....
Auditory nerve	.....
.....	The impulses for maintenance of body balance are transmitted to the cerebellum.

Activity 5

Select suitable words from the box and complete the flowchart given below related to hearing.

Lens, Cerebrum, Cochlea, Retina, Auditory canal, Oval window, Ear ossicles, Auditory nerve, Hair cells, Optic nerve,Impulse, Cornea, Pinna



Activity 6

Stages related to the maintenance of body balance are given below. Rearrange these statements in order.

a) Generates impulses

b) Body movements create movement of fluid inside the vestibule and semi circular canals.

c) Impulses are trasmitted by the vestibular nerve to the cerebellum.

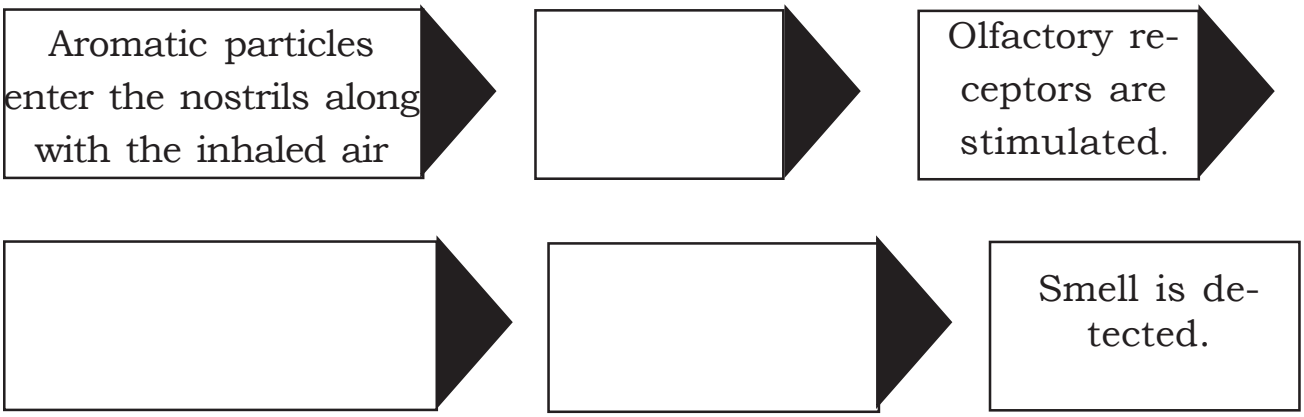
d) Creates movements of the sensory hair cells.

e) Maintains equilibrium of the body.

f) Cerebellum coordinate muscular activities.

Evaluation
Questions

1. Complete the flowchart related to the sense of smell.



2. Prepare a poster for creating awareness about the importance of eye donation.

3. Explain the necessity of including Vitamin A rich food items in daily diet for the health our eyes?

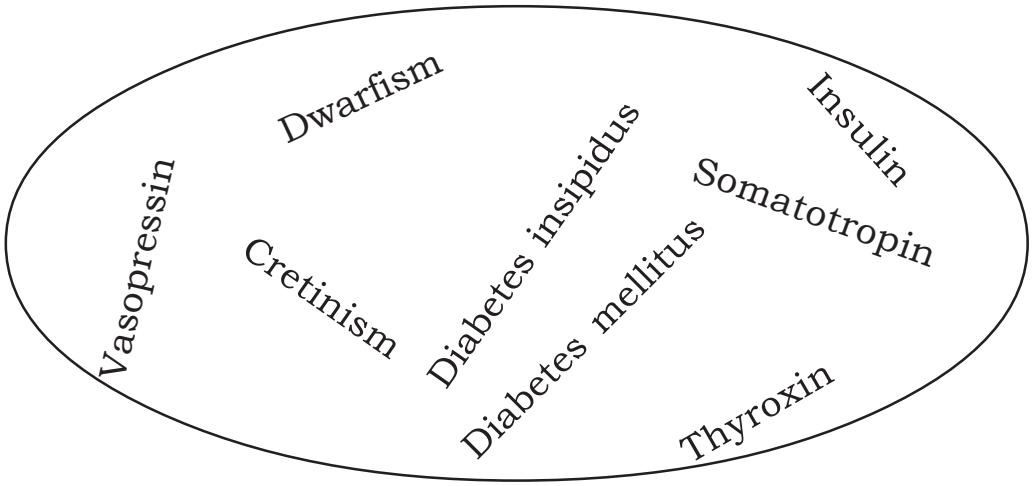
3 Chemical Messages for Homeostasis

Major concepts

- Endocrine glands - position , hormones
- Hormones - functions
- Hormones - defects
- Plant hormones - functions
- Pheromones - functions
- Artificial plant hormones

Activity 1

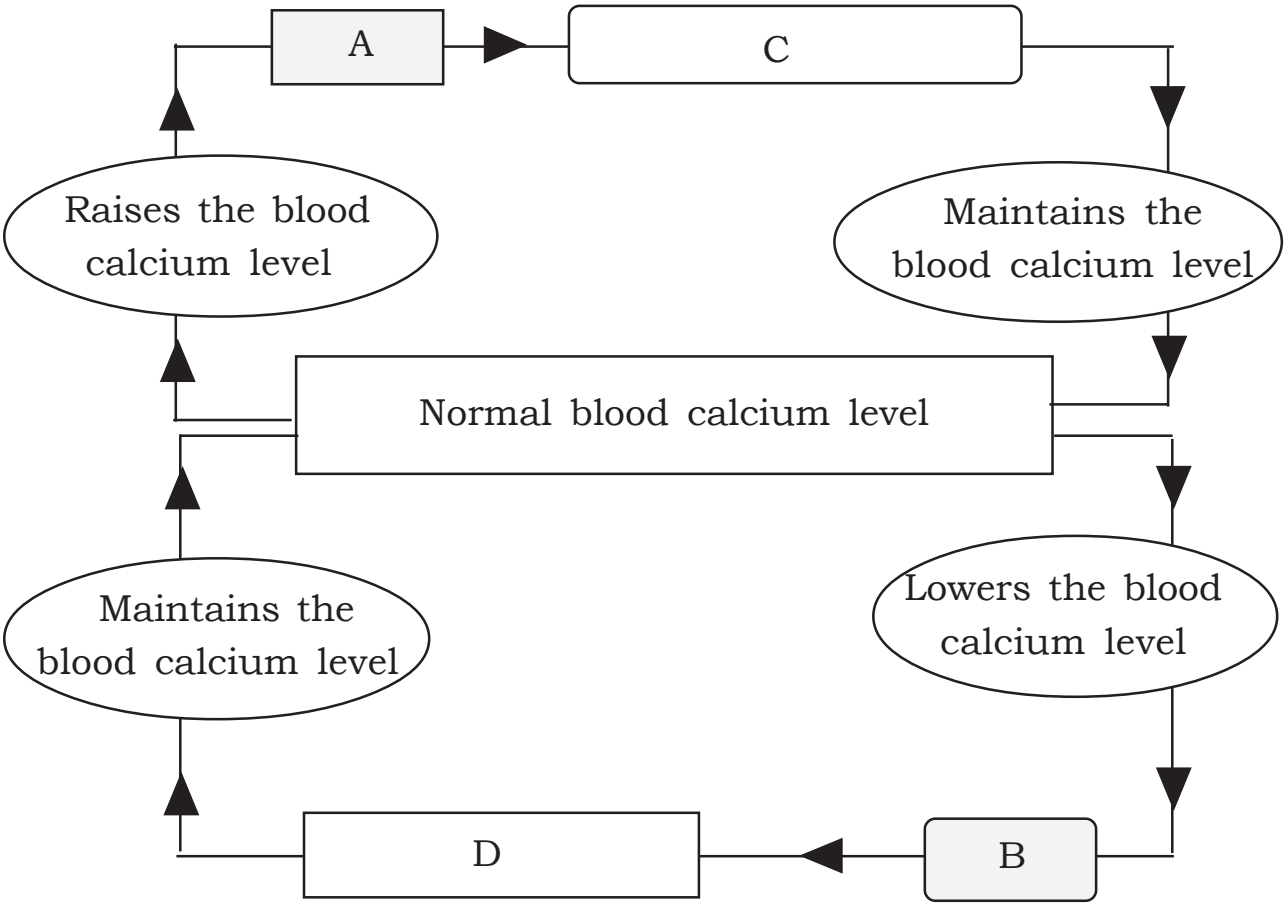
Make suitable word pairs from the words give below.



Insulin - Diabetes mellitus

Activity 2

Observe the illustration and answer the following questions.



a) What is the normal level of calcium in blood ?

b) Name the glands marked as A and B ?

c) Name the hormones marked as C and D ?

d) What is the action of the hormones C and D in regulating the blood calcium level to normal?

Activity 3

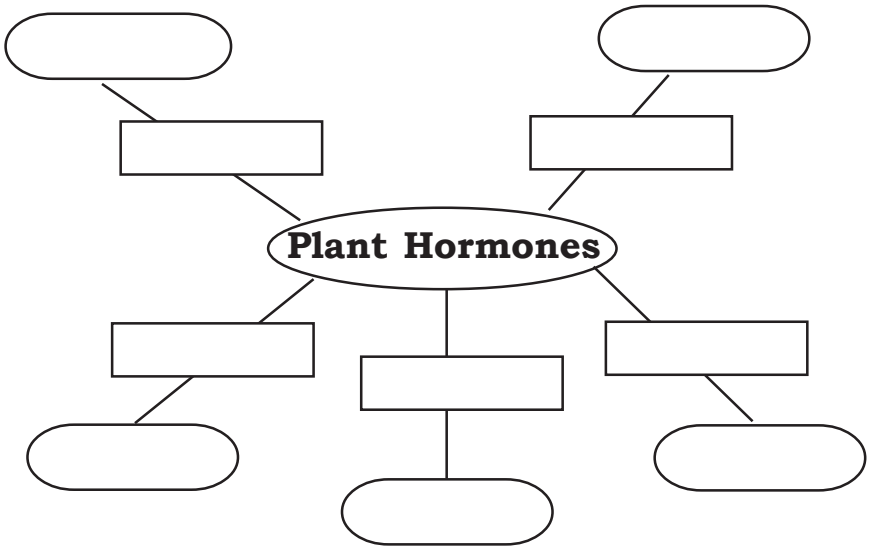
Arrange column B and C with the data of column A

A **Gland**	B **Hormone**	C **Function**
a)Pancreas	Somatotropin	Reduces the excess calcium in blood.
b)Adrenal	Vasopressin	Helps in sperm production.
c)Pituitary	Epinephrin	Promotes growth of the body
d)Thyroid	Testosterone	Converts glucose in to glycogen
e)Testes	Calcitonin	Slowsdown the action of defence cells
f)Hypothalamus	Melatonin	Act during emergencies.
	Glucagon	Helps in reabsorption of water in kidneys

Activity 4

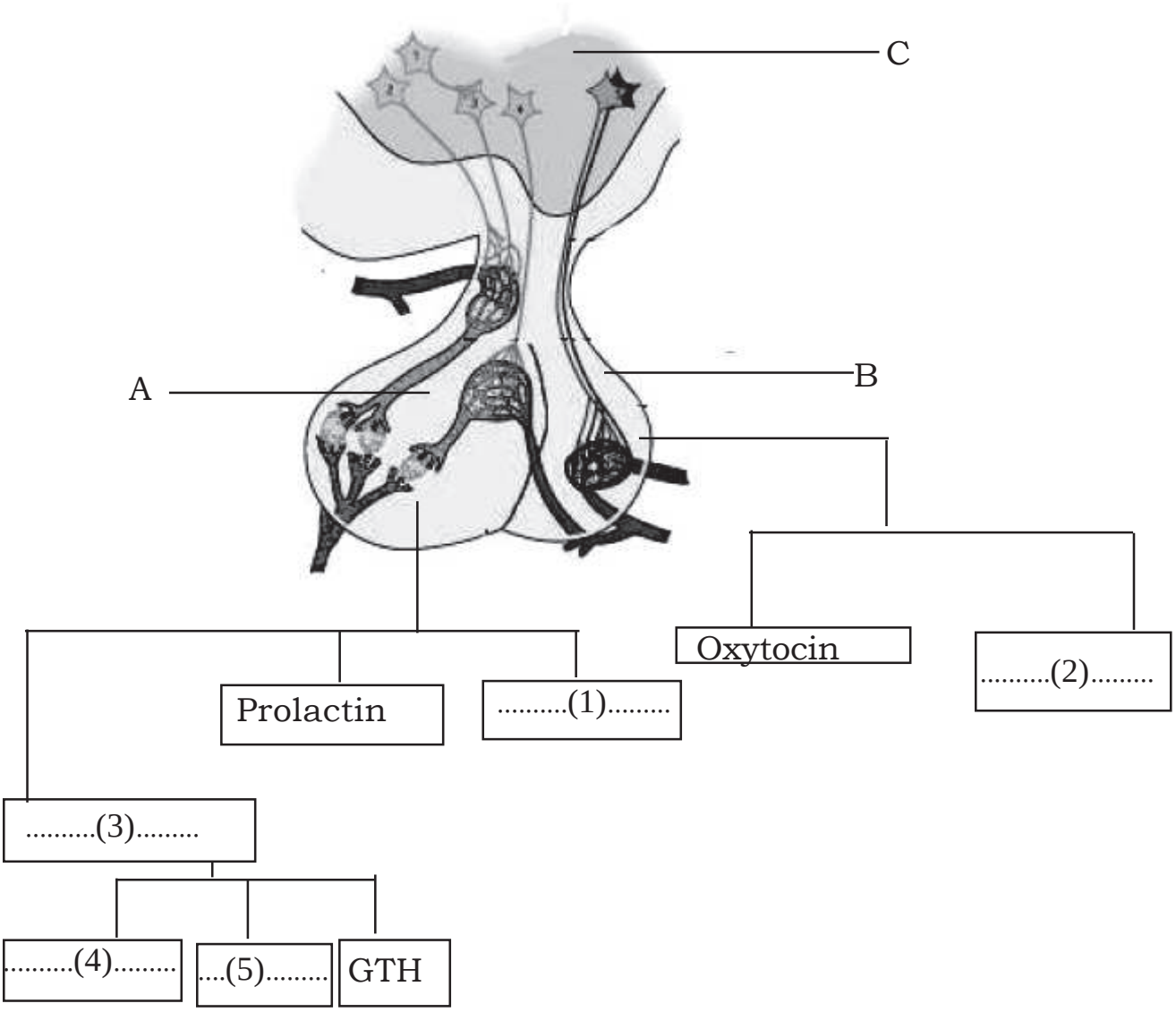
Complete the illustration using the words given in the box.

Abscisic acid, Inhibiting the growth of lateral buds by promoting the growth of terminal buds, Gibberellins, Auxin, Breaking up of stored food in seeds, Ethylene, Cell differentiation,Wilting of leaves, Cytokinin, Helps in ripening of fruits



Activity 5

Observe the illustration and answer the following questions?



a) Identify the parts marked as A , B and C ?

b) Name the hormones indicated as 1,2,3,4 and 5?

c) What are the functions of the hormones Oxytocin and Prolactin ?

d) What are the abnormalities caused by the difference in the production rate of the hormone marked as 1 ?

Evaluation Questions

1.All hormones are being transported through the blood and reach all cells of the body, but all hormones are not functioning in all cells.Why?

2.The incresed or decreased level of thyroxin may disrupts the homeostasis of the body. Explain ?

3.Bees and termites are maintaining the colony life by using some chemical substances as chemical messages.

(a) What are these chemical substances ?

(b) Write the other uses of these chemical substances?

(b) Give other examples for these chemical substances?

4 Keeping Diseases Away

Major concepts

- Communicable diseases.
- Viral diseases - the modes of invansion.
- Bacterial diseases - the modes of invansion.
- Fungal diseases - the modes of invansion.
- Protozoa diseases - the modes of invansion.
- Genetic diseases.
- Lifestyle diseases.
- Plant diseases, Animal diseases.

Activity 1

Read the statements and answer the questions given below.

- Pathogen enters the body and multiplies using the gentic mechanism of lymphocytes.
- The number of lymphocytes decreases considerably and reduces the immunity of the body.
- Spreads through body fluids.

(a) Identify the disease?

(b) Identify the pathogen?

(c) Give scientific explanation against the tendency of isolating these persons from the society?

Activity 2

Answer the following questions as the example given below.

Example - Chicken pox

Virus

through air

(a) Tetanus

.....

.....

(b) Botulism

.....

.....

(c) Malaria

.....

.....

(d) Ringworm

.....

.....

(e) Anthrax

.....

.....

(f) SARS

.....

.....

(g) Dengue fever

.....

.....

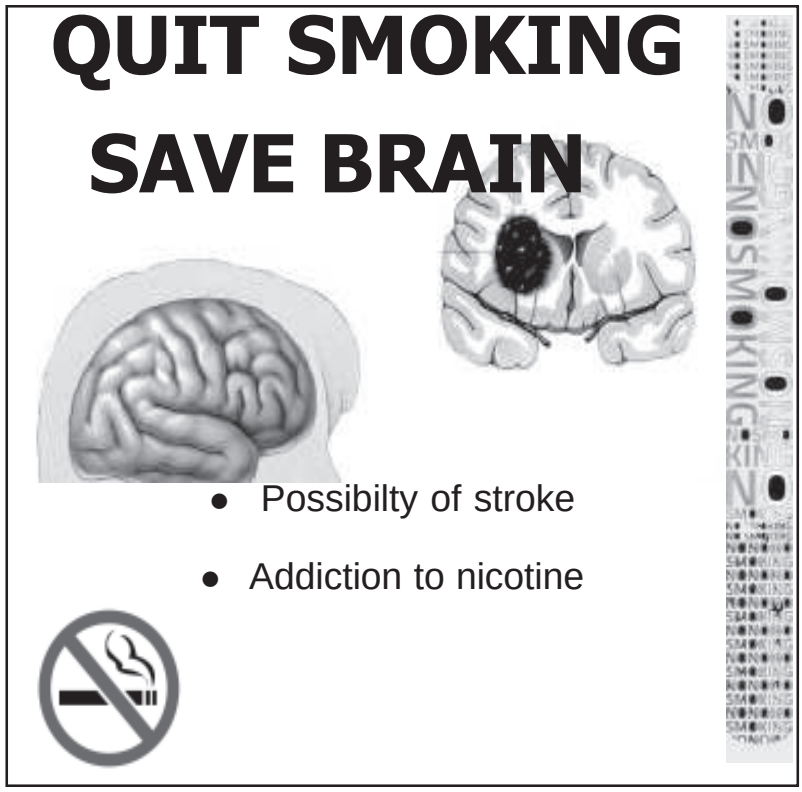
(h) Syphilis

.....

.....

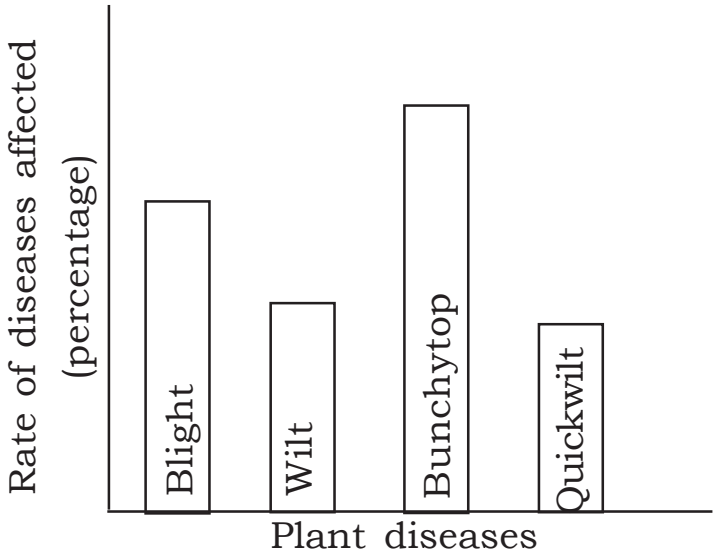
Activity 3

Observe the poster given below and prepare similar posters related to the topic how smoking affect heart and lungs.



Activity 4

The extend of the disease affected crops in Rajesh's farm is represented graphically. Analyse the graph and answer the given questions.



(a) Identify the most affected crop.

(b) Identify the least affected crop.

(c) Pair the pathogen and diseases of affected crops.

Evaluation
Questions

1. "Unhealthy life style invites diseases." Justify the statement with examples.

2. (a) What is cancer?

   (b) How normal cells get transformed into cancerous cells?

   (c) What are the methods adopted in cancer treatment?

3. The symptoms of a communicable disease are given below.

Loss of body weight, fatigue, persistent cough

(a) Name the disease?

(b) Identify the pathogen?

(c) How this disease is transmitted?

5 Soldiers of Defense

Major concepts

- Non specific defense
- Specific defense
- Methods of treatment
- Equipments for diagnosis
- Blood groups
- Induced immunity and vaccination
- Defense mechanism in plants

Activity 1

Statements related to non specific defence and specific defence are given below. Identify the type of the defense and mark them using the letters **N** and **S** respectively.

(a) The cilia in bronchus wipe out dust that enters it. ☐

(b)Destroy the bacteria by disintegrating thier cell membrane. ☐

(c)The blood vessels near the wound dialates. ☐

(d)The rise in body temperature reduces the rate of multiplication of pathogens. ☐

(e)B lymphocytes produce certain chemical substances against anigens. ☐

(f)Eosinophil produce chemical subtances needed for inflamatory responses. ☐

(g)T lymphocytes distroys cancer cells. ☐

(h) The enzyme lysozyme present in tears destroyes germs. ☐

(i) T lymphocytes destroys cancer cells. ☐

(j)Phagocytes engulf and destroy germs. ☐

Activity 2

Our body has the capacity to destroy germs those enter the body by breaking the first level defense.

Write your comment on this satement?

(Hints : inflamation, different types WBCs and thier functions, phagocytosis)

Activity 3

The basis of blood grouping is the presence of antgens in red blood cells. Complete the table given below based on this satement.

Blood groups	Antigen	Antibody
A^{+VE}	.....	.....
B^{-VE}	.....	.....
AB^{+VE}	.....	.....
O^{-VE}	.....	.....
B^{+VE}	B, D	.....

Activity 4

(a) How does the action of B lymphocytes defend agaist the antigens enter in our body?

(b) How does this peculiarity of B lymphocytes is being utilised in making induced immunity in man ?

(c) Make appropriate word pairs using words in box **A** against words in box **B**.

A

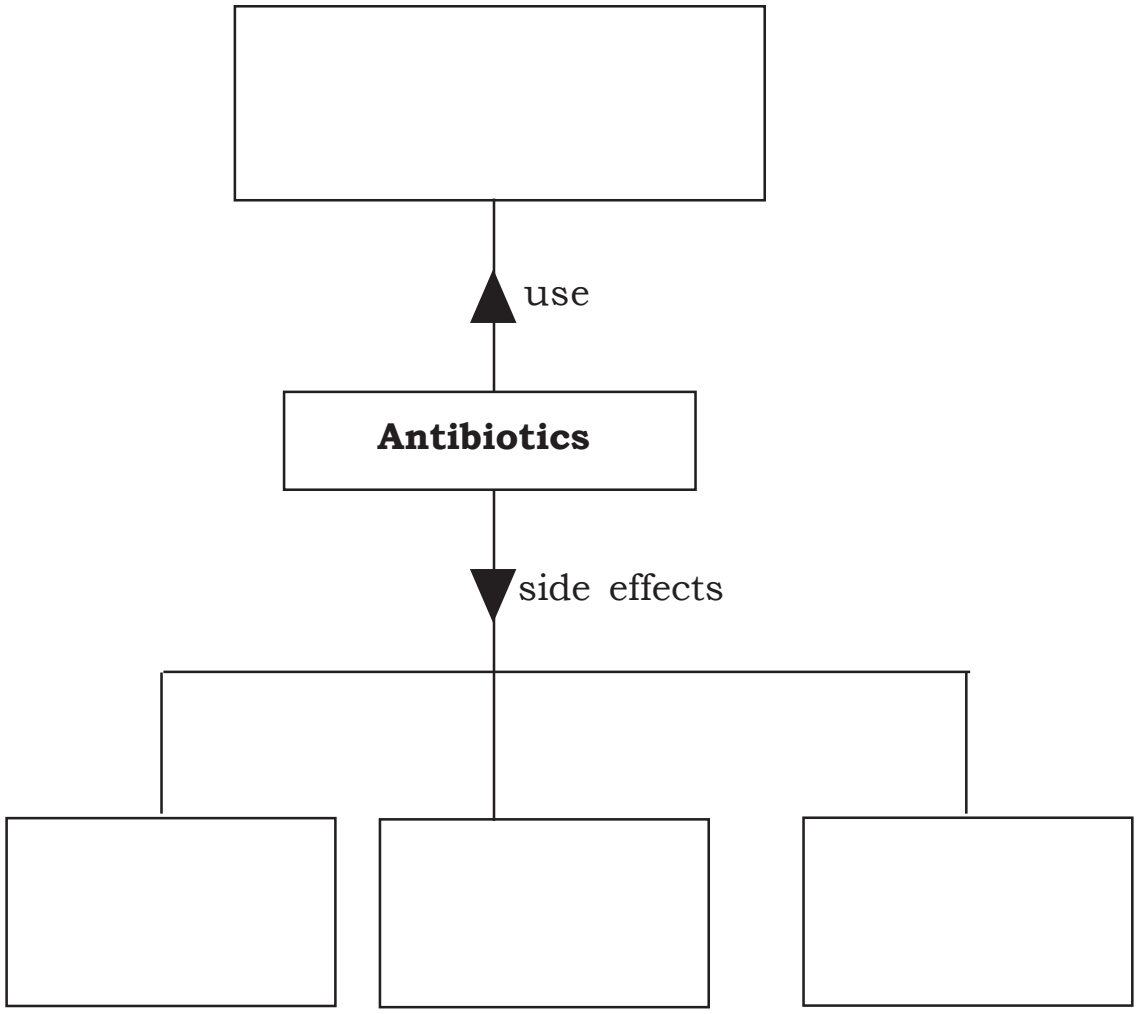
Neutralized toxins , Alive but neutralized germs, Cellular parts of pathogens , Killed germs

B

Cholera , Hepatitis B , Diphtheria , Measles

Activity 5

Complete the illustration suitably related to antibiotics.



Evaluation
Questions

1. The wound scar does not remain allways. Write reason?
2. Fill in the blanks by observing the relationship in the first pair.
   (a) EEG : To record electric waves in the brain
   ECG : .....
   (b) Rabies : Killed germs
   Typhoid : .....
3. Name the first vaccine? Who developed this? Write the situation which leads to the development of vaccine?

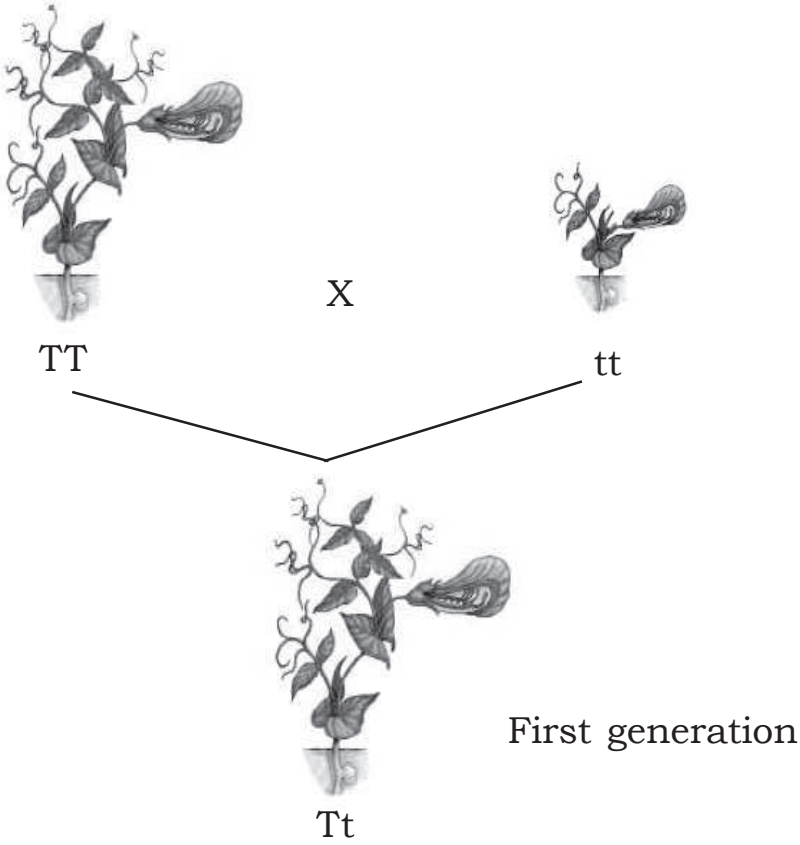
6 Unravelling Genetic Mysteries

Major concepts

- Heredity , Variation
- Mendels experiments and inferences
- Structure of DNA and RNA
- Action of genes
- Genetics of variation
- Sex determination in huaman

Activity 1

Observe the illustration of Gregor Mendel's experiment and answer the following questions.



(a)What are the inferences made Gregor Mendel based on this experiment ?

(b)What are the types of plants obtained by the self pollination of first generation mentioned above? What are the inferences made by Gregor Mendel based on the second experiment?

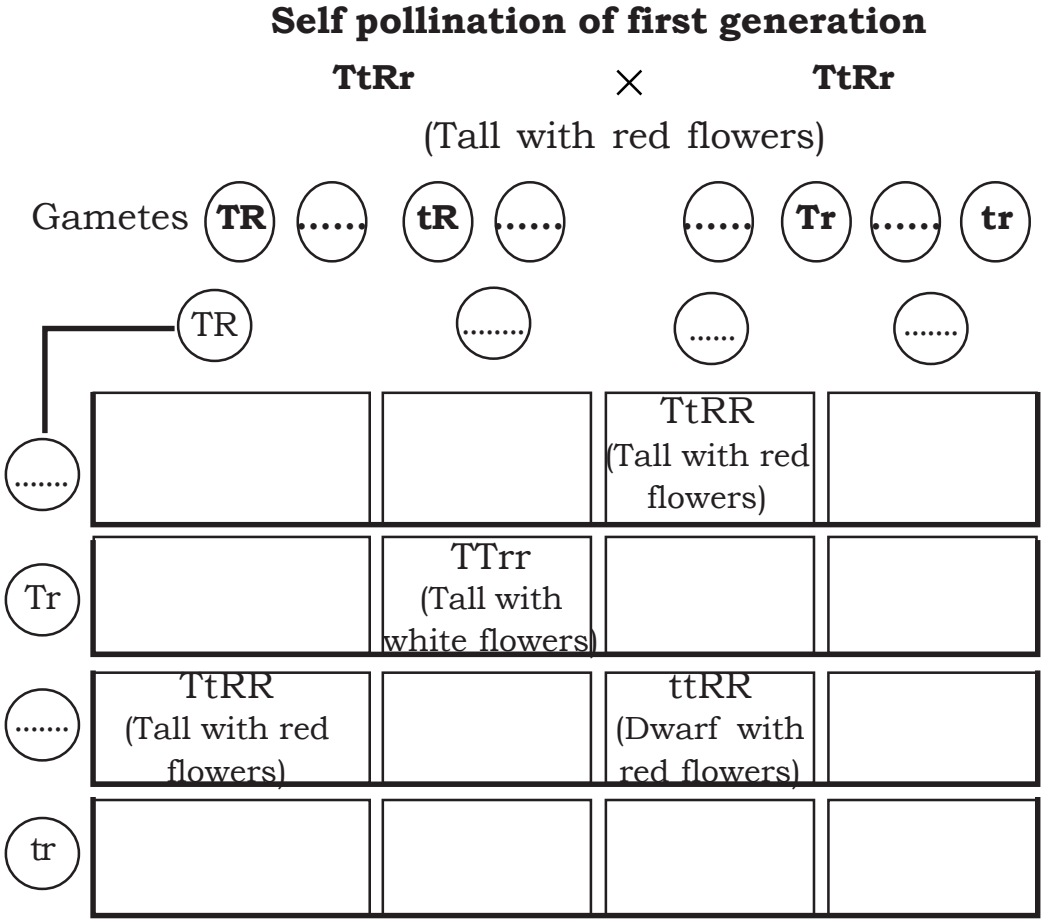
(c) What are the other contrasting characters considered by Gregor Mendel in his experiments?

(d) Illustrate the same experiment by using alleles responsible for colour?

Activity 2

Observe the illustration related to Mendel`s experiment based on two contrasting characters.

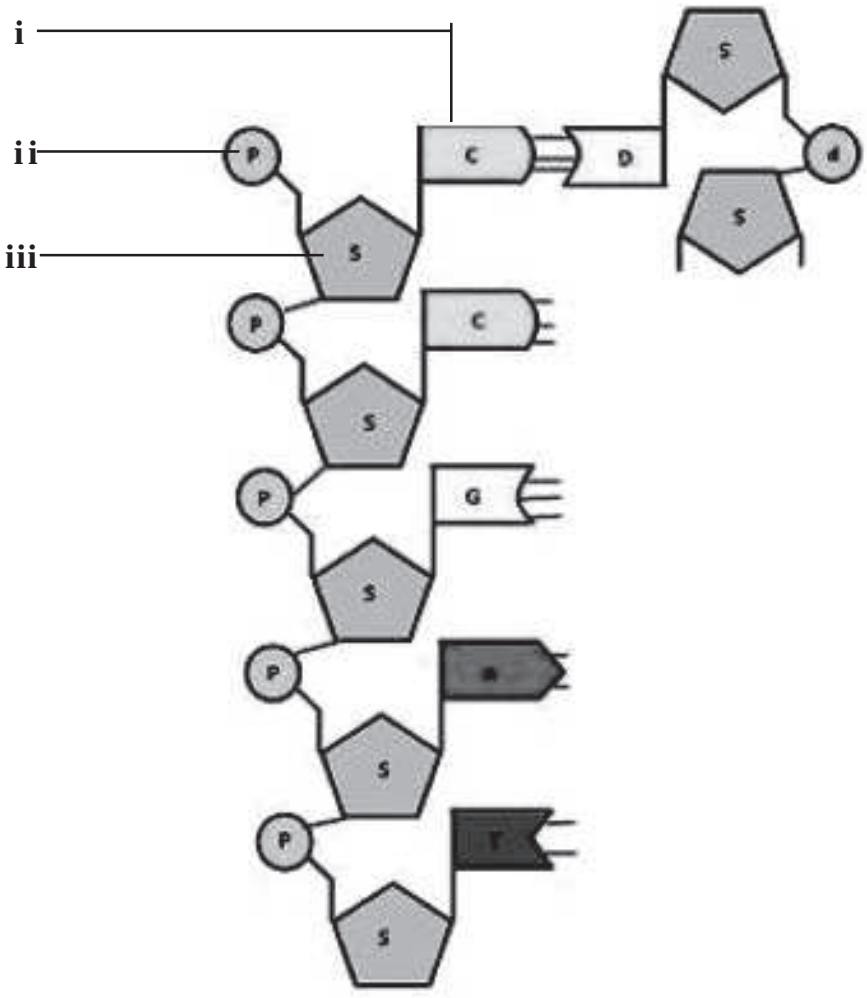
a) Complete the illustration appropriately



(b) What are the characters observed in the second generation ?

Activity 3

A. The sequential arrangements of neucleotides in DNA molecule is illustrated below. Complete the illustraion by drawing the second strand of the DNA molecule.



B. Tabulate the differences between DNA and RNA

	DNA	RNA
Number of strands	.....	.....
Type of sugar	.....	.....
Nitrogen bases	....	....

Activity 4

Offsprings may vary in characters from thier parents .

a) What are reasons of this variation in the light of genetics ?

b) How does the changes take place during mieosis cause variations in next generation?

c) How does the chemical substances and the radiations cause variation in characters?

Activity 5

The different stages of protein synthesis given below. Rearrange them appropriately.

a) tRNA carries different types of amino acids.

b) mRNA come out from the nucleus.

c) mRNA is formed from DNA.

d) Amino acids are joined together based on the messages in mRNA.

e) mRNA reaches in ribsome.

f) Protein is synthesised.

Evaluation
Questions

1. Observe the figure and answer the questions given below.

Stage 1 Stage 2 Stage 3

(a) Name the process shown in the figure.

(b) Write the importance of this process.

2. Write the role of mRNA and tRNA in protien synthesis.

3. What is mutation? Write the reasons ?

7 Genetics for the Future

Major concepts

- Development of genetics
- Production of artificial insulin
- Cutting and combining of genes
- DNA finger printing
- Human genome project
- Pharm animals
- Genetic engineering - uses and misuses

Activity 1

Analyse the table given below and answer the following questions.

Crop	Productivity	Resistence to the disease
A	High	Low
B	Low	High

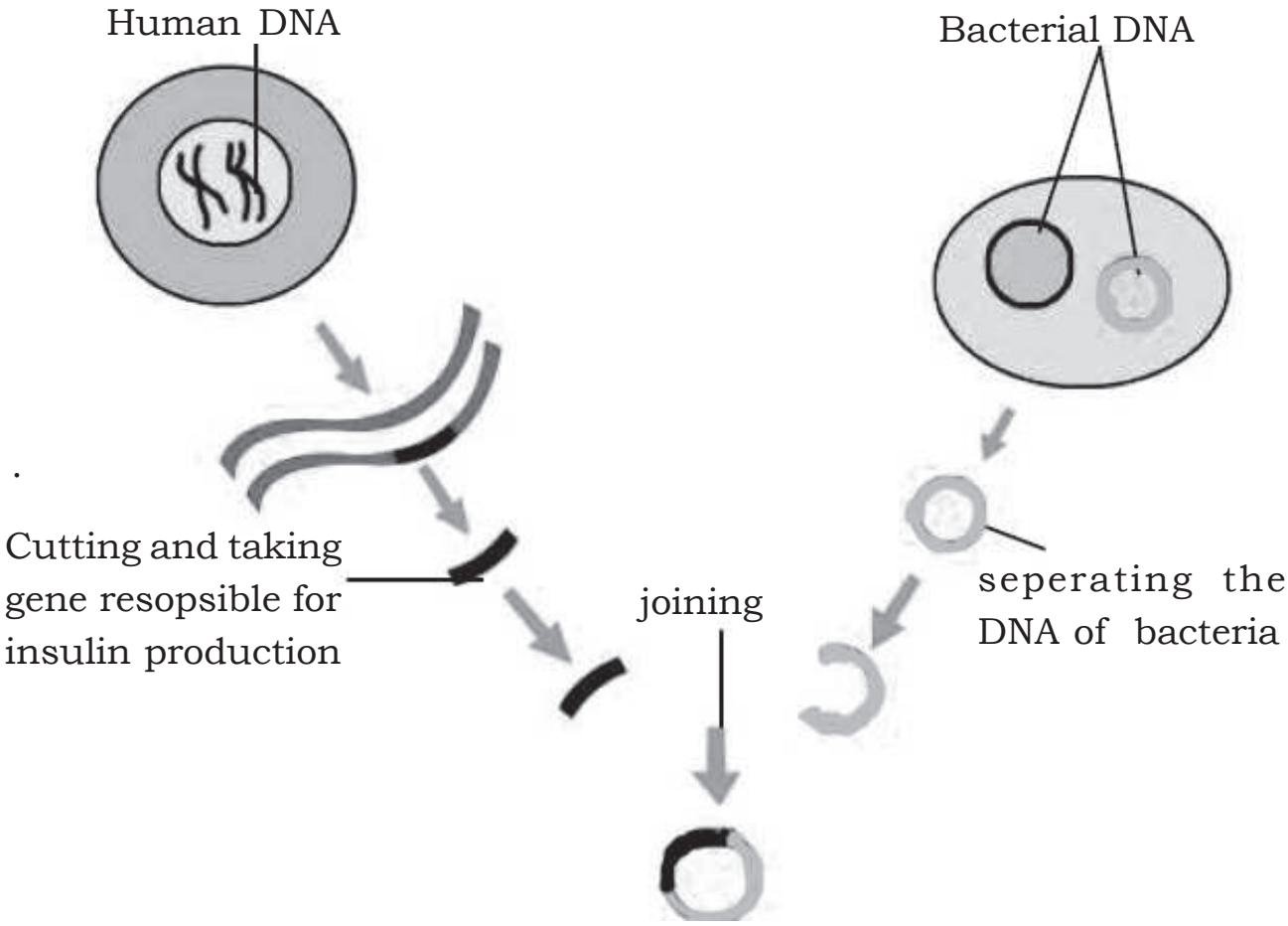
a) What are the desirable characters that you like from hybridisation between crop A and B ?

b) Is there any chance for getting plants with undesirable charac ters in the same hybridisation? Expalin the reason for this chance in the light of Mendel`s experiment in pea plant ?

c) Can you suggest a remedy for this problem.

Activity 2

Analyse the stages in the production of bacteria those are capable of producing insulin and answer the following questions



.

a) Which is the enzyme used for cutting the gene responsible for insulin production ?

b) Which is the mechanism used for transfer of genes from one cell to another ?

c) Which is the enzyme used for joining gene responsible for insulin production with the DNA of the bacteria?

d) Name the technology referrred here.

Activity 3

Read the statement given below and answer the following questions.

Gene mapping is the method to identify the location of gene in the DNA responsible for a particuar trait.

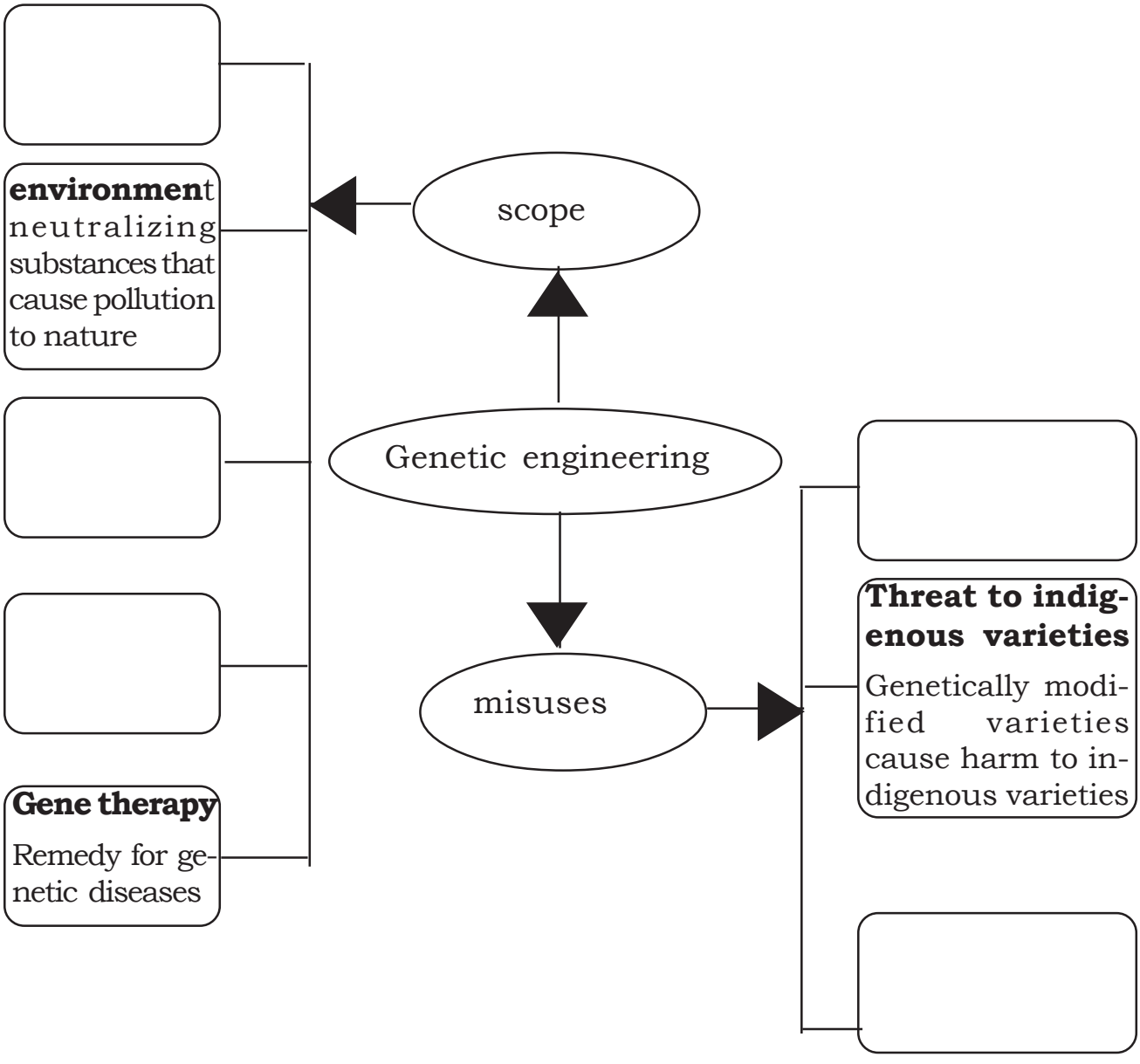
a) How does gene mapping help in insulin production ?

b) What is the significance of pharm animals ?

c) What is meant by gene therapy ?

Activity 4

Complete the illustration which represents the scope and misuses of genetic engineering.



Evaluation Questions

1. Explain the difference between traditional biotechnology and modern biotechnology with suitable examples

2. What are the scope of DNA fingerprinting and gene mapping?

3. Wirte down any two arguments that evolved during the debate about the topic “Is genetic engineering for human progress?” from support and against group.

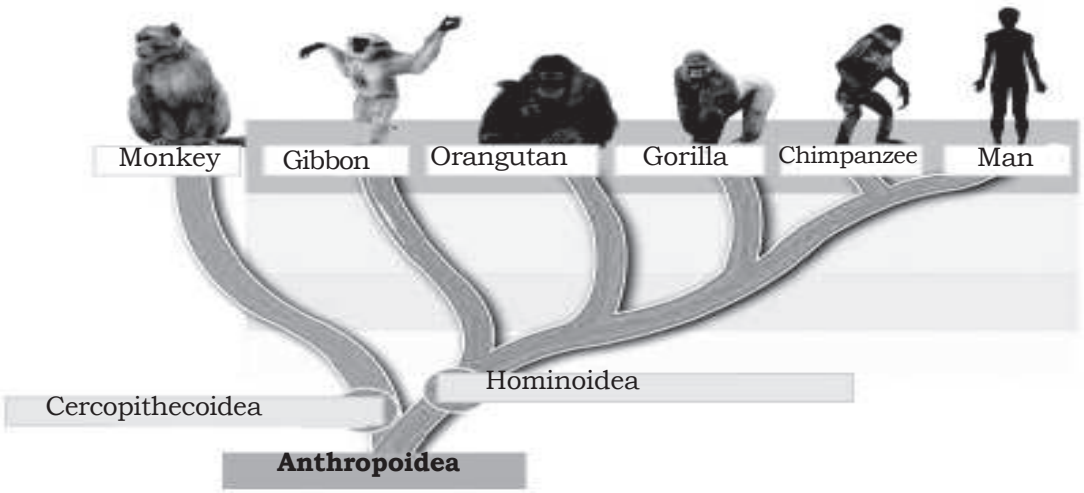
8 The Paths Traversed by life

Major concepts

- Origin of life
- Lamarckism.
- Darwinism
- Neo Darwinism
- Mutation theory
- Scientific evidence of evolution
- Human evolution and mass extinction.

Activity 1

Observe the illustration and answer the questions given below.



a) What are the characteristic features of cercopithecoidea group?

b) Name the group which include man and gorilla.What are the characteristic features of this group?

c) Which organism is close to man from the evloutionary point of view? Give explanation for this on the basis of molecular biology?

Activity 2

The main concepts related to chemical evolution is stated below. Rearrange these statements in the flowchart given below

a) Formation of simple biomolecules like monosaccharides, amino acids, fatty acids etc.

b) Formation of primitive cells which have the ability of self replication

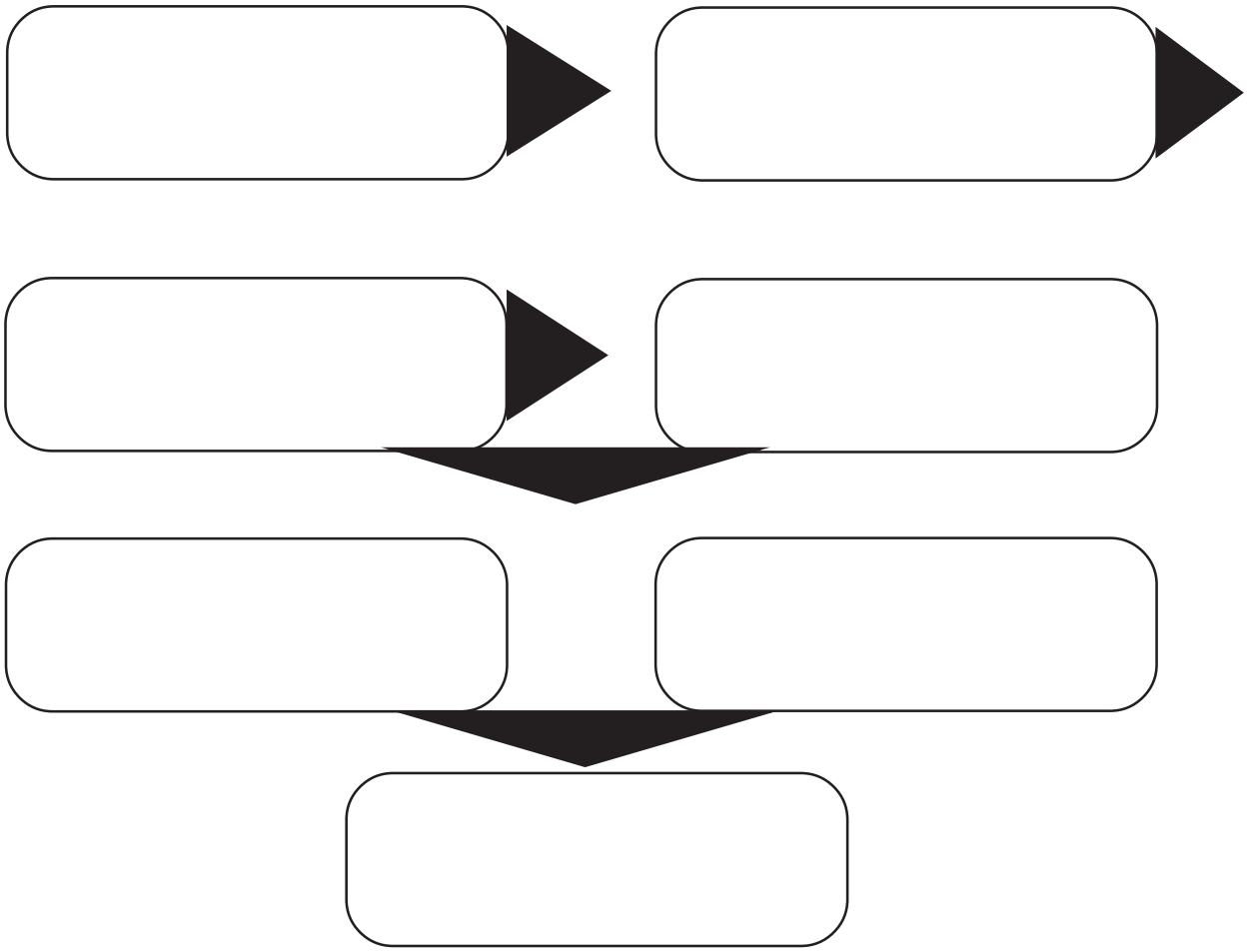
c) Formation of a separate lipid layer on the surface of water

d) Atmosphere of primitive earth with hydrogen, carbon dioxide, meth ane etc as gases

e) Formation of complex molecules like poly saccharides, peptides fats, and nucleotides.

f) Formation of genetic materials and proteins

g) Formation of oceans and other water bodies by incessant rains.



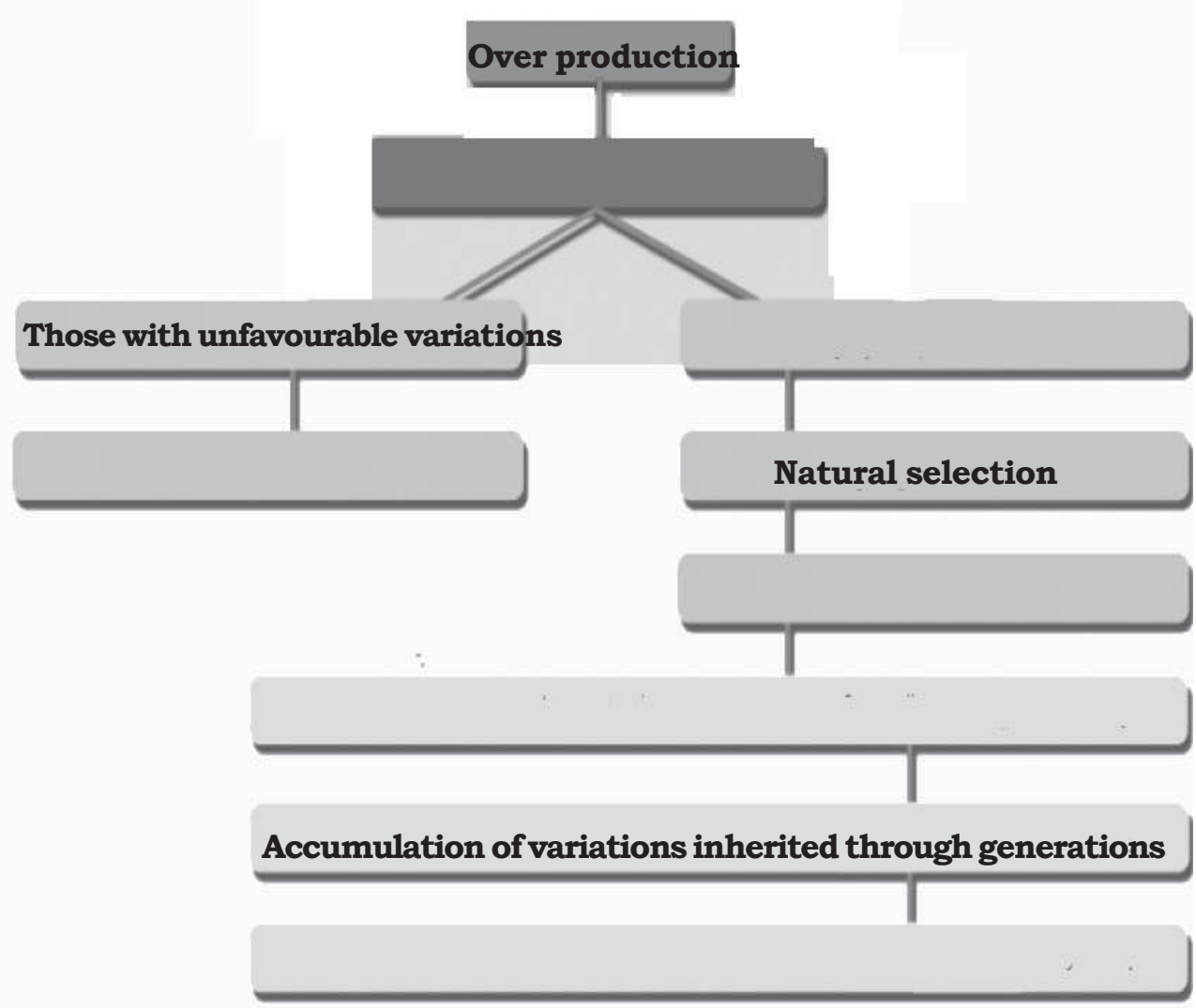
Activity 3

There exists certian scientific proofs about the formation of different species by evolution. Justify this statement.

(Hints - Fossils, Comparative morphological studies, Molecular biology)

Activity 4

Observe the illustration and answer the questions below



a) Complete the illustration.

b) Name the theory which is illustrated?

c) Who put forward this theory? Explain his findings with the help of suitabe example.

Evaluation Questions

1. The different views regarding the evolution of species are given below.

A	B
Accumulation of acquired characters led to the formation of new species.	New species are formed by the sudden changes that occur in genes

C
Those with favourable variations survive in the struggle for existence, others are eliminated.

(a) Name the scientists who proposed those views.

(b) Name the view which was not accepted by scientific world.Why?

2. Fill in the blanks by observing the relationship in the first pair.

(a) Cranial capacity 610 cu.cm : Homo habilis

Cranial capacity 1430 cu.cm : .....

(b) Gibbon : Hominoidea

Monkey : .....

3. What do you mean by homologous organs? What evidences do they give for evolution?

BIOLOGY

Sample Question paper

Score : 40

Time : 90 minutes

Instructions

1. First 15 minutes is given as cool off time. This time is to be used for reading and understanding the questions.
2. Write down answers for all questions.
3. The score of each question is given along with the question.
4. The score and time should be considerd for answering questions.

---

1. Select the correct answer by analysing the statements given below.
   (i) Ardipithecus ramidus is the most primitive member of the human race.
   (ii) Homo habilis have the capacity to stand erect.
   (iii) Homo erectus have thick chin and large teeth.
   (A) (i), (ii) correct (B) (ii),(iii) correct
   (C) (i),(iii) correct (D) All correct (1)

2. A pea plant with genetic constitution GgWw subjected to self pollination. The genetic constitution of some of the offsprings obtained are given below. Write the character of the given offsprings based in their genetic constitution.
   (Hints : G - Green coloured seed g- Yellow coloured seed
   W - Round seed w- Wrinkled seed)
   (a) Ggww (b) ggWw (c) ggww (d) GGWw (2)

3. The statements related to blood clotting are given below. Arrange them as a flowchart. (2)
   (a) Thrombin converts the fibrinogen in the plasma to fibrin.
   (b) Thromboplastin converts prothrombin in the plasma to thrombin.
   (c) Blood clot is formed by entangling of platelets and red blood cells in the fibrin netwok.
   (d) Tissues degenerate to form the enzyme called thromboplastin.

4. Fill in the blanks by observing the relationship in the first pair.

(a) Theory of natural selection : Charles Darwin

Mutation theory : ..... (1)

(b) House fly : Ommatidia

Snake : ..... (1)

5. Make corrections if any, in the underlined portions in the statements given below. (2)

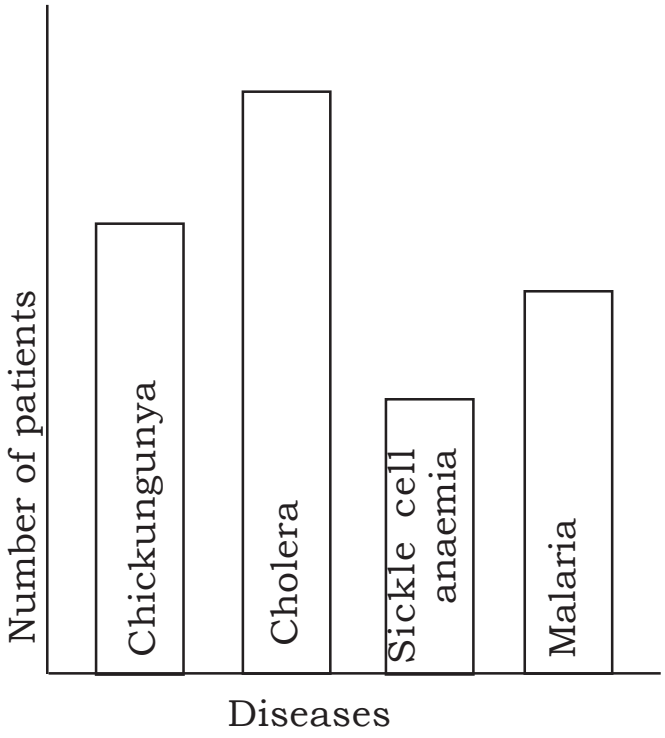
(a) **Hypothalamus** coordinates muscular activities and maintains equilibrium of the body.

(b) **Cerebrum** is the centre of thought, intelligence, memory and imagination,

(c) **Thalamus** controls heartbeat.

(d) **Medulla oblongata** controls involuntary actions.

6. The graph illustrating the data of a health survey of an area is given below. Analyse the graph and answer the given questions given below.



(a) Name the disease which is widely spread in the area? Name the pathogen? (1)

(b) Name the diseases mentioned in this graph which spread by mosquito ?(1)

(c) Name the disease which is not a communcable disease?(1)

7.What are the evidences given by biochemistry and physiology about the facts that different species that exist today have a common ancestor? (3)

8. Is it a fair practice to criticise mother who deliver girl child only? Justify your opinion as a science student about this situation with the help of an illustration? (3)

9. Find the odd one out.Write the common features of others.

(a) Botulism, Athletes' foot, Gonorrhoea, Tuberculosis (1)

(b) Anthrax, Blight disease, Foot and mouth disease, Inflamation of udder (1)

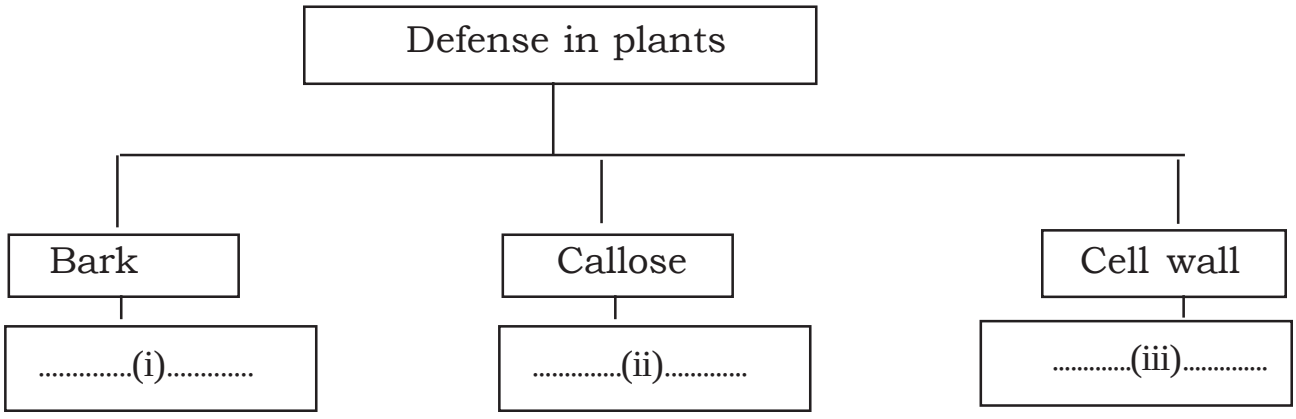
10. Observe the figure and answer the questions given below.

A B

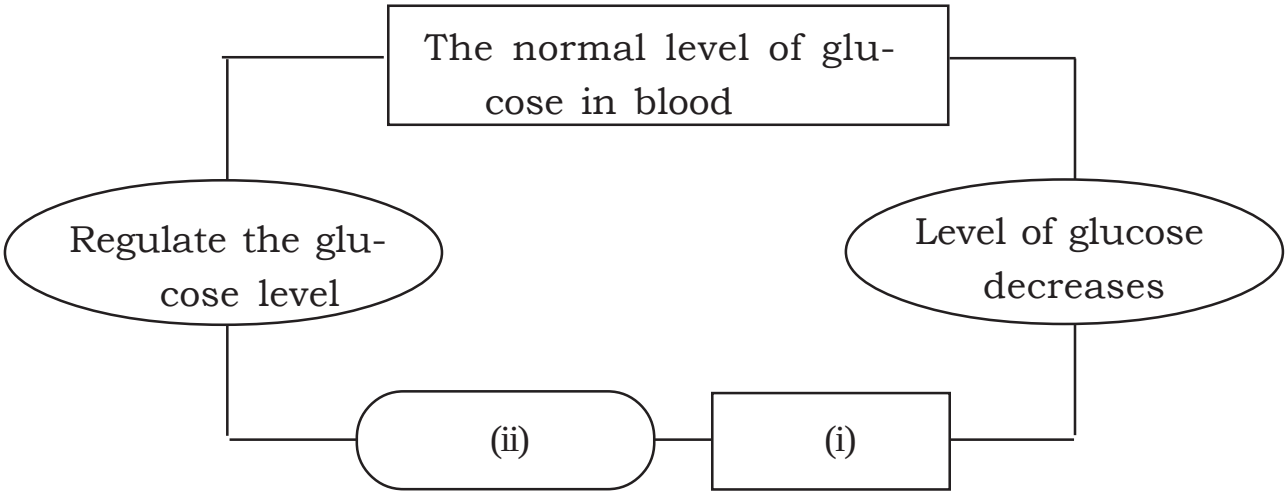
(a) Identify the photoreceptors given as A and B? (1)

(b) Name the pigments contained in each photoreceptors?(1)

11. Complete the illustration. (3)



12. Observe the illustration and answer the questions given below.



(a) Name the gland indicated as (i) and hormone indicated as(ii).(1)

(b) Write the action of this hormone which help to regulate the glucose level to normal . (2)

13.We use genetic engineering in various areas of life how ever this is misused. Justify this statement. (3)

14.Complete the table suitably. (3)

Gland	**Hormone**	**Function**
.....(a).....	Oxytocin	.....(b).....
.....(c).....	.....(d).....	Maitains the salt-water balance
.....(e).....	Melatonin	.....(f).....

15. Tabulate the given statements related to the power of accomodation of eye. Give title also. (3)

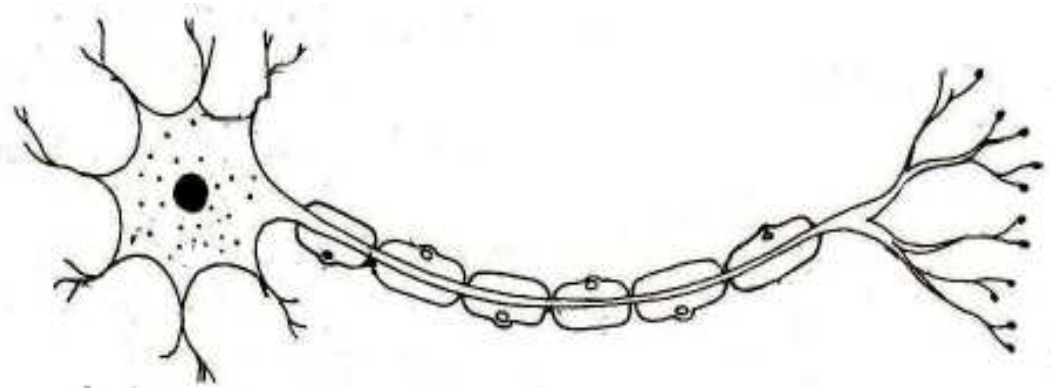
(a) Ligaments relax.

(b) Ciliary muscles relax.

(c) Curvature of lens increases.

(d) Focal length increases.

16. Redraw the picture, identify and label the parts based on the functions given below. (3)



(a) The part which secretes neurotransmitter.

(b) The part which carries impulses from dendrites to the cyton.