Biology

Standard

X

Question Pool

Government of Kerala

DEPARTMENT OF EDUCATION

Prepared by:

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Preface

Learning and evaluation must go hand in hand to understand and enhance progress in learning. It will help to recognize how much progress has been made in conceptualisation, to what extent one has been able to acquire various skills and also to identify the fields one has special aptitude for. Continuous evaluation carried out along with learning activities play a very important role in this. The term evaluation helps in testing and ascertaining the learning outcomes at the end of each stage. This book offers guidance in this direction.

Lessons in each unit of class 10 have learning activities based on knowledge construction incorporated in them in the form of questions. Evaluation indicators and scores are also provided there in, to assess the skills acquired at each stage by the learner. In addition to all these, it is hoped that teachers would endeavour to present more class room activities to instill self confidence in the learners. Let this book show the path for effective learning.

Dr. J. Prasad
Director, SCERT Kerala

Content

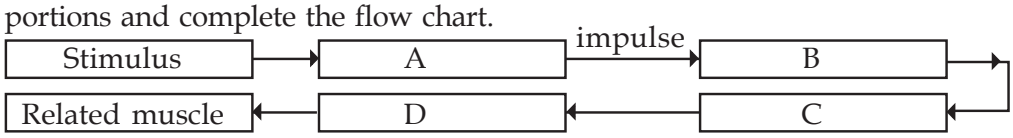
Part - A

Question Pool

Unit 1

Sensations and Responses

1. The parts of a reflex arc are illustrated in the form of a flow chart. Fill in the blank portions and complete the flow chart.



Learning Outcome : Achieves the ability to illustrate a reflex arc by identifying the major components of a reflex action. Time : 2 min, Score : 2

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2. Appu was taken by fear, on seeing a snake on his way to school and ran back.
   i) Which part of the autonomous nervous system controlled the body activities of Appu in the above situation?
   ii) What are the changes that take place in the intestine and eye during the above situation.

Learning Outcome : Identifies and explains the functions of the sympathetic and parasympathetic systems. Time : 2 min, Score : 2

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3. Which of the following activities take place under the control of the parasympathetic system?

Urinary bladder contracts, glycogen is converted to glucose, Gastric activities slow down, production of saliva increases.

Learning Outcome : Understands the actions of the parasympathetic system.
Time : 2 min, Score : 1

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4. The brain contains a fluid which is formed from and reabsorbed into the blood.
   (a) Identify the fluid.
   (b) What are the functions of that fluid?

Learning Outcome : Identifies the formation and function of the cerebrospinal fluid.
Time : 2 min, Score : 2

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5. Some of the activities of the autonomous nervous system are given below. Analyse the activities and tabulate them under appropriate headings.
   a) Pupil dilates
   b) Production of hormone decreases.
   c) Converts glucose to glycogen
   d) Peristalsis slows down

Learning Outcome : Identifies the activities of the autonomous nervous system
Time : 3 min, Score : 3

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6. A synapse is only the junction between two neurons. Do you agree with this statement? Why?

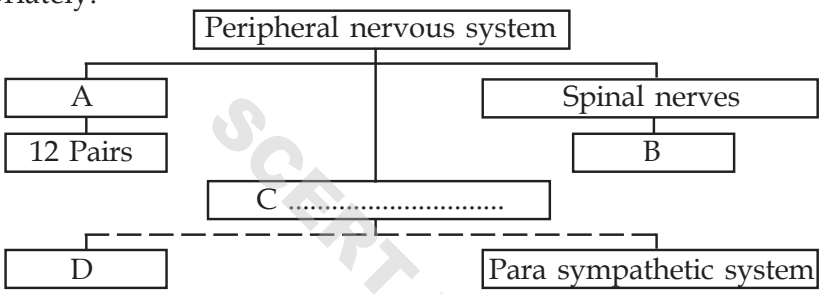
Learning Outcome : Identifies the concept of synapse and explains the different types of synapse. Time : 3 min, Score : 2

7. Write down the action of the parasympathetic and the sympathetic system in the following organs.

Organ	Parasympathetic	Sympathetic
Eye	(a)	(b) .....
Heart	(c)	(d) .....

Learning Outcome : Identifies and explains the functions of sympathetic and parasympathetic systems. Time : 2 min, Score : 2

8. One of the components of the nervous system is illustrated below. Fill in the blanks appropriately.



Learning Outcome : Identifies the components of the peripheral nervous system. Time : 3 min, Score : 2

9. The dorsal root and the ventral root play a significant role in the transmission of impulses between spinal cord and different parts of the body. Do you agree with this statement? Justify.

Learning Outcome : Identifies the structure and functions of the spinal cord. Time : 2 min, Score : 2

10. All reflex actions take place under the control of the spinal cord. Evalute the statement and justify with suitable examples.

Learning Outcome : Identifies the main factors in a reflex action and substantiates by citing suitable examples. Time : 3 min, Score : 2

11. Accumulation of an insoluble protein in the neural tissues of the brain. — X

Destruction of specialised ganglions in the brain — Y

The causes of diseases related to the nervous system in two individuals X and Y are given above.

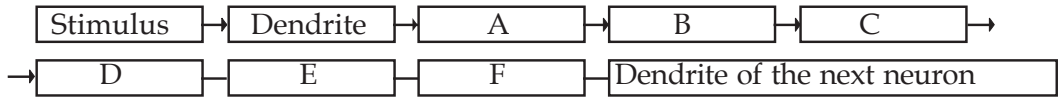
i) Identify the diseases?

ii) The deficiency of which neurotransmitter causes disease in Y?

Learning Outcome : Explains different types of diseases affecting the nervous system. Time : 2 min, Score : 2

12. The flow chart given below indicates the transmission of impulse from one neuron to another. Complete the flow chart using the data given in the box.

Cell body, neurotransmitter, axon, synaptic nobe, axonite, dendron



Learning Outcome : Identifies the transmission of impulses through neuron.
Tmin: 3, Score : 3

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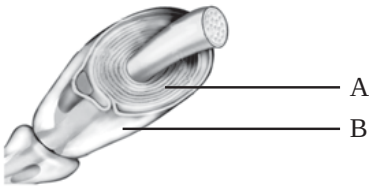
13. Examine the picture given below.



(a) Identify A and B.
(b) What is the role of A in the transmission of electric impulses?

Learning Outcome : Identifies and explains the structure and functions of the myelin sheath. Time : 3 min, Score : 3

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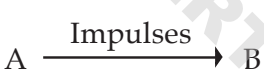
14. The illustration of a nerve based on its function is given below.



A - Organ
B - Central nervous system

(a) Identify the nerve depicted in the illustration.
(b) Identify the nerve that carries impulse to and from A and B?

Learning Outcome : Identifies different types of nerves based on their function.
Time : 2, Score : 2

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15. The sympathetic nervous system stimulates all body activities. Its activity helps the body to overcome emergency situations.
(a) Do you agree with the statement? Justify your answer by citing suitable examples.

Learning Outcome : Identifies the activities of the sympathetic nervous system and evaluates by citing examples. Time : 3 min, Score : 3

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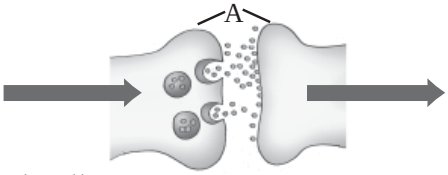
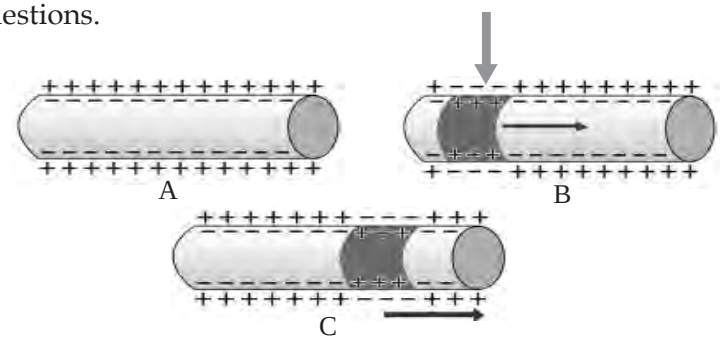
16. The illustration given below indicates the transmission of impulses from one neuron to another. Observe the illustration and answer the following question.



(a) Identify the part in the illustration.
(b) Identify the chemical substance which is secreted from A? Give one example for this chemical substance?

Learning Outcome : Identifies the concept of synapse, analyses and describes the transmission of impulses through nerves. Time : 2 min, Score : 3

17. Analyse the illustration of impulse transmission through axon and answer the following questions.



a. What are the changes that take place in illustration B when compared to A? Give reason for this change.

b. Explain how this change brings about the transmission of impulses through axon.

Learning Outcome : Explains the transmission of impulses through axon.

Time : 4 min, Score : 4

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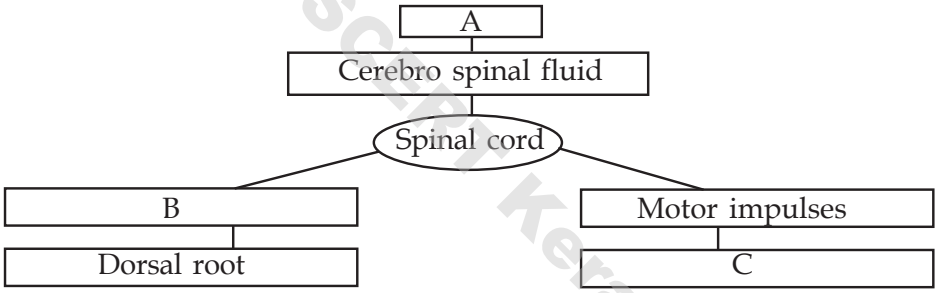
18. Complete the following illustration.



Learning Outcome : Identifies the structure and function of the spinal cord.

Time : 2 min, Score : 2

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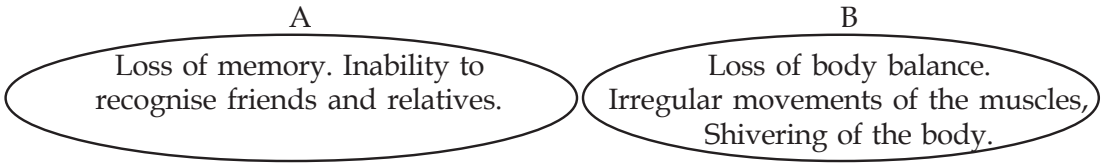
19. The disease symptoms of two individuals are given below.



(a) Identify the diseases of idividuals A and B.

(b) Explain the causes of diseases in individual A.

Learning Outcome : Explains the diseases affecting the nervous system.

Time : 3 min, Score : 3

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20. Mohan lost his memory and was partially paralysed after he met with an acccident.

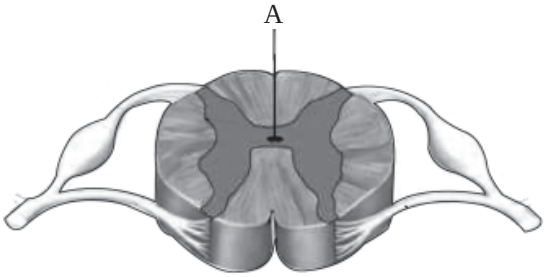
(a) Which part of Mohan's brain was affected?

(b) How is the brain protected?

Learning Outcome : Identifies and explains the parts and functions of the brain.

Time : 4 min, Score : 2

21. Observe the picture and answer the following.



a. Identify A.

b. What are the peculiarities of the impulses which are transmitted through the dorsal root and the ventral root?

Learning Outcome : Identifies and explains the structure and function of the spinal cord. Time : 2 min, Score : 2

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22. The following figure shows the distribution of ions on either side of the plasma membrane of the axon. Analyse the figure and answer the following.

a) Why is there a difference in charge distribution on either side of the plasma membrane?

b) What changes do the stimulus create in the charges on either side of the plasma membrane? How do these charges get transmitted through the axon as impulses?

Learning Outcome : Identifies impulse transmission through axon.
Time : 3 min, Score : 3

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23. Draw the diagram and label the following parts.

a) The part which secretes acetylcholine.

b) The part which receives impulses from the adjacent neuron.

c) The part which carries impulses from the cell body to outside.

Learning Outcome : Identifies and explains the structure of the neuron.
Time : 4 min, Score : 4

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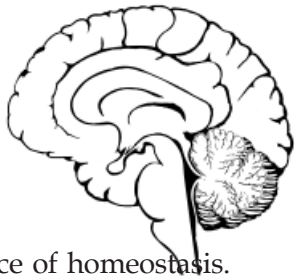
24. Draw the diagram and label the following parts.



a) The part that helps in the maintenance of homeostasis.
b) That acts as relay station of impulses to and from the cerebrum.
c) The second largest part of the brain.

Learning Outcome : Identifies the structure and function of the brain.

Time : 2 min, Score : 4

25. Box A and Box B contains the parts of the brain and related informations respectively. Analyse the informations in the boxes and complete the table as per the model cited.

A	B
Cerebellum Hypothalamus Medulla oblongata Thalamus	• Situated behind the cerebrum • Controls involuntary actions • Maintains equilibrium of the body • Located near the cerebellum as a rod-shaped structure • maintains homeostasis • situated just below the thalamus • Acts as relay station of impulses • Situated below the cerebrum

Part	Location	Function
Hypothalamus	Situated just below the thalamus.	Maintains homeostasis
Thalamus		

Learning Outcome : Identifies the location & functions of parts of the brain.

Time : 4 min, Score : 4

26. Identify the word pair relationship and fill in the blanks:

i) Sensory nerve : Carries impulses to the spinal cord.
..... : Carries impulses from the brain to various parts of the body
ii) Skull : Brain
..... : Spinal cord
iii) Hypothalamus : Maintains homeostasis
..... : Control centre of involuntary actions.
v) Dendrite : Receives impulses
..... : Carries impulses outside

Time : 4 min, Score : 4

27. Identify the correct statements from those given below:
    i) The central nervous system consists of the brain and the spinal cord.
    ii) The peripheral nervous system consists of 31 pairs of cranial nerves and 12 pairs of spinal nerves.
    iii) The sympathetic system and the parasympathetic system are parts of the central nervous system.
    iv) The autonomous nervous system which is a part of the peripheral nervous system helps to overcome the emergency situations.

Learning Outcome : Identifies the parts and functions of the nervous system.

Time : 2 min, Score : 1

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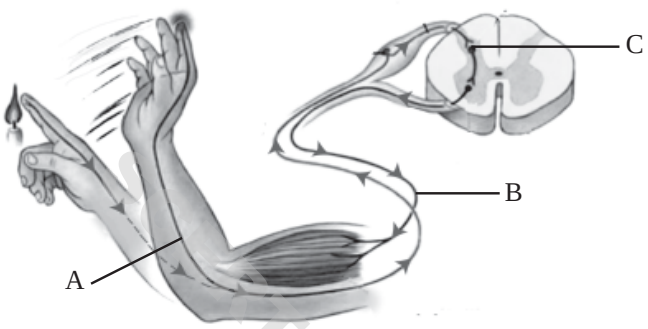
28. Observe the illustration and answer the questions.



    a) Which action does the illustration depict?
    b) Identify A, B and C.

Learning Outcome : Identifies reflex action and reflex arc.

Time : 3 min, Score : 2

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29. Identify the odd one. What is common about others?
    a) Touch, light, hunger, sound.
    b) Brain, gland, nerves, spinal cord.
    c) Breathing, sight, intelligence, hearing.

Learning Outcome : Identifies conceptual similarities and differences.

Time : 3 min, Score : 3

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30. Balu : In the spinal cord and the cerebrum, white matter is seen outside and greymatter is seen inside.
    Ramu : In the cerebrum, the grey matter is seen outside and the white matter is seen inside, But in the spinal cord, the white matter is seen outside and the grey matter is seen inside.

    In the group discussion related to the nervous system, Balu and Ramu said so.
    a) Whose opinion do you agree with?
    b) Explain white matter and grey matter?

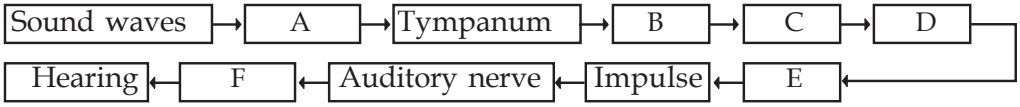
Learning Outcome : Differentiates grey matter and white matter.

Time : 2 min, Score : 3

Unit 2

Windows of Knowledge

1. Complete the flowchart filling the blanks:



Learning Outcome : Identifies the pathway of soundwaves through ear.

Time : 3 min, Score : 3

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2. Given below is the portion of a poster.

Don't take high eye pressure easy. It may lead to blindness in future.

a) Which is the eye disease mentioned in the poster?

b) What is the reason for this condition?

c) What is the remedy for this disease?

Learning Outcome : Identifies the problems of eye and its remedies.

Time : 3 min, Score : 3

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

a) Identify A, B.

b) Which is the pigment in A?

c) Which is the eye disorder related to B?

Learning Outcome : Identifies the photoceptors of eye and the pigments present in them.

Time : 3 min, Score : 3

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4. Processes related to maintaining the equilibrium of the body are given below. Analyse and arrange them in the correct order.

a) Impulses are formed.

b) Muscular movements are coordinated.

c) Maintains the equilibrium of the body.

d) Sensory hair cells of the vestibular apparatus are stimulated.

e) Impulses reach the cerebellum.

f) Body movements create the movement of fluid inside the vestibule and semicircular canal.

Learning Outcome : Explains the process of body balancing. Time : 3 min, Score : 3

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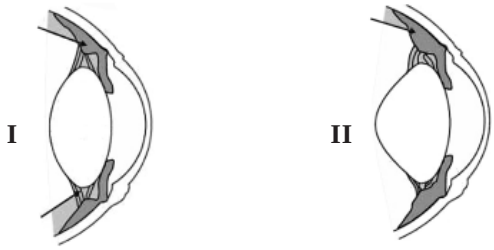
5. Analyse the illustration related to the Power of accomodation of the eye and answer the questions.



(a) Which figure indicates the change in the lens while viewing distant objects?
(b) Give the reason for the change in the curvature of the lens in figure II than in figure I.

Learning Outcome : Identifies the process of Power of accodomation by analysing picture. Time : 3 min, Score : 3

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6. Complete the table suitably in accordance with the given model.

Model : House fly - Ommatidium - vision.

(a)	Eyespot	Detects light
Snake	(b)	(c) .....
Shark	(d)	Change in the balance detected

Learning Outcome : Identifies the receptors in various organisms. Time : 2 min
Score : 2

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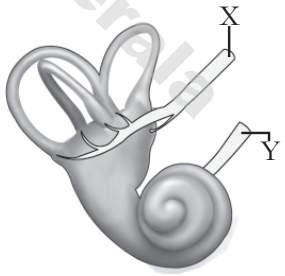
7. Observe the figure and answer the questions.



a. What does the figure indicate?
b. Identify X, Y.
c. How do X and Y differ in function?

Learning Outcome : Explains the parts and functions of internal ear.
Time : 4 min, Score : 4

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8. Statements related to sense organs are given below:

Choose the correct ones.

a) Taste buds are the chemoreceptors seen in the papilla?
b) Receptors are uniformly distributed all over the skin.
c) Impulses from the olfactory receptors reach the cerebrum through the olfactory nerve.
d) We experience taste when impulses from the taste buds reach the cerebellum.

Learning Outcome : Forms an idea about various sense organs. Time : 2 min
Score : 2

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9. Light rays which reflect from the object are focussed on the retina and an image is formed.
   a) Write the peculiarities of this image.
   b) How do the images formed in the two eyes combine? What is its advantage?

Learning Outcome : Explains the process of vision.

Time : 2 min, Score : 2

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10. "The focal length of the lens in the eye can be adjusted to view distant and nearby objects." Evaluate this statement and answer the questions given below.
    a) When does this focal length of the lens decrease?
    b) What is the change in the focal length of the lens while viewing distant objects? How does it become possible?

Learning Outcome : Identifies and explains the changes in the eye according to focal length.

Time : 4 min
Score : 3

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11. Vision is enabled when the impulse from the retina reaches the cerebrum through the optic nerve.
    a) Draw a flow chart showing the pathway of light from cornea to retina.
    b) There is no vision at the point where the optic nerve starts. Why?

Learning Outcome : Analyses how the process of vision takes place.

Time : 4 min, Score : 3

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12. Examine the terms given below and choose the parts related to the maintenance of equilibrium of the body.

Cerebrum, Eustachian tube, Sacule, Cochlea, Utricle, Vestibular nerve, Oval window, Cerebellum, Semi circular canals

Learning Outcome : Identifies the parts related to the equilibrium of the body.

Time : 2 min, Score : 2

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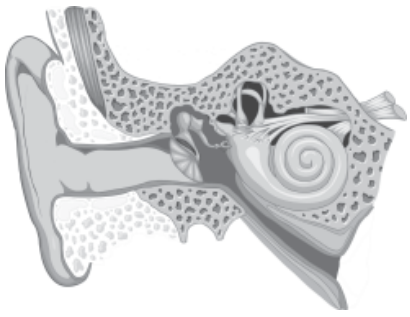
13. Redraw the diagram given below. Identify the parts and label it.



(a) Connects the middle ear with the pharynx.
(b) Auditory receptor hair cells are present.
(c) Separates the external ear from the middle ear.

Learning Outcome : Identifies the structure of the ear by analysing the picture.

Time : 5 min, Score : 4

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14. Analyse the statements given below and write reasons.
    (a) Tears have antiseptic property
    (b) We can see objects in three dimension.

Learning Outcome : Analyses the structure and functions of the eye.
Time : 3 min, Score : 2

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15. Rhodopsin $\underset{}{\overset{\text{Light}}{\rightleftharpoons}}$ Retinal + Opsin
    (a) How is this reaction related to vision?
    (b) How does the deficiency of vitamin A cause poor vision in dim light?

Learning Outcome : Identifies and explains the chemistry of vision.
Time : 4 min, Score : 3

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16. Prepare two placards to be used in a rally organised by the school Science Club to propagate the importance of eye donation.

Learning Outcome : Identifies the importance of eye donation. Time : 4 min
Score : 2

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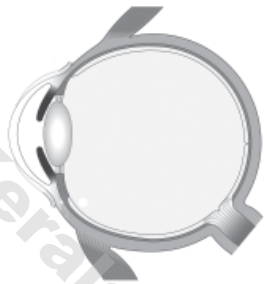
17. Redraw the diagram and label the parts given below:



    (a) Transparent anterior part of the sclera.
    (b) Fluid that nourishes the tissues of the eye.
    (c) The layer that has photoreceptors.

Learning Outcome : Identifies and explains the structure and functions of the eye.
Time : 5 min, Score : 4

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18. Observe the figure given below and answer the questions:

    (a) Which is the receptor seen in the figure?
    (b) Which sense organ is this receptor seen in?
    (c) What is the function of this receptor?

Learning Outcome : Describes the position and function of chemoreceptors.
Time : 3 min, Score : 3

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19. A fluid is formed in the eye just as the cerebrospinal fluid is formed in the brain.
    a) Name the fluid.
    b) What is its function?

Learning Outcome : Explains aqueous humor. Time : 2 min
Score : 2

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20. Justify the statements given below:
    (a) Smell can be detected only in the presence of mucus.
    (b) Persons with colour blindness cannot distinguish between green and red colours.

Learning Outcome : Identifies the various aspects of sense organs.
Time : 2 min, Score : 2

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21. Given below is a table related to eye diseases. Fill up suitably.

Eye diseases	Reason	Remedy
Cataract	**a**	Replacing the lens
b.....	Increase in pressure inside the eye, as reabsorption of aqueous humor does not occur.	**c** .....
d.....	Conjuctiva and cornea become dry and opaque	Eat food containing vitamin A

Learning Outcome : Identifies eye diseases and remedies.
Time : 3 min, Score : 2

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22. It is because of its taste that we like food. Given below are the different stages of experiencing taste. Analyse and arrange them in the correct order.
    a) Experience of taste
    b) Causes impulses
    c) Food particles dissolve in saliva
    d) Reaches taste buds
    e) Impulses reach the brain
    f) Chemoreceptors get stimulated

Learning Outcome : Identifies the various processes involved in realising taste.
Time : 3 min, Score : 3

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23. Identify the odd one. Write the common feature of the others.
    a) Cold, temperature, Pressure, Taste
    b) Tympanum, Oval window, Cochlea, Papilla
    c) Ommatidia, Pupil, Iris, Conjunctiva Time : 3 min, Score : 3

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24. Identify the word pair relatioship and fill in the blanks.

a) Retina : The inner layer which has photoreceptors
..... :The transparent anterior part of the sclera

b) Blind spot : The part from where the optic nerve begins
..... : The part where the image has maximum clarity

c) ..... : Nourishes the tissues of the eye
Vitreous humor : Shape of the eye

Time : 3 min
Score : 3

25. Choose the correct statements from the following ones.

a) Cochlea helps in maintaining the equilibrium of the body.

b) The oval window helps in the movement of fluid inside the cochlea.

c) We detect smell when impulses from the olfactory receptors reach the cerebellum.

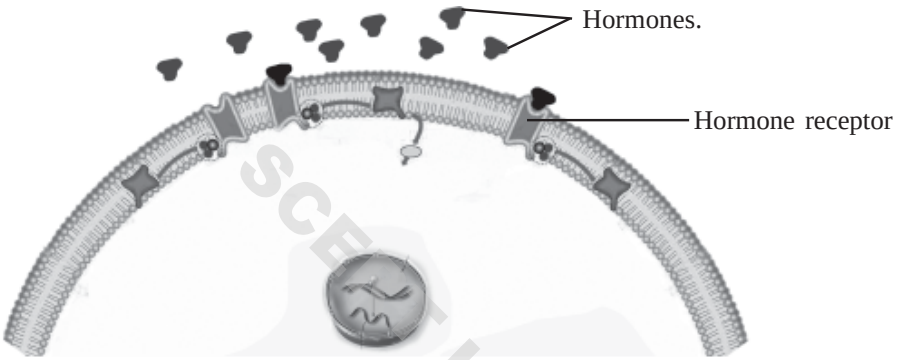
d) Glaucoma is a condition in which the lens of the eyes become opaque resulting in blindness.

Time : 2 min
Score : 1

Unit 3

CHEMICAL MESSAGES FOR HOMEOSTASIS

1. Observe the illustration given below and explain how hormones act in target cells.



Learning Outcome : Explains how hormones act in target cells

Time : 4 min, Score : 3

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2. Some statements relate to endocrine system are given below.
   - A. Hormones are the secretions of endocrine glands.
   - B. Hormones are transported through lumph.
   - C. Hormones are transported through blood.
   - D. All the hormones produced by the endocrine glands are proteins.

   (a) Choose the correct statement.

   (b) Imagine that particular hormone is not entering a particular cell. What may be the reason? Formulate two hypothesis.

Learning Outcome : Analyses and presents the secretions of endocrine glands and their transport.

Time : 2 mts, Score : 3

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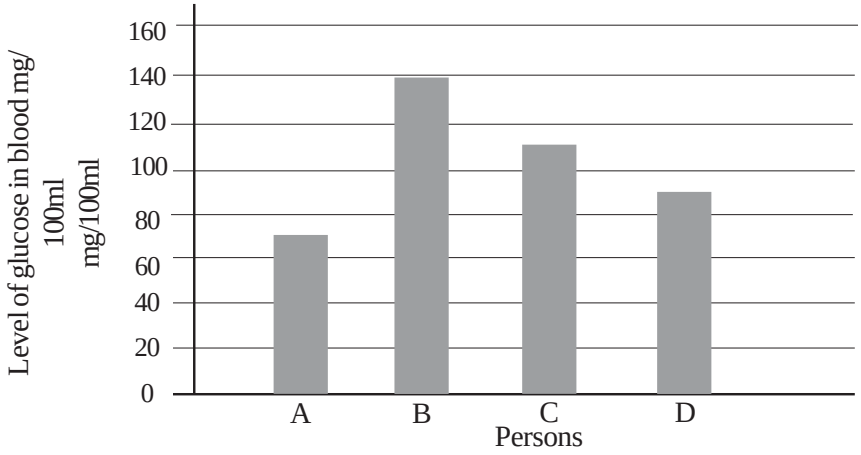
3. Examine the graph indicating the blood glucose level of different individuals before breakfast.



a) Which individual is affected by diabetes mellitus?

b) Write two actions of insulin to prevent the rise in the level of glucose in blood.

c) Why do people having diabetes mellitus experience extreme fatique?

Learning Outcome : Explains the role of hormones in regulating the blood glucose level

Time : 4 min, Score : 4

4. Analyse the table given below. Rearrange column **B** and **C** according to the indicators in Column **A**.

A	B	C
1) Situated above the kidney	a) hypothalamus	p) Calcitonin
2) Situated just below the larynx	b) adrenal gland	q) oxytocin
3) Situated in the brain	c) Thyroid	r) Epinephrine

Learning Outcome : Forms an idea about the location of endocrine glands in man and the hormones secreted by them.

Time : 2 min, Score : 3

5. Case sheets of two patients are given below. Analyse them and answer the questions.

Case -1
• Age - 4 yrs • Mental retardation • Stunted growth

Case -2
• Age - 42 yrs • High metabolic rate • Increased heart beat • Bulging of eye balls

(a) Which are the diseases whose symptoms are indicated above?

(b) Write the reasons for the diseases.

Learning Outcome : Identifies and explains the deformities caused by the difference in the production of thyroxine.

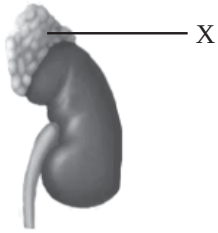
Time : 3 min, Score : 4

6. Honey bees and termites live in colonies.
   a) Name the chemical substance which helps them to live together.
   b) Mention two uses of these chemical substances.

Learning Outcome : Identifies and explains pheromones and their action.
Time : 2 min, Score : 2

---

7. Observe the diagram and answer the questions.

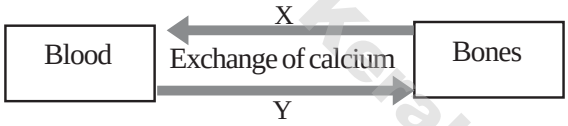


   a) Which endocrine gland does 'X' indicate?
   b) Which are the two hormones produced by the gland to control the physical activities with the sympathetic system?

Learning Outcome : Explains what the adrenal gland is and the activities of the hormones produced by it. Time : 2 min
Score : 2

---

8. Maintenance of the level of calcium in the blood is illustrated below. Analyse it and answer the following questions.

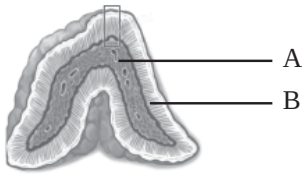


   (a) Name the hormone indicated as 'X'.
   (b) Which gland produces the hormone 'Y'?
   (c) Write another activity performed by 'X' to raise the level of calcium in blood.

Learning Outcome : Analyses and explains the role of hormones in maintaining the level of calcium in blood. Time : 3 min
Score : 3

---

9. Observe the diagram of the endocrine gland given below and answer the question.



   (a) Name the part indicated as A and B.
   (b) Name the hormones synthesized by A. Expain their action.

Learning Outcome : Analyses and presents the structure and function of the adrenal gland. Time : 4 min
Score : 4

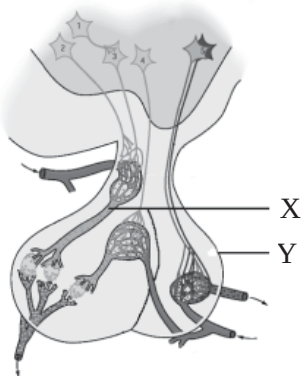
---

10. An individual looses large quantities of water through urine.
    a. Which could be the disease?
    b. Analyse the conditions that lead to this disease.

Learning Outcome : Explains the centre of synthesis of ADH, deficiency disease etc.
Time : 3 min, Score : 3

---

11. Observe the diagram and answer the questions.



a) Identify X and Y.
b) What is the function of 'Y'?

Learning Outcome : Identifies and explains the parts and functions of the pituitary gland.
Time : 2 min
Score : 3

---

12. Given in the table below is to growth hormone. Complete the table suitably.

Disease	Condition of Hormone	Symptoms
(a)	Deficiency of growth hormone during growth phase.	Stunted growth
Gigantism	(b)	Excessive growth of the body
Acromegaly	(c)	(d) .....

Learning Outcome : Understands the diseases, reasons and symptoms related to growth hormones.
Time : 3 min
Score : 2

---

13. Given below is a doctor's comment at a seminar conducted as part of Diabetic day.

"In diabetic patients, the blood glucose level before breakfast is above 126mg/100ml.

Analyse the statement and enlist the reasons.

Learning Outcome : Explains the action of hormones with suitable examples.
Time : 2 min, Score : 2

---

14. Given below are a few statements related to hormones. Pick out the correct ones.
    (a) Oestrogen helps to maintain embryo in the uterus.
    (b) Progesteron facilitates child birth.
    (c) Prolactin helps in the production of milk.
    (d) Oxytocin facilitates lactation.

Learning Outcome : Forms an idea about the action of hormones. Time : 1 min
Score : 1

---

15. Analyse the statements given below and write the reason.
    (a) Oxytocin is injected in pregnant women during child birth. (delivery)
    (b) Feels sleepy during night, wakesup when day breaks.

Learning Outcome : Analyses and substantiates the action of oxytocin and melatonin.
Time : 2 min, Score : 2

---

16. Analyse the table and identify the correct pair.

a. Decrease in somatotropin during growth phase.	Dwarfism
b. Increase in somatotropin during growth phase.	Acromegaly
c. Increase in somatotropin after growth phase.	Gigantism

Learning Outcome : Understands the action of growth hormone. Time : 1 min
Score : 1

---

17. Observe the table, re-arrange column B and C according to column A.

A	B	C
1. Pituitary gland	a. Calcitonin	P. Implants embryo
2. Ovary	b. Prolactin	Q. Deposits calcium in bones
3. Thyroid gland	c. Glucogon	R. Sperm production
	d. Progesterone	S. Production of milk

Learning Outcome : Identifies and classifies the endocrine glands in man, hormones secreted by them and their functions. Time : 3 min
Score : 3

---

18. A farmer named Balan cultivated oranges in his orchard. Now the trees are full of oranges. The price of oranges is Rs. 80/kg.

A) This farmer wants to harvest all fruits together.

B) Ripen them together.

(a) Suggest two artificial plant hormones to satisfy the A, B needs of the farmer.

(b) Uncontrolled use of plant hormones must be controlled. Evaluate this statement.

Learning Outcome : Analyses and explains the role of artificial plant hormones in agricultural development. Time : 3 min Score : 3

---

19. Analyse the indicators and answer the question given below.

Indicators
Accelerates the growth and development of the brain in the foetal stage and infancy.

a. Which hormone are the indicators about?

b. Construct a flow chart relating the action of hypothalamus and pituitary in the synthesis of this hormone.

Learning Outcome : Analyses the role of the hypothalamus and the pituitary gland in controlling other endocrine glands, makes flow charts and presents. Time : 4 min, Score : 4

---

20. Artificial plant hormones are used extensively in the agricultural sector.

Write the name and function of two artificial plant hormones belonging to the category, auxin.

Learning Outcome : Analyses and explains how the use of artificial plant hormones help in agricultural development. Time : 2 min, Score : 2

---

21. Artificial plant hormones are used extensively in the agricultural sector. Write a short note on the advantages and disadvantages of these.

Learning Outcome : Analyses and explains the benefits and drawbacks of artificial plant hormones. Time : 3 min, Score : 3

---

22. Choose the correct statement related to pheromones from those given below.

(a) Pheromones are chemical substances secreted inside the body for communication.

(b) This is the message to attract mates, determining the path of travel etc.

(c) Musk in the civet cat is a pheromone.

(d) Bombaycol is the pheromone secreted by the female silk worm.

Learning Outcome : Forms an idea about pheromone. Time : 2 min, Score : 2

---

23. Analyse the box given below and complete the table suitably.

civeton, glucagon, endolymph, bombycol
ethylene, melatonin, auxin.

Hormone	Pheromone	Plant hormone

Learning Outcome : Identifies hormones, pheromones and plant hormones and classifies them suitably. Time : 3 min, Score : 3

24. Teacher: The TSH hormone synthesised by the pituitary gland acts on the thyroid gland. It is transported to the thyroid gland through blood. All hormones are transported like this through blood.

Ammu: Can all the hormones synthesised by the pituitary gland reach the thyroid gland and act there?

What is your answer for Ammu's doubt?

Learning Outcome : Forms the idea that hormones can act only in target tissue.
Time : 2 min, Score : 1

25. Indicators related to the endocrine glands are given below. Analyse them and answer the questions.

- Situated just below the sternum.
- Active during infancy.
  But constricts at puberty.

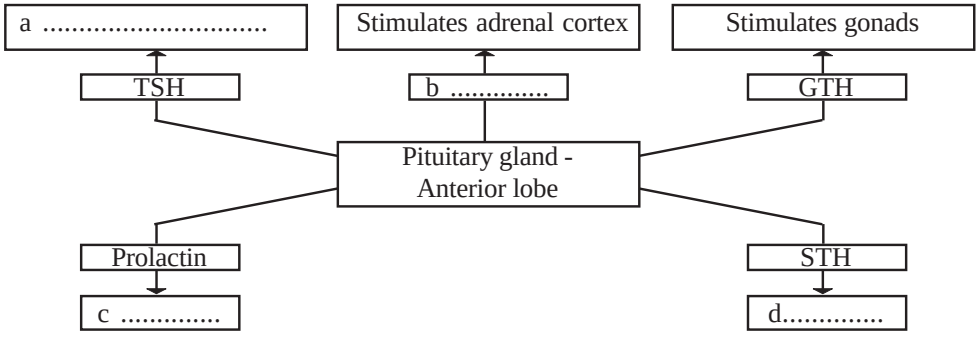
(a) Name this endocrine gland?

(b) Which is the hormone synthesised by this gland?

(c) Write the function of this hormone.

Learning Outcome : Explains the structure and function of the thymus gland.
Time : 2 min, Score : 3

26. Given below is the illustration showing the hormones synthesized by the anterior lobe of the pituitary gland. Complete it suitably.



Learning Outcome : Identifies hormones synthesised by the pituitary gland and illustrates their functions. Time : 2 min, Score : 2

27. Plant hormones and their functions are given in two boxes below. Pair them suitably.

Hormone	Functions
a. Auxin	i. Break down stored food in the seed.
b. Ethylene	ii. helps in ripening of fruits
c. Giberellins	iii. Dropping of leaves and fruits.
d. Abscisic acid	iv. Promoting growth of terminal bud.

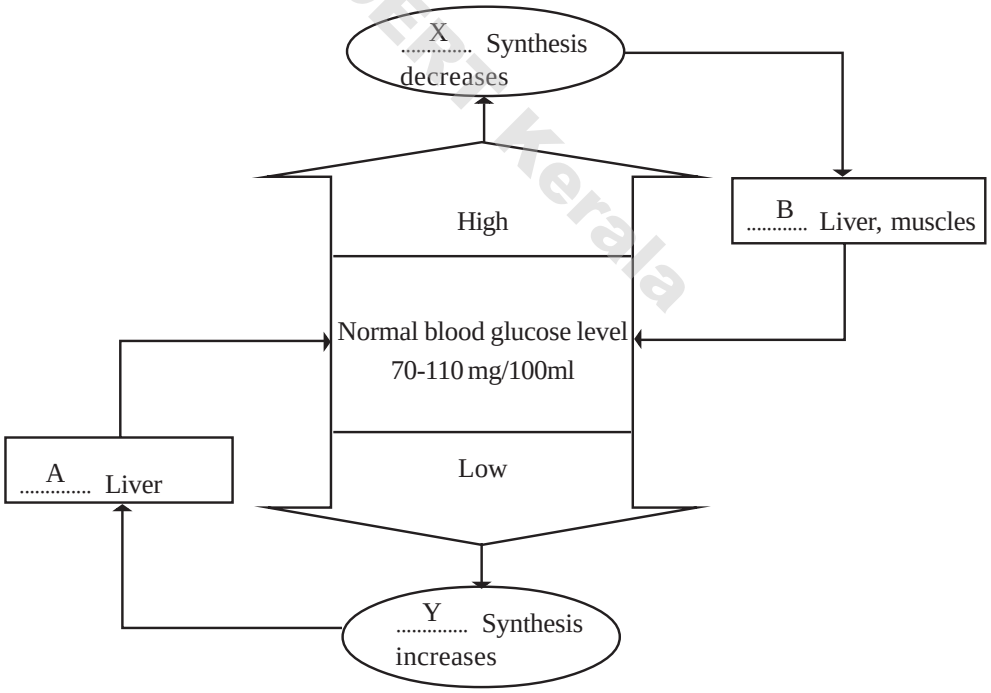
Learning Outcome : Gets an idea about plant hormones and their functions.
Time : 2 min, Score : 2

28. The problems faced by two farmers are below. Suggest two artificial plant hormones to overcome this.

Satheesh : Excessive growth of weeds in the agricultural field.
Saneesh : Premature fall of fruit in the mango orchard.

Learning Outcome : Explains the use of artificial plant hormones with suitable examples. Time : 2 min, Score : 2

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



(a) Write the names of the hormones 'X' and 'Y'.
(b) Mention two actions that take place in A and B.
(c) Name the gland which synthezises X and Y.

Learning Outcome : Understands the role of hormones in maintaining blood glucose level. Time : 4 min
Score : 4

30. Identify the word pair relationship and fill in the blanks.

a) Civet cat : .....;
Silkworm : Bombycol

b) Breaks opstored food : Gibberellins
helps in fruit ripending : .....

c) Vasopressin : Diabetes insipidus
Insulin : .....

d) Dwarfism : Somatotropin
Myxoedma : .....

Time : 4 min
Score : 4

---

31. Pick the odd one out. Write the common features of the others.

a) Increases metabolic rate, increases energy production regulate growth in children, promotes production of milk.

b) Goitre, Acromegaly, Hypothyroidism, Hypper thyroidism.

c) Cortisol, Vasopressin, Epinephrine, Norepinephrine.

d) Ethylene, Cytokinin, Auxin, Pheromones.

Time : 4 min
Score : 4

---

32. Choose the correct statement.

a) Synthesis of vasopressin increases, if the level of water in the blood increases.

b) Thyroid stimulating hormone stimulates the activity of the thyroid gland.

c) Synthesis of insulin increases if the blood glucose level rises.

d) Deficiency of thyroxine causes cretinism in adults.

Time : 3 min
Score : 1

---

33. Identify the word pair relationship and complete the following.

a) Alphacells : Glucagon
Beta Cells : .....

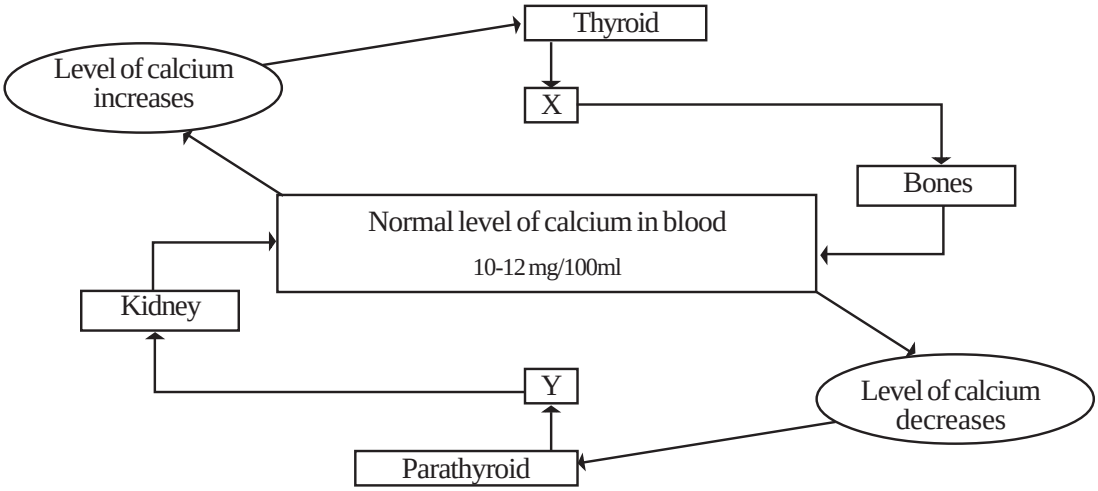
b) Prolactin : Production of milk
..... : Facilitate lactation

c) Parathyroid : Parathormone
Thyroid : .....

Time : 3 min
Score : 3

---

34. Maintenance of the level of calcium in blood is illustrated below. Analyse it and answer the questions.



(a) Which are the hormones indicated as 'X', 'Y'?

(b) Write the actions performed by 'X' in the bone and 'Y' in the kidney.

(c) How does the deficiency of 'Y' affect the process of blood clotting?

Learning Outcome : Identifies the importance of glands and hormones in maintaining the level of calcium in blood.

Time : 4 min

Score : 4

Unit 4

Keeping Diseases Away

1. Polluted surroundings and stagnation of water lead to the multiplication of mosquitoes. Mosquitoes carry many diseases to man. One such disease results in the considerable decrease in the number of platelets.
   a) Name the disease.
   b) Which microbe causes this disease?

Learning Outcome : Identifies how dengue fever is caused and how it spreads.
Time : 1 min, Score : 2

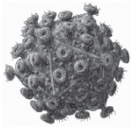
2. Rearrange columns B & C suiting the pictures in column A.

A	B	C
i 	a. fungus	P Well defined nucleus absent.
ii 	b. Virus	Q Causes ringworm.
iii 	c. Bacteria	R Uses the genetic mechanisms of the host cells

Learning Outcome : Identifies various pathogens. Time : 3 min, Score : 3

3. Choose the statements related to virus from those given below.
   a) Multiplies by binary fission.
   b) Has a simple structure with a DNA or RNA molecule within a protein coat.
   c) Toxins produced by them damage living cells.
   d) Multiplies by taking control over the genetic mechanism of host cells.

Learning Outcome : Identifies the characteristics of viruses.
Time : 2 min, Score : 2

4. 

This microbe disrupts the immunity power of the body.
No need to worry.... Let's live carefully.

Shown above is one of the presentation slides prepared by Pradeep, as part of the International year of Microbes.
   a) Which is the microbe mentioned in the slide?
   b) Which disease is caused by this microbe?
   c) How does this affect the immunity of the body?

Learning Outcome : Identifies and explains the relationship between AIDS and immunity. Time : 3 min, Score : 3

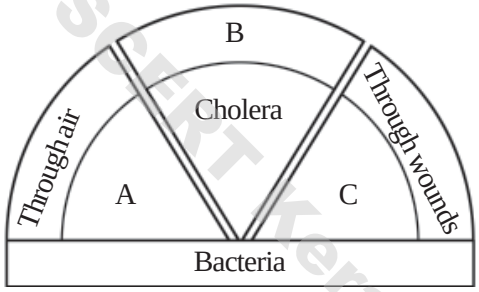
5. Analyse the statements related to the spread of AIDS and classify them suitably.
   a) Through mosquitoes & houseflies.
   b) Through body fluids.
   c) Through extramarital sexual contact.
   d) By touch, shaking hands, coughing etc.
   e) From HIV infected mother to foetus.
   f) When you sit near an HIV infected friend in the school.

Situations where HIV spreads	Situations where HIV does not spread
•	•
•	•
•	•

Learning Outcome : Identifies and distinguishes situations where AIDS spreads and does not spread. Time : 3 min
Score : 3

---

6. Complete the illustration of bacterial diseases given below.



Learning Outcome : Learns about bacterial diseases. Time : 3 min
Score : 2

---

7. SAARS, Tuberulosis, Chickenpox

   a) What is common between the diseases given in the box?
   b) Pick out the odd one. Justify.

Learning Outcome : Classifies diseases, causative organisms and mode of infection.
Time : 2 min, Score : 3

---

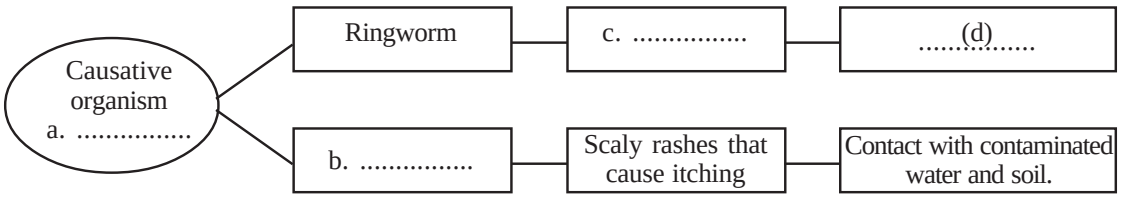
8. An interview with the doctor of the Primary Health Centre regarding tuberculosis, organised by the Health Club is given below. What is your explanation for the questions asked by the children?

   (a) Which bacteria causes this disease.
   (b) Write two symptoms of this disease.
   (c) Name the vaccine used to prevent tuberculosis.

Learning Outcome : Identifies and explains about tuberculosis. Time : 4 min
Score : 3

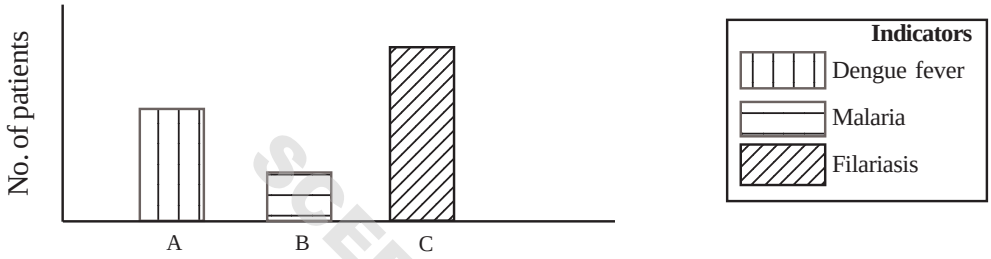
---

9. Complete the illustration.



Learning Outcome : Differentiates and explains various types of fungal diseases.
Time : 2 min, Score : 2

10. The result of a survey conducted by the Health Department on mosquito borne diseases is shown in the graph. Analyse the graph and answer the questions.



a. Which disease affects more number of people?

b. Write symptoms of the disease B.

c. Suggest suitable measures to prevent the spread of the diseases shown in the graph.

Learning Outcome : Acquires knowledge about the diseases caused by mosquito.
Time : 4 min, Score : 3

11. Make suitable pairs using the information given in the box.

Diabetes, Goitre, Life style, Haemophilia, Deficiency of nutrients, Genetic.

Learning Outcome : Identifies the diseases and classifies them suitably. Time : 3 min
Score : 3

12. Anjana gets wounded on her foot while playing with her friends. Due to continuous bleeding, her parents take her to the hospital. The doctor's diagnosis after thorough investigation, is given below.

"This has happened as the blood is not clotting. This is a genetic disease."

a. What is Anjana's disease?

b. How can temporary relief be brought about for the disease?

Learning Outcome : Explains genetic diseases with the help of suitable examples.
Time : 2 min
Score : 2

13. Change in the shape of RBC due to a genetic disease is shown in the figure.

a. Name the disease shown in the figure.
b. How does the deformity of RBC affect the body?

Learning Outcome : Identifies and classifies genetic diseases. Time : 3 min, Score : 3

---

14. Identify the given symptoms and tabulate them with the name of the disease as headings.
    a) The deformity in the sequencing of amino acids of haemoglobin due to the defect of genes.
    b) The defect in the production of protein for blood clotting.
    c) Excess loss of blood even through a minor wound.
    d) The oxygen carrying capacity of red blood cells decreases.

Learning Outcome : Explains genetic diseases through examples.
Time : 3 min, Score : 3

---

15. You are invited to prepare a presentation slide for the Cancer awareness class, conducted by the Health Club. What explanation will you give to the ideas given below?
    1) The disease cancer.
    2) Reasons for cancer.
    3) Treatment for cancer.

Learning Outcome : Understands more about the disease cancer.
Time : 3 min, Score : 3

---

16. An early diagnosis of the disease is crucial in the treatment of cancer. Why?

Learning Outcome : Understands and explains the disease cancer.
Time : 1 min, Score : 1

---

17. Choose the ones related to lifestyle diseases from those given below.
    a) Hereditary factors.
    b) Lack of excercise.
    c) Mental stress.
    d) Environmental factors.
    e) Change in food habits.
    f) Alcoholism, smoking.

Time : 2 min, Score : 2

---

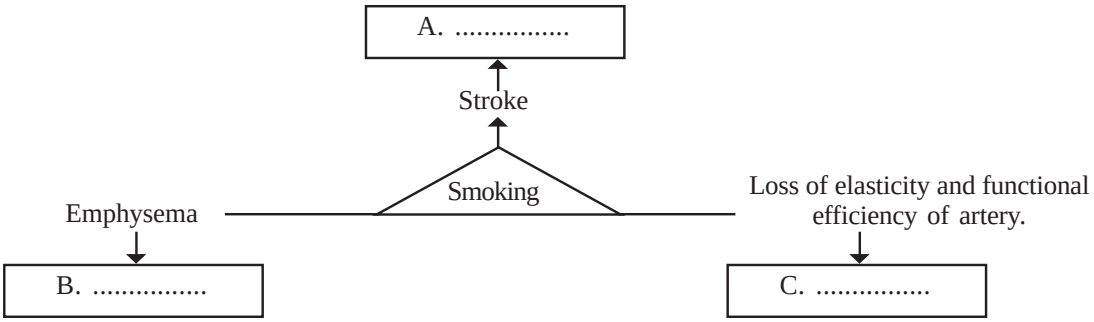
18. Arrange the indicators given in column B suitable to column A.

	Disease		Cause
A.	Stroke	i.	deficiency of insulin or its malfunctioning.
B.	Diabetes	ii.	deposition of excess fat in the liver.
C.	Fatty liver	iii.	blockage of blood flow in the brain.
		iv.	decrease in the diameter of the artery due to deposition of fat.

Learning Outcome : Identifies various lifestyle diseases. Time : 3 min, Score : 3

---

19. Some health issues due to smoking are given below. Name the affected organ.



Learning Outcome : Understands the health hazards due to smoking and formulates an attitude against smoking. Time : 3 min
Score : 3

---

20. Make a poster to provide awareness about the health issues due to smoking.

Learning Outcome : Understands the health issues due to smoking.
Time : 2 min, Score : 2

---

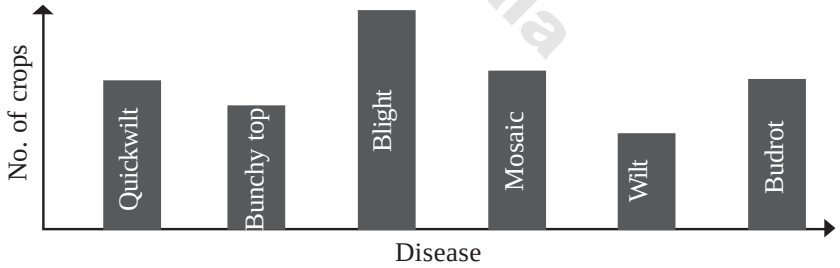
21. Classify the diseases given below into animal diseases and plant diseases.

Anthrax, Blight disease, Quick wilt, Foot and mouth disease, Inflammation of udder

Learning Outcome : Identifies and classifies animal diseases and plant diseases.
Time : 3 min, Score : 3

---

22. A study of the Agriculture Department on plant diseases in a panchayath is given below as a graph. Analyse this and answer the questions.



(a) Which is the mostly affected crop?
(b) Name the disease that affects pepper.
(c) What are the fungal diseases that affected the plants of that area?

Learning Outcome : Understands about plant diseases. Time : 3 min, Score : 3

---

23. Analyse the slogan given in the placard and answer the questions.

Healthy individuals are the wealth of a society.

(a) What is health?
(b) What should be our attitude to patients?

Learning Outcome :Develops empathy towards patients. Time : 3 min, Score : 2

---

24. Given below is a doubt raised by Asna when she notices that lungs are mentioned in an advertisement against smoking.

"Does smoking affect only the lungs?"

As a science student what explanation will you give for this question?

Learning Outcome : Analyses and explains the health issues due to smoking.

Time : 2 min, Score : 2

---

25. Nandu - Smoking causes cancer.

Mahesh - Smoking causes life style diseases.

Analyse the possibilities of these two statements and write your interpretation.

Learning Outcome : Interprets and explains the health issues due to smoking.

Time : 2 min, Score : 2

---

26. Choose the correct statement.

a) Malaria, Filariasis, Cholera etc. are spread by mosquitoes.

b) Anthrax & Rabies are transmitted from animal to man.

c) Tuberculosis, SARS and chickenpox spread through air.

d) Syphilis, Gonorrhoea and Botulism spread through sexual contact.

Learning Outcome : Forms an idea about the mode of transmission of various diseases.

Time : 2 min, Score : 1

---

27. Classify the diseases given in the box suitably.

a. Anthrax	b. AIDS	c Bud rot
d. Foot and mouth disease	e. Athlets foot	f. Tetanus

Bacteria	Virus	Fungus

Learning Outcome : Understands about animal and plant diseases and classifies them.

Time : 3 min, Score : 3

---

28. Analyse the diseases given below and arrange them suitably in the boxes provided.

a. Blight	b. Botulism	c Ebola
d. Inflammation of udder	e. Quick wilt	f. Foot and mouth disease

Plants	Animals	Man

Learning Outcome : Identifies and classifies diseases which affect plants, animals and human beings.

Time : 3 min, Score : 3

---

29. Classify the diseases given below based on the mode of transmission.

SAARS, Chickungunya, AIDS, Gonorroea, Malaria, Dengue, Syphilis, Chicken pox, Tuberculosis.

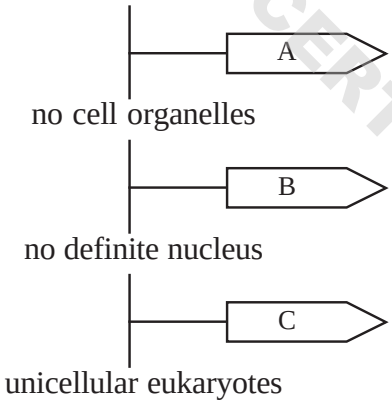
Learning Outcome : Identifies and classifies the mode of entry of various pathogens into our body. Time : 4 min, Score : 3

30. Arrange columns B and C suitably in relation with column A.

A	B	C
i. Blight disease	a. Virus	P. Pepper
ii. Quick wilt	b. Bacteria	Q. Paddy
iii. Bud rot	c. Fungus	R. Banana

Learning Outcome : Identifies and classifies plant diseases. Time : 3 min
Score : 3

31. A few characteristic features of micro organisms are given below. Analyse them and complete the illustration.



Indicators
i. Fungus
ii. Bacteria
iii. Virus
iv. Protozoa

Learning Outcome : Classifies different pathogens based on their characteristics.
Time : 2 min, Score : 3

32. Cause of all diseases are microorganisms. All microorganisms are pathogens.

Evaluate this statement and justify your answer giving suitable examples.

Learning Outcome : Explains and substantiates that all microorganisms are not pathogens by giving suitable examples.
Time : 2 min, Score : 2

Unit

5

Soldiers of Defense

1. Which among the following is the odd one? Why?

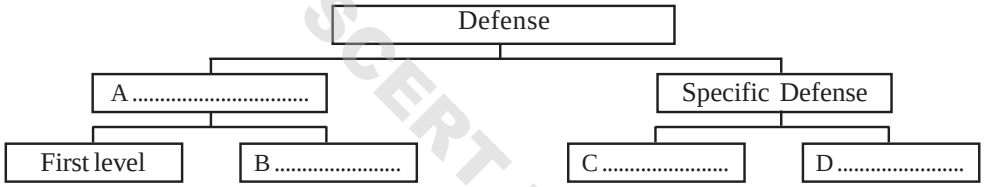
   Lymphocyte, Monocyte, Neutrophil, Basophil, Eosinophil

Learning Outcome: Understands the defense mechanism of the body

Time : 1 min, Score : 1

---

2. Fill up the blanks in the given illustration



Time : 1 min, Score : 2

---

3. Write down the correct ones among the following statements related to defense.
   a) Specific defense is the mechanism where monocytes engulf the pathogens.
   b) First level defense is the mechanism that prevents germs from entering the body.
   c) First level defense is a part of specific defense.
   d) Second level defense is the mechanism that destroys the germs that have entered the body.

Learning Outcome : Understands the defense mechanism of the body

Time : 2 min, Score : 2

---

4. Skin is the largest sense organ of the body. It helps us to sense heat, cold, touch, pressure etc and it acts as a soldier of defense of the body.
   a) Does the skin have significance in defense as mentioned above? Justify.

Learning Outcome: Analyses and explains the role of the skin in primary level defense.

Time : 3 min, Score : 3

---

5. A table indicating primary level defense is given below. Arrange column B based on column A.

A	B
i. Skin	a) Wax
ii. Trachea	b) Hydrochloric acid
iii. Ear	c) Sebum
iv. Stomach	d) Cilia

Learning Outcome : Understands primary level defense. Time : 2 min, Score : 2

6. Which among the following is the odd one and why?
   a) The Mucus of trachea destroys the pathogens.
   b) The wax in the ear destroys pathogens.
   c) Neutrophil destroys pathogens by engulfing them.
   c) Lysozyme present in Saliva destroys pathogens.

Learning Outcome : Classifies and presents different types of defense mechanisms.
Time : 1 min, Score : 1

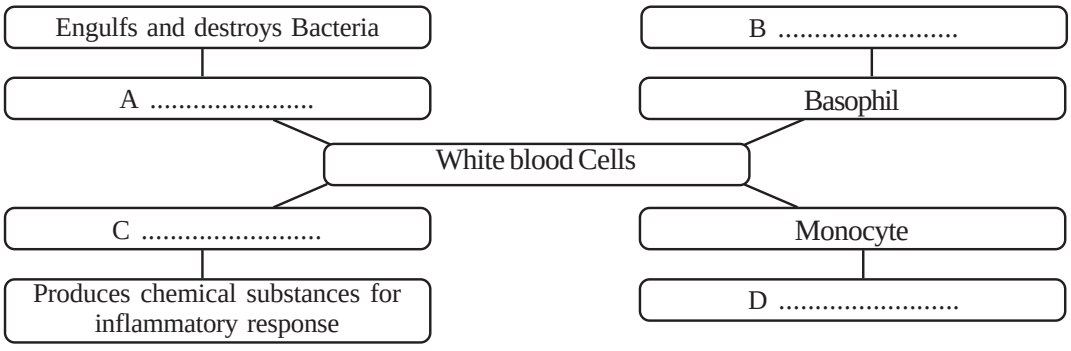
7. Nimisha's hand got injured in an accident. After some time the wound area got swollen.
   a) What is this type of activity known for?
   b) Is it a defense mechanism? Why?

Learning Outcome : Identifies and explains inflammatory response.
Time : 3 min, Score : 2

8. Using the following statements, prepare a flow chart of inflammatory response.
   (a) Production of chemical messages.
   (b) White blood cells destroy pathogens.
   (c) Blood vessels dilate.
   (d) Pathogens enter in to the wound.
   (e) White blood cells come out from blood vessels.
   (f) Blood flow increases.

Learning Outcome : Analyses and presents inflammatory response
Time : 3 min, Score : 3

9. The given illustration includes white blood cells which act as a part of non specific defense. Fill up the blanks and complete the wordweb.

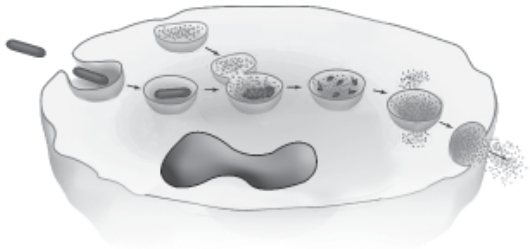


Learning Outcome : Gains knowledge about the white blood cells which act as part of non specific defense. Time : 2 min, Score : 2

10. When there is an injury or wound, the blood vessel of that part dilates.
    a. What is its benefit?
    b. Which white blood cell dilates the blood vessel?

Learning Outcome : Understands inflammatory response Time : 3 min, Score : 2

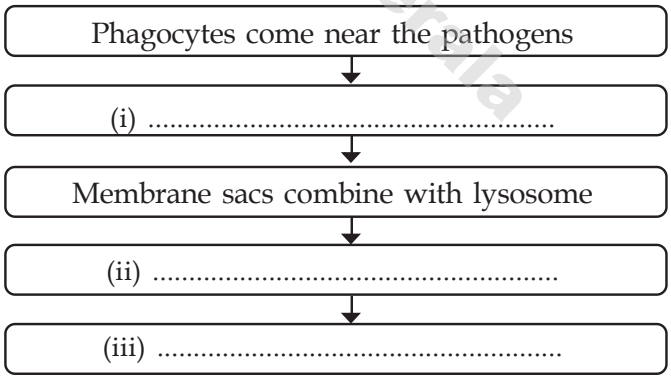
11. Observe the given illustration and answer the following questions



a) Which is the process indicated in the illustration?
b) Which are the white blood cells involved in the process?
c) Is it a specific defense mechanism? Justify

Learning Outcome : Analyses and explains the process of phagocytosis
Time : 3 min, Score : 3

12.The flow chart given below indicates a type of defense mechanism occuring in the body.



(a) Complete the flow chart
(b) Which process is it related to?

Learning Outcome : Analyses and explains the process of phagocytosis
Time : 2 min, Score : 2

13. Blood clotting is a defense mechanism. Analyse the statement.

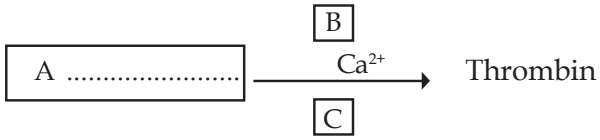
Learning Outcome : Analyses and explains blood clotting Time : 2 min, Score : 1

14. Prepare the flow chart of the clotting of blood using the following statements.
    (a) Thromboplastin converts prothrombin to thrombin.
    (b) Blood flows from the wound.
    (c) Blood clot is formed.
    (d) Thrombin converts fibrinogen to fibrin.
    (e) Tissues degenerate to form the enzyme called thromboplastin.
    (f) The red blood cells and platelets entangle in the fibrin network.

Learning Outcome : Analyses and explains blood clotting.

Time : 3 min, Score : 3

15.



    (a) Identify A
    (b) B is a vitamin and C is an enzyme. Name them.
    (c) How does the lack of B or C affect the consequent chemical process?

Learning Outcome : Analyses and explains the process of blood clotting.

Time : 2 min, Score : 3

---

16. Blood clot is formed by the entangling of red blood cells and platelets in the fibrin network.

    White blood cells are not involved in this process. What explanation will you give for this?

Learning Outcome : Analyses and explains the process of blood clotting.

Time : 2 min, Score : 2

---

17. One of the scars of the wound obtained by Binu while playing football remained even after 10 years.

    What explanation will you give for the scar remaining as such?

Learning Outcome : Explains the healing of wounds. Time : 1 min, Score : 1

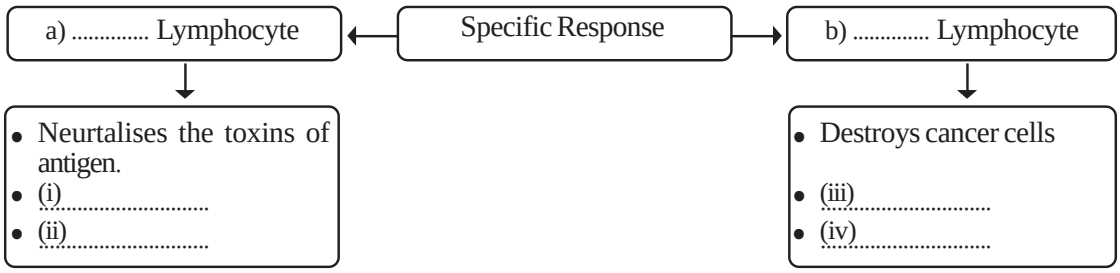
---

18. Fever is a defense mechanism. Is the statement correct? Justify your answer.

Learning Outcome : Understands fever as a defense mechnism. Time: 1 min, Score : 1

---

19. complete the illustration



Learning Outcomes : Acquires knowledge about specific defence mechanisms in the body. Time : 3 min, Score : 3

---

20. After attending a class on immunity, Arun raised a question to his teacher.
"Inspite of so many defense mechanisms in the body why are we still affected by diseases?
(a) What explanation will you give for Arun's doubt?

Learning Outcome : Identifies and explains the factors causing damage to our defense system
Time : 1 min, Score : 2

---

21. The use of some modern equipments are given below. Identify the equipments.
(a) To record electric waves in the brain.
(b) To record electric waves in the heart muscle
(c) To understand the structure of internal organs using ultrasonic sound waves.

Learning Outcomes: Know about equipments used for diagnosis.
Time : 3 min, Score : 3

---

22. The doctor prescribed antibiotics to Sunil who is affected with cholera, but not to Anil who is affected with chicken pox. What is the reason?

Learning Outcome : Identifies and explains antibiotics.
Time : 2 min, Score : 2

---

23. Enlist the demerits of antibiotics for Jose who is preparing for a seminar on the topic "The merits and demerits of Antibiotics."

Learning Outcome : Identifies the merits and demerits of antibiotics.
Time : 3 min, Score : 3

---

24. Ashiq who met with an accident, was in need of blood. Antigen A and D and Antibody b was identified in his blood.
(a) Name his blood group?
(b) Whose blood, among the following can be accepted by ashiq?
(i) Venu = A^+ (ii) Amal - AB^+ (iii) Suhara - AB^- (iv) Anoop - A^-

Learning Outcome: Explains blood transfusion. Time : 2 min, Score : 2

---

25. The table given below indicates blood groups.

Blood group	Antigen	Antibody
A	(i)	b
B	B	(ii)
(iii)	A, B	(iv) .....
.....(v).....	.....(vi).....	a, b

Learning Outcome : Understands about blood groups Time : 4 min, Score : 3

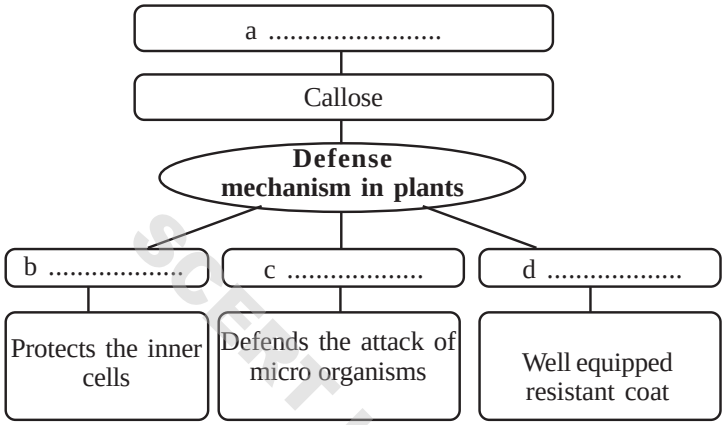
---

26. Box A includes the major components of vaccines and box B includes the diseases against which they are used. Match them appropriately.

A	B
Major components of vaccines	**Diseases that can be prevented**
i. Killed germs	a. Tetanus
ii. Cellular parts of pathogen	b. Typhoid
iii. Alive but neutralized pathogens	c. Hepatitis
iv. neutralized toxins	d. cholera

Learning Outcome : Learns about vaccines Time : 3 min, Score : 4

27.Ravi prepared an illustration showing defense mechanisms in plants. Complete it.



Learning Outcome : Identifies the ways and means of defense mechanisms in plants.
Time : 2 min, Score : 2

28. "This mode of treatment is a life style in tune with nature rather than a mere method of treatment" This is a statement regarding a well known mode of treatment.
    (a) Name the treatment.
    (b) Apart from this, name any two well known modes of treatment.

Learning Outcome : Understands different methods of treatment.
Time : 2 min, Score : 2

29. Given below are the symptoms of Anil's disease. Analyse them and answer the following questions.
    - Prolonged fever.
    - Decrease in the number of platelets.

    (a) Identify the disease of Anil.
    (b) Why is there a decrease in the number of platelets in this disease?
    (c) According to the opinion of one student the disease is a haemophilia. Evaluate the opinion and record your inference.

Learning Outcome : Compares dengue fever and haemophilia.
Time : 3 min, Score : 4

30. Prepare two suitable placards to conduct an awareness rally in association with World Blood Donation day.

Learning Outcome : Understands the importance of blood donation and participates in awareness activities Time : 2 min, Score : 2

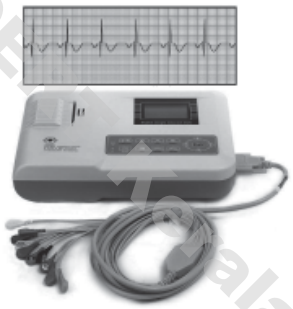
---

31. Match the following pairs

a)	T-lymphocyte	:	Thymus gland	(1)
	B - lymphocyte	:	.....	
b)	EEG	:	to record electric waves in brain	(1)
	.....	:	to record electric waves in heart muscles	
c)	First Antibiotic	:	Alexander Flemming	(1)
	First vaccine	:	.....	
d)	Heart beat	:	Stethescope	(1)
	Blood pressure	:	.....	
e)	Antigen	:	Red blood cells	(1)
	Antibody	:	.....	

---

32. Given below is an equipment used for disease diagnosis .



(a) Identify the equipment

(b) What is its use?

(c) Name another equipment that works on the same principle.

Learning Outcome : Understands the equipments used for disease diagnosis Time : 2 min, Score : 3

---

33. It is possible to build up a healthy society with hospitals, doctors and medicines". This is Bashir's opinion. Evaluate it.

Learning Outcome : Understands about building a healthy society Time : 2 min, Score : 2

---

34. It is not necessary to detect blood groups if we can accept blood from anyone"

This was an argument put forward by Sivaprasad in a discussion on blood transfusion.

(a) What is the base of blood group determination?

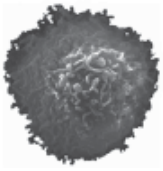
(b) Can a person receive any blood from anyone ? Why?

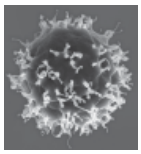
Learning Outcome : Identifies and explains the importance of blood group determination Time : 3 min, Score : 3

---

35. Given below is the picture of white blood cells which are parts of specific defense?

A **B**





(a) Identify A and B

(b) What is the role of A in specific defense?

(c) Give any one difference between A and B

Learning Outcome : Identifies different types of lymphocytes and their function .

Time : 3 min, Score : 4

---

36. Analyse the following statement and answer the following questions.

When there is a wound, the body temperature rises.

(a) What is the significance of white blood cells in this activity?

(b) How does immunity become possible through a rise in temperature?

Learning Outcome : Identifies and explains that rise in body temperature is an immune response.

Time : 3 min, Score : 3

Unit 6

Unravelling Genetic Mysteries

1. Find the word pair relationship and fill in the blanks appropriately.
   a) DNA : Thymine
      RNA : .....
   b) Adenine : Thymine
      Guanine : .....
   c) The character which is expressed : dominant
      The character which remains hidden : .....

Time : 3 min
Score : 3

---

2. Given below are certain indicators exhibited by Anu in her slide presentation while conducting seminar on the topic "Emergence of Genetics". What explanations would you give for these indicators?
   a) Heredity
   b) Variation
   c) Genetics
   d) The father of Genetics

Learning Outcome : Identifies how heredity, variation and genetics are related.

Time : 4 min
Score : 4

---

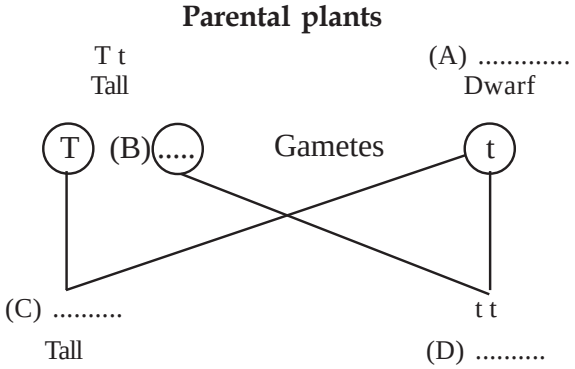
3. The note prepared by Shahana on Mendel's inferences during the classroom analysis of Mendel's hybridization experiment in pea plants, based on a single trait is given below. Analyse the statements in the note and correct those that are wrong ones.
   a) A trait is controlled by a specific factor.
   b) A character is expressed and the other remains hidden in the first generation.
   c) The character that remains hidden in the first generation does not appear in the second generation.
   d) The ratio of characters in the second generation is 3 : 1.

Learning Outcome : Attains knowledge about Mendel's inferences that paved the way to Genetics.

Time : 2 min
Score : 2

---

4. Fill in the blanks in the illustration given below.



Indicators

Dominant character - Tall

Recessive character - Dwarf

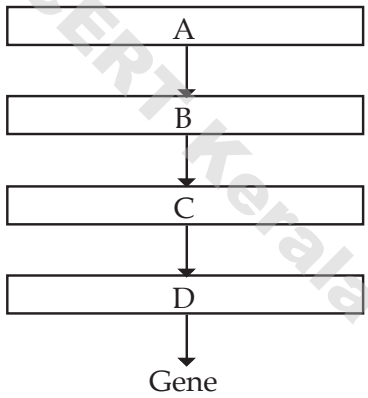
Learning Outcome : Gains the ability to illustrate hybridization experiments.

Time : 2 min,
Score : 2

---

5. Complete the flowchart illustrating the location of gene by using the information given in the box:

nucleus, gene, DNA, cell, chromosome



Learning Outcome : Acquires knowledge about the location of gene in the body.

Time : 2 min, Score : 2

---

6. Analyse the article and answer the questions.

The experiments performed by Gregor John Mendel in pea plants led to the emergence of a new branch of science that has today grown and expanded to a great extent. This branch of science has unravelled several mysteries regarding the similarities and variations found in the characters of organisms.

a) Which branch of science does the article refer to?

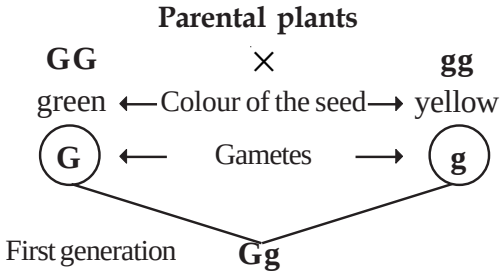
b) List out any 4 traits selected by Mendel for performing hybridization in pea plants.

Learning Outcome : Acquires knowledge about Genetics and explains about the hybridization experiments in pea plants. Time : 3 min

Score : 2

---

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



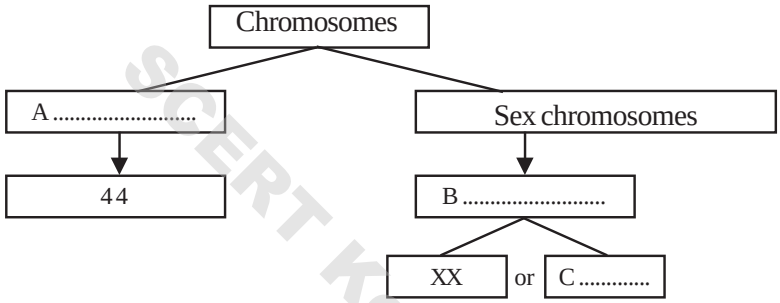
a) Identify the dominant character.
b) How does the parental plant with green coloured seed and the plant in the first generation differ in their alleles.
c) Describe alleles.

Learning Outcome : Identifies Mendel's experiments and describes alleles.

Time : 3 min, Score : 3

---

8. Fill in the blanks in the illustration related to chromosomes in man.



Learning Outcome : Identifies the different types of chromosomes in man.

Time : 2 min, Score : 2

---

9. Identify the word pair relationship and fill in the blanks:

Female : 44 + XX

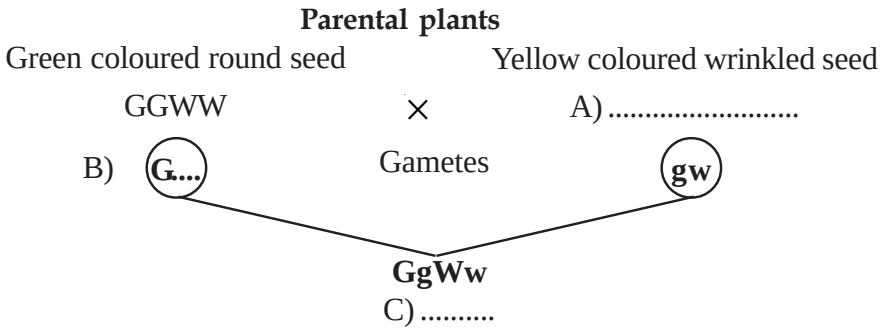
Male : .....

Learning Outcome : Identifies the sex chromosomes in male and female.

Time : 1 min, Score : 1

---

10. Fill in the blanks in the illustration.



Learning Outcome : Attains knowledge about Mendel's hybridization experiment.

Time : 3 min, Score : 3

---

11. The indicators given below are about the plant in the first generation formed as a result of the hybridization between a tall plant with red flowers and a dwarf plant with white flowers.

Tt Rr

Indicators
Dominant character - Tallness, red colour of flower.
Recessive character - Dwarfness, white colour of flower.

(a) Identify the alleles in the plant related to the trait 'tallness'.
(b) Identify the gametes formed from this plant.

Learning Outcome : Attains knowledge about Mendel's hybridization experiments.
Time : 3 min, Score : 3

---

12. Complete the illustration of the second generation obtained from the hybridization in which two traits of a plant are considered.

Indicators
Dominant character - Tallness, red colour of flower.
Recessive character - Dwarfness, white colour of flowers.

	TR	Tr	tR	tr
TR	TTRR	..... A	TtRR	..... B
Tr	 C	TTrr	..... D	Ttrr
tR	TtRR	..... E	.....F	..... G
tr	..... H	Ttrr	ttRr	ttrr

Learning Outcome : Analyses and illustrates Mendel's hybridization experiment.
Time : 4 min, Score : 4

13.

Tt Rr
Tall
Red flower

Indicators
Dominant character - Tallness, red colour of flower.
Recessive character - Dwarfness, white colour of flowers.

Given below are some of the offspring obtained by self pollinating the above plant. Analyse the offspring and answer the questions.

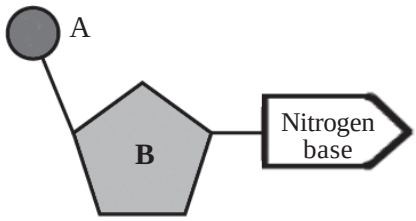
a) ttRr b) ttRR c) TTrr d) ttrr

i. Identify the dominant characters in each of the offspring?
ii. What explanation would you give for the expression of characters in the offspring which were hidden in the parrental plant?

Learning Outcome : Analyses Mendel's hybridization experiment and explains the Laws of inheritance. Time : 3 min, Score : 3

---

14. Analyse the illustration of a nucleotide molecule and answer the questions.



(a) Identify A and B in the illustration.
(b) "Nucleotides are found in DNA alone". What is your opinion regarding this statement? Substantiate.

Learning Outcome : Identifies and explains the structure of nucleotides, DNA and RNA. Time : 2 min, Score : 3

---

15. The components and features of nucleic acid are given below. Analyse them and complete the table.

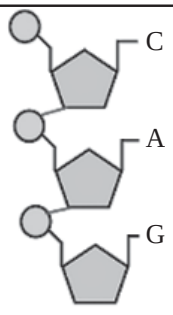
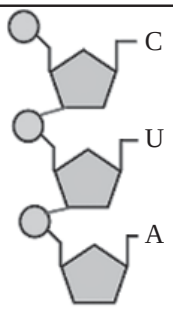
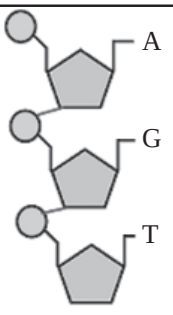
a) ribose sugar
b) double helical shape
c) uracil
d) one strand
e) deoxyribose sugar
f) thymine

DNA	RNA
•	•
•	•
•	•

Learning Outcome : Compares and lists out the differences between DNA and RNA. Time : 3 min, Score : 3

---

16. Observe the nucleotide strands given below and answer the questions.

A	B	C
		

a) Identify the strand that is found in DNA only.
b) Identify the strand that can be found in both DNA and RNA.
c) What is a nucleotide?

Learning Outcome : Identifies the differences in the arrangement of nitrogen bases in DNA and RNA. Time : 3 min, Score : 2

---

17. Genes which are the specific units of DNA control the metabolic activities and are also responsible for specific characters. They control the process of protein synthesis.

    Binu has a doubt on the above note.

    "Does the RNA have no role in protein synthesis?"

    What explanation would you give to Binu's doubt? Substrantiate.

Learning Outcome : Identifies and explains how genes function.

Time : 3 min, Score : 3

---

18. The stages in the process of protein synthesis are given below. Prepare a flowchart using the stages.

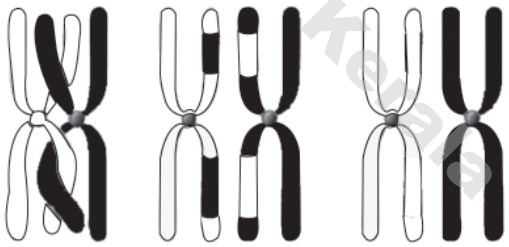
    a) tRNA carries different kinds of aminoacids to the ribosome.
    b) mRNA reaches outside the nucleus.
    c) mRNA forms from DNA
    d) Aminoacids are added based on the information in mRNA.
    e) mRNA reaches ribosome.
    f) Proteins are synthesized.

Learning Outcome : Identifies and arranges the various stages in protein synthesis.

Time : 3 min, Score : 3

---

19. The process of crossing over of chromosomes that takes place in the initial phase of meiosis is illustrated below. Analyse it and answer the questions.



A B C

    a) Arrange the stages appropriately.
    b) This process brings about variations in offspring. How?

Learning Outcome : Identifies and explains the reasons for variations in organisms.

Time : 3 min, Score : 3

---

20. A part of the article. 'Variations in ourself' is given below:

    The features seen in offspring that are different from their parents are called variations. Certain processes taking place in the initial phase of meiosis are responsible for such variations.

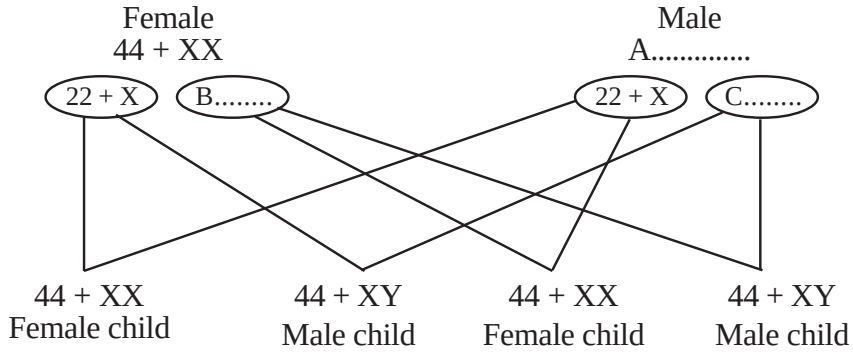
    a) Which process, as mentioned in the article, is responsible for variations?
    b) How does this process bring about variations?

Learning Outcome : Identifies and explains the reasons for variations in organisms.

Time : 3 min, Score : 2

---

21. Given below is an illustration regarding sex determination. Observe the illustration and answer the questions.



(a) Complete A, B, C in the illustration.

(b) What is the possibility of the formation of a male child or a female child? Explain.

Learning Outcome : Illustrates and explains how sex is determined in humans.
Time : 2 min, Score : 3

---

22. The practice of blaming those mothers who give birth to girl children exists even today.

(a) As a science student, how will you respond to this situation? Substantiate.

Learning Outcome : Utilizes the knowledge about sex determination in humans in life situations. Time : 2 min
Score : 2

---

23. The chromosomes from the father determine whether the child is male or female.

Evaluate this statement on a scientific basis.

Learning Outcome : Identifies the role of sex chromosomes of male in the sex determination in humans. Time : 2 min
Score : 2

---

24. Given below is a placard exhibited in a school rally organised 'Against Racism'.

It is not racial difference that makes the skin colour different;
This is an adaptation to live under the sun.

(a) How will you explain the difference in skin colour of people living in different parts of the world?

(b) What attitude should be adopted by a scientifically enlightened society towards the idea in the placard? Substantiate.

Learning Outcome : Identifies that the difference in humans is only cultural and that genetically all humans belong to one race. Time : 4 min
Score : 3

---

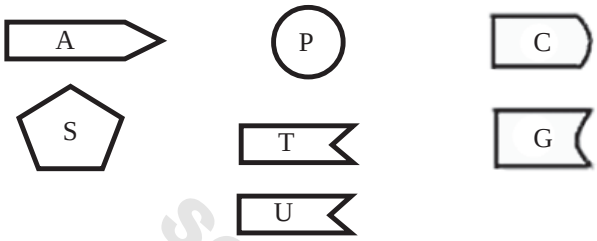
25. Vipin wrote the following as situations that create variations in organisms. Choose the right ones.

a) Mutation
b) Formation of mRNA
c) Crossing over of chromosomes
d) Action of tRNA

Learning Outcome : Identifies the reasons for variations in organisms. Time : 2 min
Score : 3

---

26. The components of nucleic acids are given below. Answer the questions through illustrations using these componenets:



a) Illustrate the nucleotide which is found only in RNA.
b) Illustrate the nucleotide which is found only in DNA.

Learning Outcome : Compares the structure of DNA and RNA and illustrates.
Time : 2 min
Score : 3

---

27. Analyse the nitrogen bases given below and write the nitrogen base pairs found in DNA.

Thymine	Guanine	Uracil	Adenine	Cytosine

Learning Outcome : Identifies the structure of DNA. Time : 2 min
Score : 2

---

28. 'Gene itself is allele; allele itself is gene.'

Learning Outcome : Differentiates and explains gene and allele. Time : 2 min
Score : 3

Unit 7

Genetics for the Future

1. Analyse the word pair relationship and fill in the blanks:
   a) Restriction endonuclease : genetic scissors
      ..... : genetic glue
   b) DNA profiling : Tests the arrangement of nucleotides
      ..... : Identifies the location of a gene in the DNA.

Time : 2 min, Score : 2

---

2. Choose the right statements from those given below:
   i) Gene mapping is a technology that identifies the location of a gene in the DNA.
   ii) The sum of genetic material present in an organism is called its DNA.
   iii) Enzyme Ligase is used to join the genes.
   iv) Gene therapy is the technology that tests the arrangement of nucleotides.

Learning Outcome : Identifies Genome, Gene therapy and Genetic engineering.

Time : 2 min, Score : 1

---

3. 'Pharm animals' is one of the promises of genetic engineering.
   What is the significance of this concept?

Learning Outcome : Explains the merits of genetic engineering.

Time : 4 min, Score : 3

---

4. Observe the logo given below. What does it indicate?

Learning Outcome : Acquires knowledge about the Human Genome Project.

Time : 1 min, Score : 1

---

5. "Gene therapy becomes the remedy for genetic diseases."

This is a note in Sethu's science diary.

Do you agree to this note? Justify your opinion.

Learning Outcome : Explain the gene therapy and its possibilities. Time : 2 min
Score : 2

---

6. Suma murder case - trace of hair obtained from the site of incidence enabled to identify killer.

a) Read the above news. Name the technology that helped to find the killer?
b) Cite two other uses of this technology.

Learning Outcome : Explains DNA finger printing and elaborates its uses.
Time : 2 min, Score : 2

---

7. "Insulin producing bacteria created" - news report

Santosh raises the following doubts about the news. What explanations would you give as a student of Genetics?

a) Which is the technology that helped to create insulin producing bacteria?
b) Will the next generation of this bacteria be able to produce insulin? Give reason.

Learning Outcome : Presents with evidences that organisms with desirable qualities can be produced through genetic engineering.
Time : 3 min, Score : 2

---

8. Given below are the various steps involved in the production of insulin through genetic engineering. Arrange them appropriately.

(a) Producing active insulin from this.
(b) Cutting the gene responsible for the production of insulin from human DNA.
(c) Bacteria produce inactive form of insulin.
(d) Isolating bacterial DNA.
(e) Joining the gene with bacterial DNA and inserting it in to the bacterial cell.
f) Providing a favourable medium for the multiplication of bacteria.

Learning Outcome : Presents with evidences that organisms with desirable qualities can be produced through genetic engineering.
Time : 2 min, Score : 3

---

9. A debate has been organised in the topic.

'Genetic Engineering - scope and challenges.'

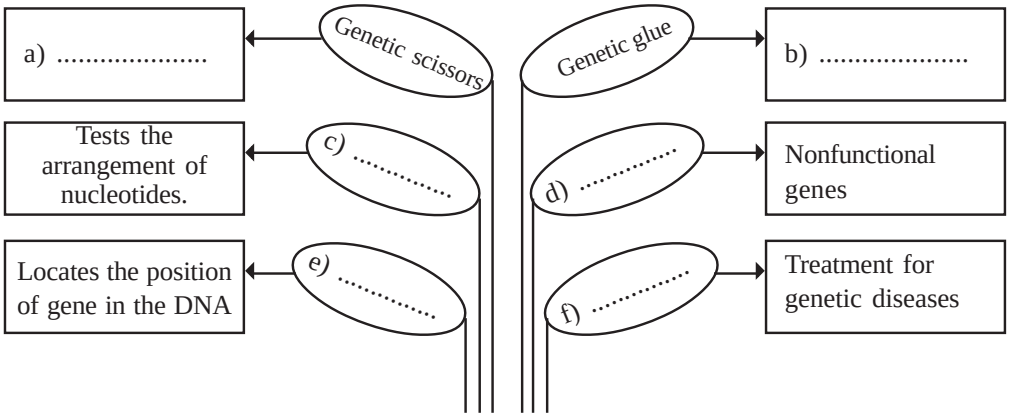
List out 3 scopes encountered in the field of Genetic Engineering for Anoop and 3 challenges for Safa respectiely.

Learning Outcome : Evaluates the scope and challenges encountered in the field of Genetic Engineering.
Time : 3 min, Score : 3

---

10. Given below is a word tree prepared by Appu for classroom presentation. Help him to complete the tree by choosing the words given in the box:

Junk genes, Ligase,, Gene therapy, DNA profiling, Restriction endonuclease, Gene mapping, Plasmid, Genetic engineering.



Learning Outcome : Attains knowledge about the scope of genetic engineering.

Time : 3 min, Score : 2

11. Observe the table and form matching pairs.

(a) DNA Profiling	(i) Treatment for genetic diseases.
(b) Gene mapping	(ii) Testing the arrangement of nucleotides
(c) Gene therapy	(iii) The sum of genetic material present in an organism.
(d) Genome	(iv) Locating the position of a gene in the DNA

Learning Outcome : Attains knowledge about the concept of genetic engineering.

Time : 2 min, Score : 2

12. **DNA testing - Dead bodies identified.**

Kollam : About twenty dead bodies of those who lost their lives in the Paravoor firework tragedy were identified through DNA test and handed over to relatives.

Didn't you read the newsreport?

(a) What is the basis of DNA test?

(b) How is it possible to identify relations through DNA test?

Learning Outcome : Decribes DNA finger printing and elaborates its use.

Time : 3 min, Score : 2

13. Identify the odd one and write the common feature of others:

DNA profiling, Electrocardiogram, gene mapping, gene therapy.

Time : 1 min, Score : 1

Unit 8

The Paths Traversed by Life

1. Identify the odd one from those given below, and write the feature common to others:
   (a) monkey, gibbon, orangutan, gorilla.
   (b) acquired characters, over production, struggle for existence, favourable variations.

Time : 2 min, Score : 2

---

2. Analyse the word pair relationship and fill in the blanks:
   (a) Monkey : Cercopithecoidea
   Chimpanzee : .....
   (b) Theory of Natural Selection : Charles Darwin
   Mutation theory : .....

Time : 2 min, Score : 2

---

3. The stages related to the origin of life are given below. Analyse and arrange them correctly.
   (a) organic compounds
   (b) prokaryotic cells
   (c) chemical evolution
   (d) eukaryotic cells
   (e) multicellular organism
   (f) colonies of eukaryotic cells.

Learning Outcome : Identifies the evolution of eukaryotes and multicellular organisms from primitive cells. Time : 3 min, Score : 3

---

4. Match the following :

a) Lamarck	(i) Natural selection
b) Darwin	(ii) Chemical evolution
c) Oparin	(iii) Acquired characters

Learning Outcome : Acquires knowledge about the scientists and their theories related to the origin of life and evolution. Time : 2 min, Score : 3

---

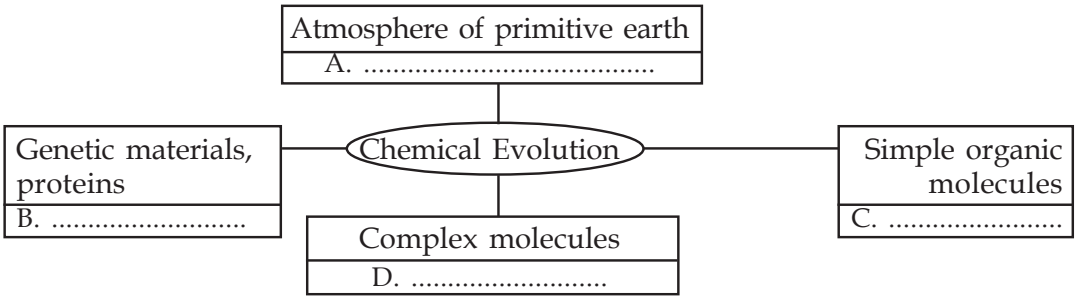
5. Identify the statements that are related to chemical evolution:
   i) Life originated in some other planets in the universe and accidentally reached the earth.
   ii) Life originated as a result of the changes that occured in the chemical substances in water, under specific conditions of primitive earth.
   iii) The theory is supported by the organic substances found in the meteors that fell on earth.
   iv) A.I.Oparin and J.B.S. Haldane are the proponents of the theory.

Learning Outcome : Acquires knowledge about chemical evolution.

Time : 1 min, Score : 1

6. An illustration related to chemical evolution is given below. Complete the illustration using the information given in the box.

(i) RNA, DNA
(ii) Polysaccharides, peptides, fats
(iii) Presence of H_2, N_2, CO_2
(iv) Monosaccharides, aminoacids



Learning Outcome : Illustrates and explains the origin of the first life form on earth.

Time : 2 min, Score : 2

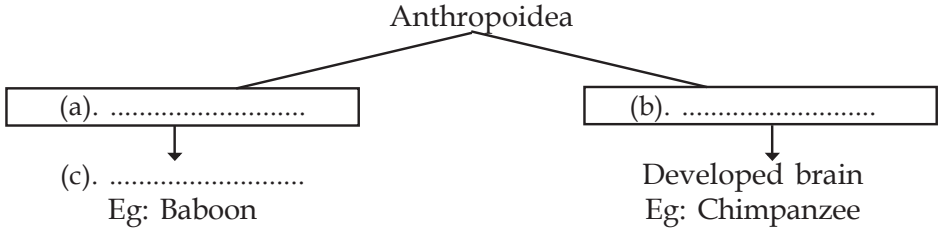
7. Tabulate the data appropriately in the box given below:
   i) Chemical evolution
   ii) Natural selection
   iii) Panspermia theory
   iv) Mutation theory

Origin of life	**Evolution**
•	•
•	•

Learning Outcome : Identifies the theories related to the origin of life and evolution.

Time : 2 min, Score : 2

8. Complete the illustration related to the evolution of human beings appropriately.



Learning Outcome : Identifies the various links related to the evolution of man.

Time : 2 min, Score : 3

9. Complete the table using the data given in the box:

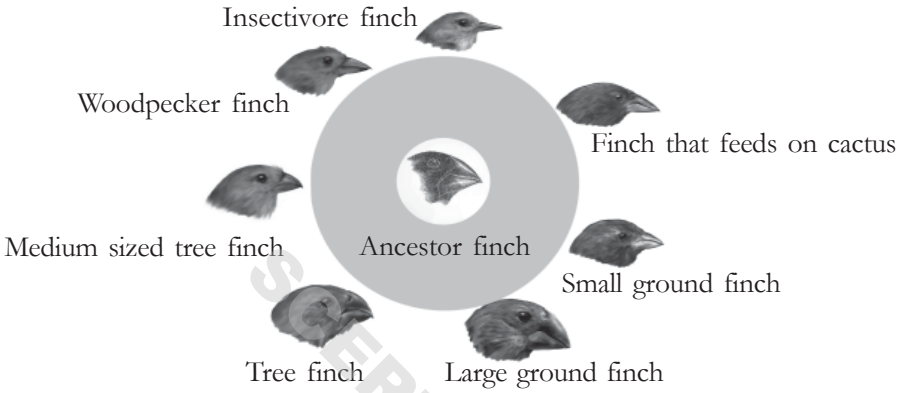
Most primitive members of the human race, cranial capacity is 460cm^3, made weapons from stones and bone pieces, cranial capacity is 1000cm^3, thick chin and large teeth, cranial capacity is 1700cm^3, slender body, cranial capacity 610cm^3, cranial capacity 325cm^3, contemporary of modern man.

Organism	Cranial capacity	Characteristic
Homo erectus		
Homo habilis		
Australopithecus		
Ardipithecus		

Learning Outcome : Identifies and lists out the ancestors of man and their respective features.

Time : 4 min, Score : 4

10. Given below is an illustration of the differences observed by Darwin in the beaks of the finches in the Galapagos island.



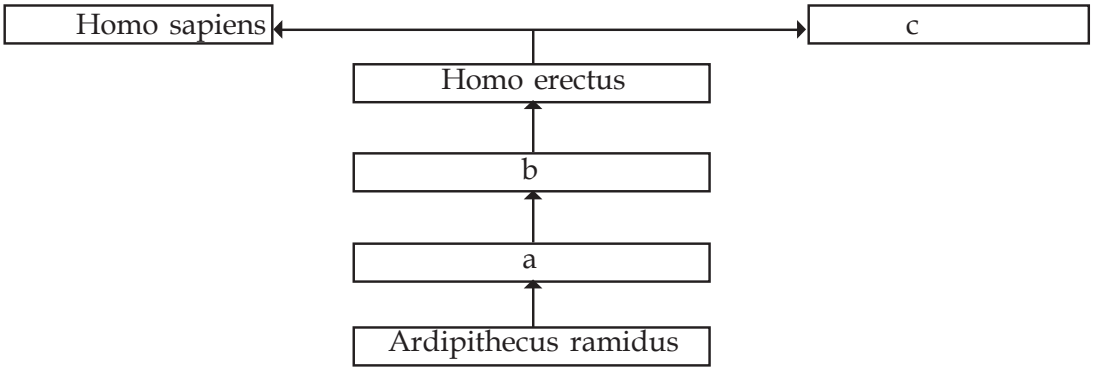
Finches with different beaks emerged from the ancestor finch. Substantiate the statement.

Learning Outcome : Analyses and explains the theory of natural selection.

Time : 2 min, Score : 4

11. The links in the evolutionary history of modern man are given in the box. Complete the illustration choosing the appropriate ones from the box.

Ardipithecus ramidus, Homo neanderthalensis, Homo habilis, Homo erectus, Homo sapiens, Australopithecus afarensis.



Learning Outcome : Illustrates the evolutionary tree.

Time : 2 min, Score : 3

12. "The constant use of antibiotics develops resistance in bacteria"
Substantiate the above statement on the basis of the theory of natural selection.

Learning Outcome : Analyses and explains the theory of natural selection

Time : 2 min, Score : 2

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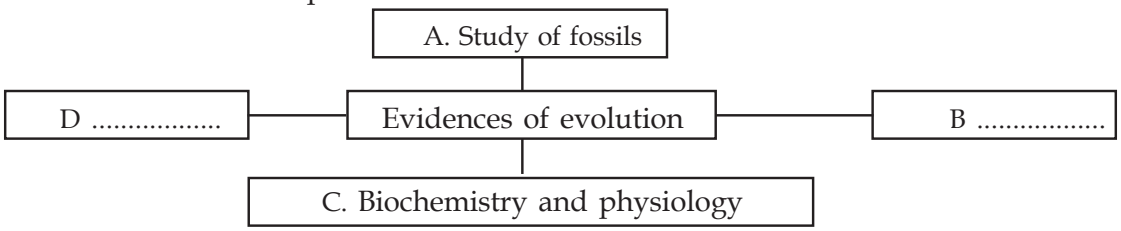
13. Complete the illustration given below, related to the evidences that support the evolution of new species.



Learning Outcome : Attains knowledge about the evidences of evolution.

Time : 2 min, Score : 2

---

14. Scientific study of the remnants, body parts, and imprints of primitive organisms are evidences on evolution.
(a) What inferences do we arrive at, through such scientific studies?
(b) How will you explain these inferences as evidences on evolution?

Learning Outcome : Analyses and explains how fossil studies provide evidence on evolution. Time : 4 min, Score : 3

---

15. The forelimbs of the organisms shown in the picture below, do not show any similarity. Hence they do not have any evolutionary relationship.

How will you respond to this statement? Substantiate.

Learning Outcome : Analysis and explains how comparative morphological studies provide evidences on evolution. Time : 2 min, Score : 2

---

16. Arrange the following links in human evolution in the ascending order of their cranial capacity.

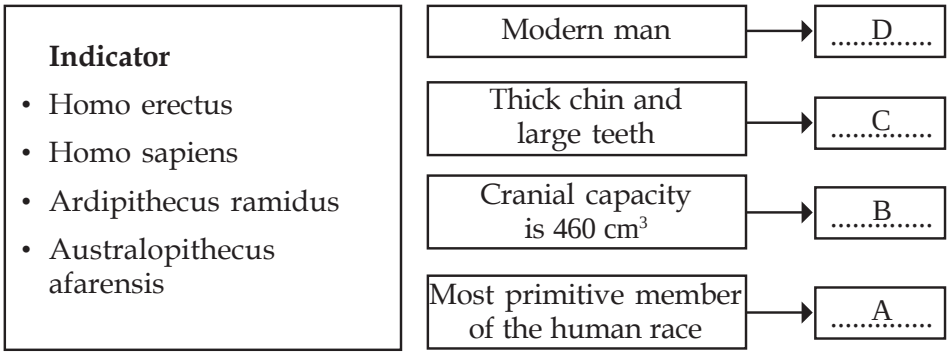
Homo sapians, Ardipithecus, Homo erectus, Homo habilis

Learning Outcome : Attains knowledge about the various links in human evolution.

Time : 2 min, Score : 2

---

17. Arrange the links in human evolution appropriately:



Learning Outcome : Attains knowledge about the various links in human evolution.

Time : 2 min, Score : 2

---

18. There is a common ancestor for all the different species that exist today.

Explain how Biochemical and Physiological studies substantiate the above statement?

Learning Outcome : Identifies and explains the evidences that support evolutions

Time : 3 min, Score : 3

---

19. The table given below shows the difference in aminoacids obtained from a comparative study of the β chain of haemoglobin of different organisms. Analyse the table and answer the questions:

Organism	Difference from the aminoacids in the β chain of haemoglobin in man.
Chimpanzee	0
Gorilla	1
Rat	31

(a) Which organism is more closely related to man on the basis of evolution? Substantiate your observation.

(b) Explain the reason for the difference in aminoacids of haemoglobin of the organisms listed in the table on biochemical basis.

Learning Outcome : Analyses and explains how Molecular Biology provides evidences to validate evolution. Time : 4 min, Score : 3

---

20. An excerpt from the article "Darwin's view of evolution" is given below:

Variations often occur in organisms. New species arise, when these variations are subjected to natural selection. But Darwin could not explain the reason for these variations.

(a) Explain the reason for variations on the basis of Genetics.

(b) How was Darwinism revised later?

Learning Outcome : Analyses and explains the theory of natural selection and Neodarwinism. Time : 4 min, Score : 3

---

21. A few concepts of scientists like Darwin and Malthus are given below. Classify them in the table given below.
    a. Selection by nature leads to the diversity of species.
    b. Rate of food production does not increase proportionately to the increase in population.
    c. Those organisms that overcome the unfavourable situations will survive.
    d. Scarcity of food and starvation leads to struggle for existence.

Concepts of Darwin	Concepts of Malthus

Learning Outcome : Compares the concepts of Darwin and Malthus. Time : 2 min
Score : 2

22. An excerpt from the science article 'Man and Evolution' is given below. Analyse the excerpt and answer the questions.

    Certain evolutionary features make man different from other animals included in evolutionary history. This helped him in his dominance over nature and other organisms. His interferences had created a negative impact on the existence of other organisms.

    (a) What are the features that make man different from other animals?
    (b) Has man's interference led to Biodiversity deterioration as mentioned in the excerpt? Evaluate.

Learning Outcome : Evaluates the interference of human beings. Time : 2 min
Score : 4

Part - B

Scoring Indicators

Unit - 1

Sensations and Responses

Scoring Indicators

Que. No.	Scoring Indicators	Split Score	Total
1.	A. Receptor B. Sensory neuron C. Interneuron D. Motor neuron	½ x 4	2
2.	i. Sympathetic system ii. Peristalsis in the intestine slows down Pupil dilates	1 ½ ½	2
3.	Urinary bladder contracts Production of saliva increases	½ x 2	1
4.	a. Cerebrospinal fluid b. Provides nutrients and oxygen to brain tissues, protects the brain from injuries (Any two)	1 ½ ½	2
5.	**Sympathetic System** / **Parasympathetic System** a) Pupil dilates / c) Converts glucose to Glycogen d) Peristalsis slows down / b) Production of hormone decreases	1 ½ x 4 = 2	3
6	Don't agree • It is the junction - between two neurons • between a neuron and a muscle cell • between a neuron and a glandular cell	½ ½ x 3	2
7.	a. Pupil constricts b. Pupil dilates c. Heart beat becomes normal d. Heart beat increases	½ x 4 = 2	2
8.	A. Cranial nerves B. 31 pairs C. Autonomous nervous system D. Sympathetic system	½ x 4 = 2	2
9.	• Sensory impulses reach the spinal cord through the dorsal root. • Motor impulses go out of the spinal cord to diferent parts of the body through ventral root.	1 1	2
10	• All reflex actions are not under the control of the spinal cord. • Cerebral reflex/some reflex actions are under the control of the cerebrum. Eg. We blink our eyes when light suddenly falls on eyes/any cerebral reflex.	½ 1 ½	2

11.	i) X - Alzheimer's Y - Parkinsons ii) Dopamine	½ x 2 =1 1	 2
12.	A. Dendron B. Cell body C. Axon D. Axonite E. Synaptic knob F. Neuro transmitter	½ x 6 = 3	3
13.	a) A - Myelin sheath B - Schwann cell b) • accelerates impulses • act as an electric insulator • provides nutrients and oxygen to axon (Any two)	1 x 2 ½ x 2	3
14.	a) Sensory nerve b) Mixed nerve	1 1	2
15	• Agrees partially • Sympathetic system enables body to overcome emergency situations. • Sympathetic system slows down certrain body activities. • Eg. Production of saliva decreases/slows down peristalsis/ slows down gastric activities. (Any one example)	½ ½ 1 1	3
16.	a) Synapse b) Neutrotransmitters, Acetyl choline/Dopamine	1 1 x 2	3
17.	a. When stimulated, ionic equilibrium in the particular part changes, and the outer surface of the plasma membrane of axon becomes negatively charged while the inner surface becomes positively charged. b. • These changes generate impulses. • The momentary charge difference in the axon stimulates its adjacent parts. • Similar changes occur there also. • Impulses get transmitted through axon.	1 1 ½ x 4	4
18.	A. Central canal B. Sensory impulses C.Ventral root	1 ½ ½	2
19.	a) A - Azheimer's B - Parkinsons b. • Accumulation of an insoluble protein in the neural tissues of the brain. • Neurons get destroyed.	1 x 2 ½ x 2	3
20.	a) Cerebrum b. • Skull • Meninges • Cerebrospinal fluid	½ ½ x 3	2

<table>
<tr><td>21.</td><td>a) A - Central canal
b) • Dorsal root - sensory impulses
• Ventral root - motor impulses</td><td>1
½
½</td><td>2</td></tr>
<tr><td>22.</td><td>a) The difference in the distribution of ions.
b) • When stimulated, in that particular part, the outer surface of the plasma membrane becomes negatively charged while the inner surface becomes positively charged.
• The momentary charge difference stimulates its adjacent parts and similar changes occur there also. Thus impulses get transmitted through axon.</td><td>1
2</td><td>3</td></tr>
<tr><td>23.</td><td>For copying the diagram
a) Synaptic knob
b) Dendrite
c) Axon</td><td>1
1 x 3</td><td>4</td></tr>
<tr><td>24.</td><td>For copying the diagram
a) Hypothalamus
b) Thalamus
c) Cerebellum</td><td>1
1 x 3</td><td>4</td></tr>
<tr><td>25.</td><td><table><tr><th>Part</th><th>Location</th><th>Function</th></tr><tr><td>Thalamus</td><td>Situated below the cerebrum</td><td>relay station of impulses</td></tr><tr><td>Cerebellum</td><td>behind the cerebrum</td><td>maintains equilibrium of the body</td></tr><tr><td>Medulla oblongata</td><td>seen as a rod shaped structure near the cerebellum</td><td>controls involuntary actions</td></tr></table></td><td>½ x 8</td><td>4</td></tr>
<tr><td>26.</td><td>i) Motor nerve
ii) Vertebral column
iii) Medulla oblongata
iv) Axon</td><td>1 x 4 = 4</td><td>4</td></tr>
<tr><td>27.</td><td>Correct statements
(i), (iv)</td><td>½ x 2</td><td>1</td></tr>
<tr><td>28.</td><td>a) reflex action
b) A - Sensory nerve
B - Motor nerve
C - Inter neuron</td><td>½
½ x 3</td><td>2</td></tr>
<tr><td>29.</td><td>a) hunger - others are external stimuli
b) gland - others are parts of nervous system
c) breathing - others are controlled by cerebrum</td><td>1 x 3</td><td>3</td></tr>
<tr><td>30.</td><td>a) Ramu’s opinion
b) • the part where myelinated neurons are present in abundance - white matter
• the part where cell body and non-myelinated neurons are present - grey matter.</td><td>1
1 x 2</td><td>3</td></tr>
</table>

Unit - 2

Windows of Knowledge

Scoring Indicators

Que. No.	Scoring Indicators	Split Score	Total
1.	A. Pinna B. Tympanum C. Ear ossicles D. Oval window E. Cochlea F. Cerebrum	½ ½ ½ ½ ½ ½	3
2.	(a) Glaucoma (b) • Blockage of reabsorption of aqueous humour. • Increase in the pressure inside the eyes. (D) Laser surgery.	1 ½ ½	3 1
3.	(a) A - Rod cells B - Cone cells (b) Rhodopsin (c) Colour blindness	1 1 ½ ½	3
4.	(f)→(d) →(a)→(e)→(b)→(c)	½ x 6	3
5.	a) I b) • While viewing near by objects. • Ciliary muslcles contract. • Ligaments relax	1 1 ½ ½	3
6	(a) Planaria (b) Jacobson's organ (c) Detects smell (d) Receptors in the lateral line	½ ½ ½ ½	2
7.	(a) Internal ear (b) • X - Vestibular nerve • Y - Auditory nerve (c) • X Transmits impulses from the vestibular apparatus to cerebellum. • Y - Transmits Impulses from the cochlea to the cerebrum.	1 ½ ½ 1 1	4
8.	a c	1 1	2
9.	(a) Small, inverted, real. (b) • Three dimensional image of the object is formed due to the activity of the brain. • Binocular vision becomes possible.	1 ½ ½	2

10	(a) While viewing nearby objects. (b) • Focal length increases. • Ciliary muscles relax. • Ligaments stretch • Curvature of lens decreases.	1 ½ ½ ½ ½	3
11.	(a) Light → Cornea → Aqueous humor → Pupil → Lens → Vitreous humor → Retina. (b) Optic nerve (c) Rod cells and cone cells are absent in the part from where the optic nerve begins / Photoreceptors are absent.	½ x 4 ½ ½	3
12.	Sacule, Utricle, Vestibular nerve, Cerebellum.	½ x 4	2
13.	For copying the diagram. a) Eustachian tube b) Cochlea c) Tympanum	1 1 1 1	4
14.	a) Lysozyme b) Binocular vision	1 1	2
15	a) • When light rays fall rhodopsin dissociate into retinal and opsin. • Generates impulses. • When impulses reach the cerebrum vision is experienced. b) • Amount of retinal decreases. • Cause a decrease in the level of rhodopsin. • Resynthesis of rhodopsin gets blocked. • Cannot see objects clearly in dim light / night blindness.	½ ½ ½ ½ ½ ½	3
16.	Appropriate idea. Example : Let the eyes glow even after death! Eye donation great donation.	1 x 2	2
17.	a) Cornea b) Aqueous humor c) Retina for copying the diargam	1 1 1 1	4
18.	a) Olfactory receptor b) Nose c) Gets stimulated by aromatic particles and generate impulses.	1 1 1	3
19.	a) Aqueous humor b) Nourishes the tissues of the eye.	1 1	2
20.	a) Aromatic particles dissolve in the mucus and stimulates olfactory receptors. b) Reduction/ damage of cone cells that help to distinguish red and green colours.	1 1	2
21.	a) Lens in the eye becomes opaque. b) Glaucoma c) Laser surgery d) Xerophthalmia	½ ½ ½ ½	2

22.	(c); (d); (f); (b); (e); (a)	½ x 6	3
23.	a) • Taste • Others senses through skin b) • Papilla Others are parts of the ear. c) • Ommatidia Others are parts of eye.	½ ½ ½ ½ ½ ½	3
24.	a) Cornea b) Yellow spot c) Aqueous humour	1 1	3
25.	(b)	1	1

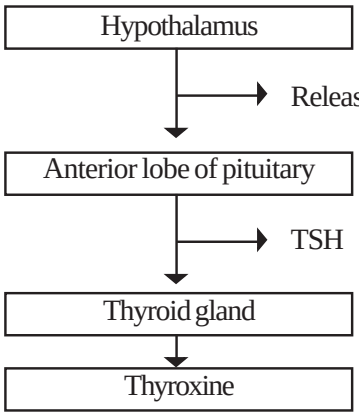
Unit - 3

CHEMICAL MESSAGES FOR HOMEOSTASIS

Scoring Indicators

Que. No.	Scoring Indicators	Split Score	Total
1.	• Hormone molecule combines with the receptor of the target cell to form hormone - receptor complex. • Following this, enzymes are activated within the cell. • Changes occur in cellular activities.	1 1 1	3
2.	(a) A, C (c) Receptors of that hormones is not in the cell.	½ + ½ 1	2
3.	(a) (B) (b) • Enhances the entry glucose into the cell. • Converts glucose to glycogen in liver and muscles. (c) • Sufficient quantity of glucose is not reaching the cell. Energy production decreases. Excess amount of glucose is eliminated through urine.	½ 2 1½	4
4.	1 - (b) - (r) 2 - (c) - (p) 3 - (a) - (q)	1 1 1	3
5.	a) Case - 1 cretinism Case - 2 graves disease b) Case - 1 reasons • Deficiency of thyroxine during foetal stage and infancy. Case - 2 reasons • Persistant hyper thyroidism. • excessive production of thyroxine.	1 1 4 1	
6	(a) Pheromones. (b) • attracting mates • informing availability of food. • determining the path of travel. • informing the dangers. (Any two)	1 ½ x 2	2
7.	a. Adrenal gland b. Epinepherine, Norepinephrine	1 1	2
8.	a. Parathormone b. Thyroid gland c. Helps in the reabsorption of calcium from kidneys.	1 1 1	3

9.	(a) A Medulla B Cortex (b) Epinephrine, Norepinephrine Epinephrine - Helps to tide over emergency situations. Nor epinephrine - acts along with epinephrine.	1x 2 ½ x 2 ½ ½	4
10	(a) Diabetes insipidus (b) ADH is synthesized by hypothalamus. ADH increases the reabsorption of water into the kidney. Synthesis of ADH decreases. Reabsorption of water disrupts.	1 ½ ½ ½ ½	3
11.	(a) Portal vein - X Posterior lobe of pituitary - Y (b) Stores the hormones vasopressin and oxytocin synthesized by hypothalamus and releases them into blood when required.	½ ½ 1 x 2	3
12.	a) dwarfism b) Excessive production of growth hormone during the growth phase. c) Excessive production of somatotropin after the growth phase. d) Growth of the bones on face, jaws and fingers.	½ ½ ½ ½	2
13.	• Decreased production of insulin. • Malfunctioning of insulin. • Destruction of Beta Cells. • Inactive insulin.	½ ½ ½ ½	2
14	(c) (d)	1	1
15	a. Facilitates child birth by stimulating the contraction of smooth muscles in the uterine wall. b. When the level of melatonin increases at night, we feel sleepy. We wake up when the level of melatonin decreases during the day.	1 ½ ½	2
16	a. Somatotropin decreases during growth phase -dwarfism.	1	1
17	1 - (b) - (S) 2 - (d) - (P) 3 - (a) - (Q)	1 1 1	3
18	a) A - Abscisic acid. B - Ethylene b) • Control, uncontrolled use. • Environmental issues. • Health issues.	1 1 ½ ½	3

19.	a) Thyroxine b. 	1 ½ x 6	4
20.	NAA - Sprouting, prevention of premature fall of fruits. IBA - - do - 2, 4-D- Weedicide (Any two)	½ x 4	2
21.	Advantages • Sprouting • Prevents premature full of fruits. • Weedicidal action. • Increases size of fruits. • Ripening of fruits. • Increases production of latex in rubber trees. • Harvesting fruits at the same time. • Prevents early ripening of fruits. Disadvantages • Environmental issues. • Health issues. (Any 4 advanatages & disadvantages)	½ x 4 ½ x 2	3
22.	(b) (d)	½ x 2	1
23.	**Hormone** **Pheromone** **Plant hormone** • Glucagon • Civetone • Ethylene • Melatonin • Bombycol • Auxin	½ x 6	3
24.	Receptors to receive other hormones synthesized by the pituitary gland are absent in the thyroid gland.	1	1
25.	a) Thymus gland b) Thymosine c) Controls the activities and maturation of lymphocytes which help to impart immunity.	1 1 1	3
26.	a) Stimulates thyroid gland b) ACTH c) Production of milk d) Enhances growth	½ ½ ½ ½	2

27.	(a) - (iv) (b) - (ii) (c) - (i) (d) - (iii)	½ ½ ½ ½	2
28.	Satheesh : 2, 4 - D Saneesh : NAA/IBA	1 1	2
29.	a) X - Insulin Y - Glucagon b) A - Converts glycogen to glucose. B - Converts glucose to glycogen. a) Pancreas	½ ½ 1 1 1	4
30.	a) Civetone b) Ethylene c) Diabetes mellitus d) Thyroxine	1 1 1 1	4
31.	a) Increases the production of milk. all others are the activities of thyroxine. b) Acromegaly. all others are disorders/diseases, related to thyroid gland. c) Vasopressin. all others are hormones of adrenal gland. d) Pheromones. all others plant hormones.	1 1 1 1	4
32.	(b) (c)	½ x 2	1
33.	a) Insulin b) Oxytocin c) Calcitonin	1 1 1	3
34	(a) X - Calcitonin : Y - Parathormone (b) Action of X : Deposits excess calcium in bones. Action of Y : Reabsorbs calcium into the blood in the kidney. (c) Deficiency of Y decreases the level of calcium in blood. As calcium is required for blood clotting, the clotting process becomes slow.	1 1 1 1	4

Unit - 4

Keeping Diseases Away

Scoring Indicators

Que. No.	Scoring Indicators	Split Score	Total
1.	a. Dengue b. Dengue virus	1 1	2
2.	i - b, R ii - c, P iii - a, Q	½ x 6	3
3.	b, d	½ x 2	1
4.	a. - HIV b. - AIDS c. • Multiplies using the genetic mechanism of lymphocytes. • Considerable decrease in the number of lymphocytes. • Disrupts immunity.	1 ½ ½ ½ ½	3
5.	**Situations where HIV spreads** / **Situations where HIV does not spread** (b) / (a) (c) / (d) (e) / (f)	½ x 6	3
6	A. - Tuberculosis B. - Contaminated water/food C. - Tetanus	1 1 1	3
7.	a. Diseases spread through air b. Tuberculosis is a bacterial disease and rest all virus diseases.	1 1	2
8.	a) Mycobacterium tuberculosis b) Loss of body weight, Fatigue, Persistant cough. (Any two) c) BCG	1 1 1	3
9.	a) Fungus b) Athletes foot c) Round red blisters d) touch/ contact	½ ½ ½ ½	2
10	a) Filarial worm b) High fever with shivering, profuse sweating, head ache, vomiting, diarrhoea, anaemia etc. (Any two) c) Mosquito irradication measures. (Any two)	1 1 1	3

11.	Diabetes - life style Goitre - defficiency disease Haemophilia - genetic	1 1 1	3
12.	a) Haemophilia b) Injecting protein helps in blood clotting dotting.	1 1	2
13.	a) Sickle-cell anaemia b) • Decreases the oxygen carrying capacity of red blood cells. • Sickle shaped RBC aggregate and block the blood flow through blood vessels.	1 1 1	3
14.	**Haemophila** **Sickle cell anaemia** b a c d	1 1 1	3
15	a) Cells undergo uncontrolled division and spread to other tissues. b) Environmental factors, smoking, radiations, virus, hereditary factors alteration of genetic materials, chemical substances (Any two) c) Chemotherapy, surgery, radiation therapy (Any two)	1 1	3
16.	It is difficult for the patients to recover if the disease becomes severe.	1	1
17.	(b), (c), (e), (f)	½ x 4	2
18	A - iii B - i C - ii	1 1 1	3
19.	A. - brain B. - lungs C. - any organ.	1 1 1	3
20.	Suitable - poster having concept. Smoking - pathway to death	2	2
21.	**Animal disease** / **Plant disease** Anthrax / Blight disease Foot and mouth disease / Quick wilt Inflammation of the udder / Bunchy top of banana	½ x 6	3
22.	a) Paddy b) Quick wilt c) Bud rot; quick wilt	1 1 1	3
23.	a) The complete physical, mental and social well-being of a person. b) Compassion, mercy, sympathy, empathy, pity, service mindedness, helping mentality etc. (Any two)	1	1 2

24.	• No . • Affects the Brain, Heart and Blood Vessels.	½ 1½	2
25.	• The statements of both of them are correct. • Smoking causes cancer and lifestyle diseases. (Write the name of two life style diseases and substantials)	½ 1½	2
26.	b, c	1	1
27.	**Bacteria** **Virus** **Fungus** (a), (f) (b), (d) (c), (e)	½ x 6	3
28.	**Plants** (a) (e) **Animals** (d) (f) **Human beings** (b) (c)	 ½ ½ ½ ½ ½ ½	3
29.	**Through air**: • SAARS • Chicken pox • Tuberculosis **Through Sexual Contact**: • Syphilis • Gonorrhoea • AIDS **Through Mosquitoes**: • Dengue fever • Malaria • Chikungunya	3	4
30.	(i) - (b) - (Q) (ii) - (c) - (P) (iii) - (a) - (R)	1 1 1	3
31.	A - (iii) B - (ii) C - (iv)	1 1 1	3
32.	• Do not agree with this statement. • Diseases occur with out pathogens also. etc. diabetes/stroke/cancer, etc. (Any two) • All micro organisms are not pathogens. There are useful micro organisms also. eg: Bacteria seen in the intestine & skin. (Any two)	½ ½ ½ ½	2

Unit - 5
Soldiers of Defense

Scoring Indicators

Que. No.	Scoring Indicators	Split Score	Total
1.	Lymphocyte - Involved in specific defense	1	1
2.	A. Non-specific defense B. Secondary level C. B - lymphocyte D. T -lymphocyte	½ ½ ½ ½	2
3.	b d	1 1	2
4.	(a) Yes, it has importance • The protein keratin - rigidity • Sebum • Acid in the stomach	½ ½ ½ ½	2
5.	(i) - c (ii) - d (iii) - a (iv) - b	½ ½ ½ ½	2
6	C, Secondary defense	1	1
7.	(a) Inflammatory response (b) • Yes • Secondary level defense • Process to destroy pathogens in the body	½ ½ ½ ½	2
8.	d a c f e b	½ ½ ½ ½ ½ ½	3
9.	A - Neutrophil /Monocyte B - Stimulates other white blood cells/dilates blood vessels C - Eosinophil D - engulfs and destroys germs	½ ½ ½ ½	2

10	(a) • Blood flow increases • Plasma and white blood cells reach the wound site • White blood cells destroy the pathogens (b) • Basophil	½ ½ ½ ½	2
11.	a) Phagocytosis b) Neutrophil, Monocyte c) No • does not identify and destroy pathogens that enter to the body	1 1 ½ ½	3
12.	a). i. engulfs pathogen in the membrane sac ii. The enzyme in the lysosome destroys the pathogens iii) expels the remnants b) Phagocytosis	½ ½ ½ ½	2
13.	• Prevents the entry of germs through wound • Prevents bleeding through wounds	1	1
14.	b e a d f c	½ ½ ½ ½ ½ ½	3
15	A - Prothrombin B - Vitamin K, C - Thromboplastin C - Thrombin not formed fibrinogen not converted to fibrin	1 ½ ½ 1	3
16.	• White blood cells do not have a definite shape. • They come out through the fibrin network.	1 1	2
17.	• connective tissue heals the wound • New tissues are not formed in the place of damaged tissues.	½ ½	1
18.	• Yes • The rise in body temperature reduces the multiplication of pathogens	½ ½	1
19.	a) B - lymphocyte b) T - lymphocyte i) Stimulates white blood cells and destroys pathogens ii) Destroys the bacteria by disintegrating their cell membrane iii) Stimulates defense cells iv) Destroys the cells which is affected by virus	½ ½ ½ ½ ½ ½	3

20.	• Bad habits • Unhealthy food habits • Unhygiene • Excess pathogens	½ ½ ½ ½	2
21.	(a) EEG (b) ECG (c) Ultra sound scanner	1 1 1	3
22.	• Antibiotics are used to prevent bacterial diseases • Cholera is a bacterial disease	1 2 1	
23.	• The frequent use of antibiotics produces disease defence in pathogens. • Destroys useful bacteria in the body • Reduces the level of some vitamins in the body	1 1 1	3
24.	a) A^+ b) (i) Venu A^+ (ii) Anoop A^-	1 ½ ½	2
25.	(i) A (ii) a (iii) AB (iv) No (v) O (vi) No	½ ½ ½ ½ ½ ½	3
26.	(i) - d (ii) - c (iii) - b (iv) - a	1 1 1 1	4
27.	a) Prevents the entry of germs which have crossed the cell wall, through cell membrane. b) Bark c) Cuticle in leaves d) Cell wall	½ ½ ½ ½	2
28.	a) Ayurveda b) • Allopathy • Homeopathy/etc	1 ½ ½	2
29.	a) Dangue fever b) Dangue virus prevents the formation of platelets from bone marrow. c) Not hemophilia. It is not the deficiency of platelets that causes bleeding in a hemophilia patient. A protein which is responsible for blood clot is not formed in them. This is due to the deficieny of the gene that controls the formation of proxin.	1 1 ½ x 4 = 2	4

30.	2 placards contain appropriate concepts Example : Donate blood Donate Life Blood donation - Nothing to loose profits - Life	1 1	2
31	a) Bone marow b) ECG c) Edward Jenner d) Sphigmo manometer e) Plasma	1 1 1 1 1	5
32	a) ECG b) to record electric waves in heart muscles c) EEG	1 1 1	3
33	• The opinion of Bshir is wrong • Nutritions food • Healthy life style • Hygiene, These are the factors which build up a healthy society.	½ ½ ½ ½	2
34	a) The presence of antigens A and B on the surface of Red blood cells. b) • Not possible • When a foreign antigen reaches one's blood, it stimulates the defense activity • The antigen present in the received blood and the antibody in the receipients • If forms a blood clot	1 ½ ½ ½ ½	3
35	a) A - T- lymphocyte B - B lymphocyte b) • Stimulates other defense cells • Destroys cancer cells and virus affected cells. c) B lymphocytes matured at bone marrow T lymphocytes matured at thymus.	1 1 ½ ½ 1	4
36	a) The chemical substances produced by white blood cells rises body temperature b) • Reduces the multiplication of pathogens • Increases the effectiveness of phagocytosis.	1 1 1	3

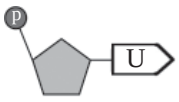
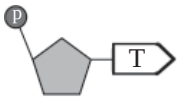
Unit - 6

Unravelling Genetic Mysteries

Scoring Indicators

Que. No.	Scoring Indicators	Split Score	Total
1.	a. Uracil b. Cytosine c. Recessive character	1 1 1	3
2.	a. Transmission of features of parents to offspring. b. Features seen in offspring that are different from their parents. c. The branch of science that deals with heredity and variation. d. Gregor John Mendel	1 1 1 1	3
3.	(a) One trait is controlled by the combination of two factors. (b) The characters that remains hidden in the first generation appears in the second generation.	1 1	2
4.	A. tt B. t C. Tt D. dwarf	½ ½ ½ ½	2
5.	A. Cell B. Nucleus C. Chromosome D. DNA	½ ½ ½ ½	2
6	(a) Genetics (b) Height, colour of the seed, colour of the flower, shape of the seed, colour of the fruit, shape of the pod (Any 4)	1 4 x ½	3
7.	a. Green b. Alleles in parental plant - G, G Allele in the first generation - G, g c. Different forms of a gene	1 ½ ½ 1	3
8.	A. Autosomes B. 2 C. XY	½ ½ 1	2
9.	44 + XY	1	1
10	A. ggww B. GW C. Green coloured round seed	1 1 1	3
11.	(a) T, t (b) (TR) (Tr) (tR) (tr)	1 ½ x 4 = 2	3

12.	A. TTRr B. TtRr C. TTRr D. TtRr E. TtRr F. ttRR G. ttRr H. TtRr	½ ½ ½ ½ ½ ½ ½ ½	4
13.	i. a) dwarf, red flower b) dwarf, red flower c) tall, white flower d) dwarf, white flower ii. Due to the independent assortment of each character.	½ ½ ½ ½ 1	3
14.	a) A - Phosphate B - Sugar b) • does not agree • Like DNA, RNA is also made up of nucleotides	1 x 2 ½ ½	3
15	DNA RNA b a e c f d	½ x 6	3
16.	a) B b) A c) A unit of sugar, phosphate and nitrogen base/ Component of nucleic acid	½ ½ 1	2
17.	• RNA has role • DNA is not directly involved in protein synthesis • mRNA is formed from DNA. • mRNA that carries information from DNA, controls the protein synthesis • tRNA carries aminoacids to ribosomes • rRNA associated with ribosomes also have a role in protein synthesis.	½ ½ ½ ½ ½ ½	3
18.	c →b →e →a →d →f	½ x 6	3
19.	a) C, A, B b) • Part of a DNA crosses over to become the part of another DNA. • This causes difference in the distributions of genes. • When these chromosomes are transferred to the next generation, new characters are expressed.	1½ 1½	3

20.	a) Crossing over of chromosomes b) • Part of a DNA crosses over to become the part of another DNA. • This causes difference in the distributions of genes. • When these chromosomes are transferred to the next generation, new characters are expressed.	½ 1½	3
21.	a) (A) 44 + XY (B) 22 + X (C) 22 + Y b) Equal chance. The number of male gametes with X chromosome and those with Y chromosome are equal. Egg with the X chromosome has equal chance to combine with sperm having Y chromosome and those having X chromosome.	½ ½ ½ 1½	3
22.	• No, it is wrong to blame the mother. • The possibility of the birth of male or female child is equal. • The gender of the child is determined by the XY chromosome of the father.	½ ½ 1	2
23.	Males have 2 types of sex chromosomes. (X, Y) Females have only one type of sex chromosome (X, X) Sex determination is based on the type of male gamete that fuses with the egg. If the male gamete with Y chromosome fuses with the egg, then male child is born, if the male gamete with X chromosome fuses with the egg, then female child is born.	½ ½ ½ ½	2
24.	a) • Melanin, a pigment protein imparts colour to skin • It is due to the difference in gene function. b) • Skin colour is an adaptation to live under the sun. • Races among manking are only cultural. • Scientifically, all men are of the same race. • Consider all men as equal, without any racial difference.	½ ½ ½ ½ ½ ½	3
25.	a, c	½ x 2	1
26.	a)  b) 	1½ 1½	3

27.	Thymine - Adenine Guanine - Cytosine	1 1	2
28.	Statement is partly correct. Each character is controlled by pair factors called genes. Different forms of a gene are called alleles. Generally, a gene has two alleles. Alleles can be of the same types (TT) or of different types (Tt). If the alleles are of different types, only one trait represented by any one of the alleles get expressed.	½ ½ ½ ½ ½ ½	3

Unit - 7

Genetics for the Future

Scoring Indicators

Que. No.	Scoring Indicators	Split Score	Total
1.	(a) Ligase (b) Gene mapping	1 1	2
2.	(i) (iii)	1	1
3.	• Genes responsible for the production of insulin and grwoth hormones are inserted into animals, transforming them into pharm animals. • These animals are easy to be reared and cared when compared to bacteria. • Medicines can be extracted from their blood or milk.	1 1 1	3
4.	Human Genome Project	1	1
5.	• Yes • Gene therapy is the treatment for curing genetic diseases by removing disease causing genes and inserting functional genes in the genome.	½ 1½	2
6.	(a) DNA finger printing (b) • to solve parental dispute • to identify culprints • to identify persons (Any two)	1 ½ ½	2
7.	(a) • Genetic Engineering (b) • Yes • Because the gene responsible for the production of insulin is there in the next generations.	1 ½ ½	2
8.	b → d → e → f → c → a	½ x 6	3
9.	Scopes : In the field of medicine, food crops, cash crops, cattle management, nature conservation, gene therapy etc. (Any three) Challenges : Genetic modifications - violation of rights, bioweapons, biowar, threat to indigenous varieties, health problems in man, super bugs etc. (Any three)	1½ 1½	3
10	a) Restriction endonuclease. b) Ligase c) DNA profiling d) Junk genes e) Gene mapping f) Gene therapy	½ ½ ½ ½ ½ ½	3

11.	a - (ii) b - (iv) c - (i) d - (iii)	½ ½ ½ ½	2
12.	a) The arrangement of nucleotides in the DNA differs in different individuals. b) The arrangement of nucleotides among close relatives have many similarities.	1 1	2
13.	a) Electrocardiogram. Others are related to genetic engineering.	½ x 2	1

Unit - 7

Genetics for the Future

Scoring Indicators

Que. No.	Scoring Indicators	Split Score	Total
1.	(a) Ligase (b) Gene mapping	1 1	2
2.	(i) (iii)	1	1
3.	• Genes responsible for the production of insulin and grwoth hormones are inserted into animals, transforming them into pharm animals. • These animals are easy to be reared and cared when compared to bacteria. • Medicines can be extracted from their blood or milk.	1 1 1	3
4.	Human Genome Project	1	1
5.	• Yes • Gene therapy is the treatment for curing genetic diseases by removing disease causing genes and inserting functional genes in the genome.	½ 1½	2
6.	(a) DNA finger printing (b) • to solve parental dispute • to identify culprints • to identify persons (Any two)	1 ½ ½	2
7.	(a) • Genetic Engineering (b) • Yes • Because the gene responsible for the production of insulin is there in the next generations.	1 ½ ½	2
8.	b → d → e → f → c → a	½ x 6	3
9.	Scopes : In the field of medicine, food crops, cash crops, cattle management, nature conservation, gene therapy etc. (Any three) Challenges : Genetic modifications - violation of rights, bioweapons, biowar, threat to indigenous varieties, health problems in man, super bugs etc. (Any three)	1½ 1½	3
10	a) Restriction endonuclease. b) Ligase c) DNA profiling d) Junk genes e) Gene mapping f) Gene therapy	½ ½ ½ ½ ½ ½	3

11.	a - (ii) b - (iv) c - (i) d - (iii)	½ ½ ½ ½	2
12.	a) The arrangement of nucleotides in the DNA differs in different individuals. b) The arrangement of nucleotides among close relatives have many similarities.	1 1	2
13.	a) Electrocardiogram. Others are related to genetic engineering.	½ x 2	1

Part - C

Model Question papers

SAMPLE QUESTION PAPER

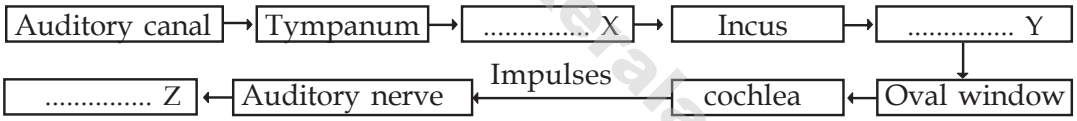
Standard : X **Time : 1½ Hour**
Score : 40

1. Identify the odd one and write the common feature of others.
   a) Testosterone, Aldosterone, Oestrogen, Progesterone. (1)
   b) musk, civeton, cytokinin, bombycol. (1)
   c) TSH, ACTH, ADH, GTH (1)

2. Arrange the information given in columns B and C as matching to those given in column A. (3)

A	B	C
Hypothalamus	Melatonin	facilitates lactation
Pineal gland	Vasopressin	Production of milk
Pituitary gland	Oxytocin	growth of the body
	Prolactin	biological clock

3. Analyse the flowchart related to hearing and answer the questions. (3)



   a) Fill in the blanks in the flowchart.
   b) Where do the nerve activities begin from?
   c) The ear is the only organ that causes the sense of hearing. Is it true? Give reason.

4. Identify the eye defects and complete the table using the details given below as S, T, U and V. (3)
   S - deficiency of vitamin A
   T - defective cone cells
   U - cannot distinguish colours
   V - cannot see in dim light

Eye defects	Cause	Symptom

Answer either A or B.

5A. Classify the diseases given below in the appropriate way. Write the criterion used for the classification.

AIDS, chickenpox, gonorrhoea, SAARS, tuberculosis, syphilis

a. .....

Diseases
- .....
- .....
- .....

b. .....

Diseases
- .....
- .....
- .....

(4)

OR

B. The symptoms of 2 diseases are given below. Answer the questions based on them.

X - Red blood cells bend like sickle.

Y - Continuous bleeding even through minor wounds.

a) Which are the diseases indicated by X and Y?

b) Analyse the causes for the two diseases?

6. Smoking affects all body parts, but the most severely affected part is the lung. Name two such lung diseases. Write a message for creating the awareness against smoking. (2)

7. If there is any mistake in the following statements, correct it. Corrections should be made in the underlined parts only.

a) 'Monocyte' is a white blood cell that performs. (2)

b) T - lymphocytes stimulate other defense cell.

(c) Platelets help in blood clotting.

(d) Basophils engulf and destroy germs.

8. Persons with AB blood group can receive any blood group. But they can donate blood only to those with AB group. Give reason? (2)

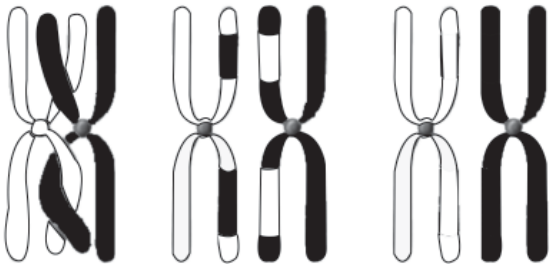
9. Choose the main defense mechanism factors in plants. (2)

a) bark b) chlorophyll c) tracheid d) cuticle

e) cell wall f) cell membrane g) callose

10. Protein synthesis in cells takes place as a result of the combined activity of different kinds of RNA. Substantiate this statement. (3)

11. Analyse the illustration and answer the questions. (2)



a) Which is the process illustrated above?

b) When does this process take place?

c) What happens in this process? What is its 'consequence'?

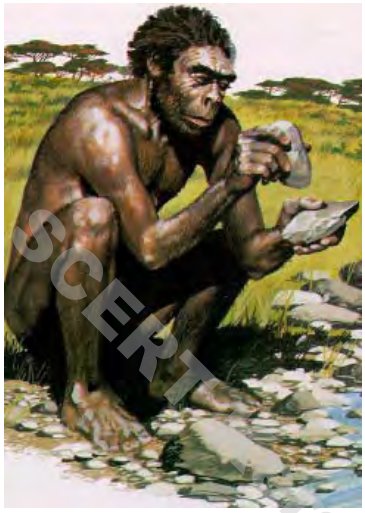
12. Read the excerpt from the newspaper. (3)

Killer under police custody
Culprit's hair from the murder site as proof

(a) How can the culprit be identified from a piece of hair?
(b) What is the name this technology?

13. Both bacteria and human beings evolved from a common ancestor. Substantiate the statement. (2)

14. The picture of an ancestor of modern man is given below. What is the name of this primitive man? Write its two features? (2)



15. Copy the diagram and label the parts indicated below: (4)

(a) Centre of memory and imagination.
(b) Coordinates muscular activities.
(c) Maintenance of homeostasis.

SAMPLE QUESTION PAPER

Scoring Indicators

Que. No.	Scoring Indicators	Split Score	Total
1.	a. Aldosterone Others are sex hormones b. Cytokinin Others are pheromones c. ADH Others are tropic hormones	½ ½ ½ ½ ½ ½	3
2.	Hypthalamus - Oxytocin - Facilitates lactation Pinel gland - Melatonin - Biological clock Pituitary gland - Prolactin - Production of milk	½ ½ ½ ½ ½ ½	3
3.	a. X - Malleus Y - Stapes Z - Cerebrum b. In the sensory hair cells which are present in basilar membrane of the cochlea. c. No/ Cerebrum of the brain help in hearing support of brain is also required.	½ ½ ½ ½ ½ ½	3
4.	**Defect of eye** / **Reason** / **Symptom** Night blindness / S / V Colour blindness / T / U	½ x 3 ½ x 3	3
5 A.	a. • Diseases spread through air. • Chicken pox • SAARS • Tubericulosis b. • Diseases spread through sexual contact. • AIDS • Gonorrhoea • Syphilis	½ ½ ½ ½ ½ ½ ½ ½	4
5 B.	a. X - Sickle cell anaemia Y - Haemophilia b. - Sickle cell anaemia is due to defects in genes. - Deformities occur in the sequencing of aminoacids of haemoglobin. - In Haemophilia, the synthesis of the protien that causes blood clotting fails. - This is because the genes that control the protein synthesis become defective.	1 1 ½ ½ ½ ½	4
6	Lung cancer Emphysema Bronchitis (Any two) Eg : Never 'Smoke' your life away, say No to Smoking.	½ ½ 1	2

7.	a. Lymphocute d. Neutrophil/Monocyte	1 1	2
8.	As AB group does not have antibodies any blood group can be received. AB group has antigen A and B. So AB group cannot be given to people with other blood groups. Antigen present in the donor's blood reacts with the antibody present in the recepient's blood and forms blood clot. As a result the recepient's life becomes fatal.	½ ½ ½ ½	2
9.	a, d, e, g	½ x 4	2
10	Information for the synthesis of protein is carried from DNA to ribosomes by mRNA. tRNA - Carries aminoacids to ribosomes. rRNA - Help in protein synthesis.	1 1 1	3
11.	a. Crossing over d. In meiosis c. Chromosomes exchange genes. Variations individuals	½ ½ ½ ½	2
12.	a. Arrangement of nucleotides in DNA is different in two different individuals. DNA separated from hair cells. Compared the arrangement of nucleotides with that of the suspected persons. Identified the ..... by checking the similarity of arrangement of the nucleotides. DNA finger printing.	½ ½ ½ ½ 1	3
13.	Enzymes controlling chemical reactions are same in bacteria and man. Energy is stored in ATP molecules. Genes control hereditary characters. Bascic substances are carbohydrates, proteins and fats.	½ ½ ½ ½	2
14.	Homo habilis Ability to make weapons from stones and bone pieces. Cranial capacity is 610 cm^3	1 ½ ½	2
15.	For copying the diagram. For correct labelling. a. Cerebrum d. Cerebellum c. Hypothalamus	1 ½ ½ ½ ½ ½ ½	4

A

Terminal Evaluation - 2016-17
Sample Question Paper
BIOLOGY

Standard: X **Time: 1½ Hours**
Score: 40

Instructions

1. The first 15 minutes is cool off time. Use this time to read and understand the questions clearly.
2. Answer as per the instructions and questions only.
3. Write answers on the basis of score and time.
4. Answer only one from the option A, B for questions 7 and 11.

1. Choose the correct statement from those given below: 1

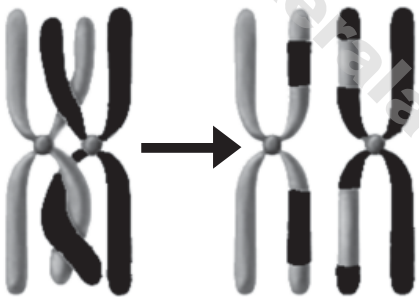
   a) Adrenal gland produces calcitonin.

   b) Hormones like insulin and parathormone control blood glucose level.

   c) The hormone that regulates the rhythm of life is melatonin

   d) Hypothalamus produces growth hormone.

2. Examine the illustration and answer the following questions. 2



   a) Which process does the illustration indicate?

   b) How does this process cause variations in the offsprings of the next generation?

3. 'Different species evolved from a common acestor'. 3

   a) How do fossil evidences substantiate this statement?

   b) Give more evidences for the statement based on cell structure and physiology of organisms.

4. Examine the table given below and answer the questions. 3

Pathogen	Disease
Bacteria	Tuberculosis
Virus	AIDS

a) Give one example each for other diseases caused by these pathogens.

b) Write the differences in the mode of action of these two pathogens in the body of the host.

5. Analyse the situations given below and answer the questions. 3

i) Withdraws the hand suddenly when one unknowingly touches a hot object.

ii) Eyes blink when objects move towards them.

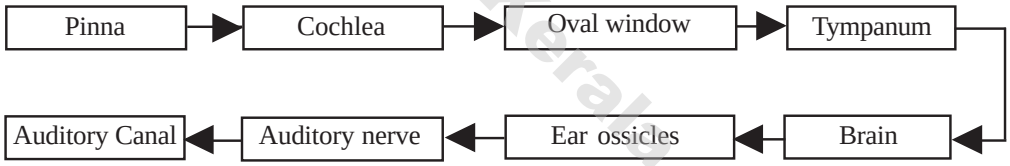
a) What nerve action does the responses in Situations i and ii indicate?

b) What are the control centres of these two nerve actions?

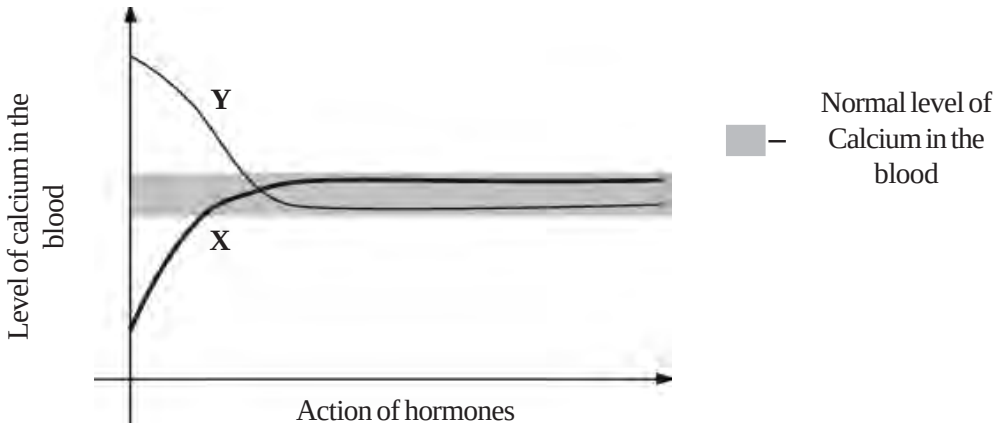
c) What is the role of interneuron in the response of situation (i)?

6. Observe the flow chart prepared on the process of hearing in Geethu's Science Diary. 2

Arrange the flow chart in correct order



7. **A.** Observe the graph and answer the questions. 3



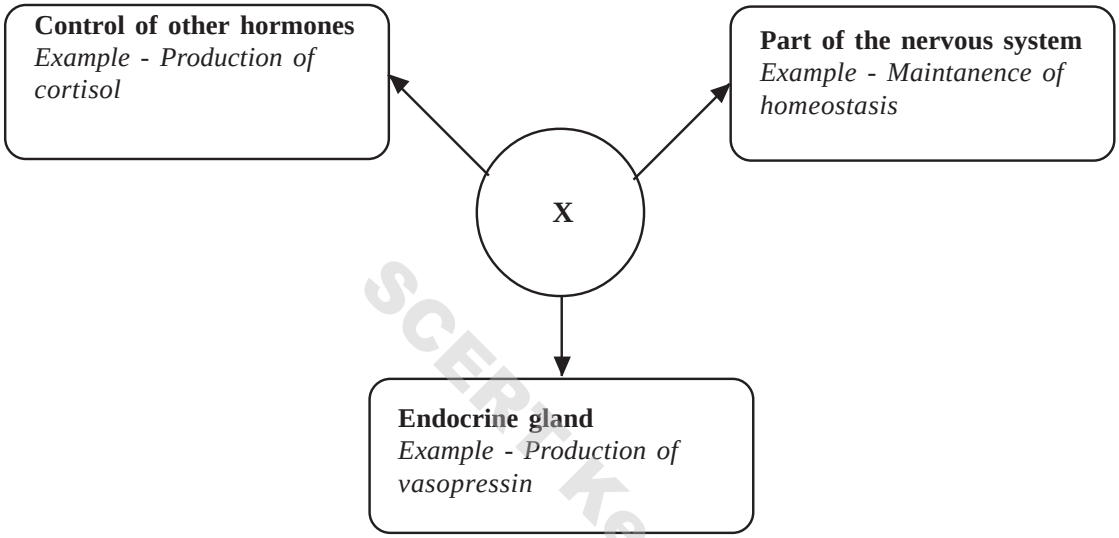
a) What is the normal level of calcium in the blood?

b) Which hormone helped to maintain the normal level of calcium in person 'X' ?

c) Write two processes that helped to maintain the level of calcium in person 'Y'.

OR

B. Observe the word web and answer the questions.



a) What does 'X' indicate?

b) Name the disease caused due to the under production of vasopression.

c) How does 'X' control the production of cortisol?

8. Analyse the statement and answer the following questions. 4

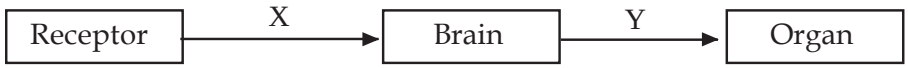
"Excess blood is lost even through minor wounds when the process of blood clotting gets disrupted".

a) Name this disease.

b) Is this disease completely curable? Give reason.

c) What is the significance of vitamin K and thrombin in blood clotting?

9. Observe the illustration on impulse transmission through nerves and answer the questions: 2



a) What kind of nerves do 'X' and 'Y' indicate?

b) What is the significance of synapse in impulse transmission?

10. Arrange the details given below, related to gene action in correct order. 3

a) Synthesises protein

b) mRNA reaches outside the nucleus.

c) Different kinds of amino acids reach ribosomes.

d) mRNA forms from DNA.

e) Adds amino acids based on the messages in the mRNA.

f) mRNA reaches ribosomes.

11. **A.** Evaluate the statement given below and answer the question. 2

The situation when the number of organisms increases and resources become limited, leads to the origin of new species.

Explain how this situation causes the origin of new species on the basis of Darwinism

OR

B. Analyse the part from a science excerpt given below and answer the questions.

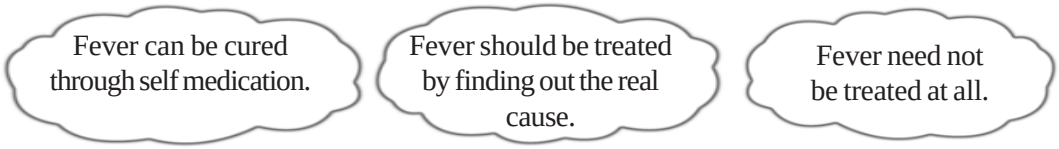
"On the verge of the sixth mass extinction"

Lakhs of species are on the verge of extinction due to human interference in nature, as for instance, deforestation, environmental pollution, destruction of ecosystems etc. This has led to a sixth mass extinction, according to the scientific world….

a) Will the sixth mass extinction differ from the earlier ones? Why?

b) What are the suggestions you put forth to avoid the possibility of mass extinction?

12. Opinion of three students during a discussion on fever are given below. 3



a) Which opinion do you agree with? Write justification.

b) How does fever become a defense mechanism of the body?

13. Tabulate suitably the information on plant hormones given below as in the sample. 2

- Gibberllins
- Abscisic acid
- Cell division, differentiation
- Dormancy of embryo
- Cytokinin
- Breaks up stored food in germinating seeds.

Sample

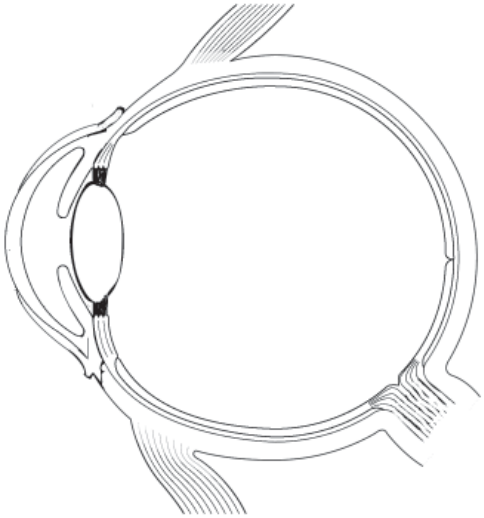
Hormone	Function
Gibberllins	Breaks up stored food in germinating seeds
•	• .....
•	• .....

14. Observe the collage and answer the question. 3

a) Which technology creates these organisms?

b) Prepare a note on the various stages in the modification of bacteria that can produce insulin.

15. Observe the figure and answer the questions according to the instructions. 4



a) Copy the diagram. Identify and label the parts given below.
   i) Cornea
   ii) Ciliary muscle
   iii) Optic nerve

b) Write the role of these parts in enabling vision.

A

Scoring Indicators

Qn. No.	Scoring Indicators	Split up Score	Total Score
1	(c) Melatonin regulates the rhythm of life	1	1
2	(a) Crossing over (b) Part of a DNA crosses over to become the part of another DNA.	1 $^1/_2+^1/_2$	2
3	(a) Primitive fossil - simple structure. Recently formed fossil - complex structure. (b) (i) Carbohydrates, proteins and fats are the basic substances. (ii) Genes determine hereditary traits. (iii) Energy is stored in ATP molecules. (iv) Enzymes control chemical reactions.	$^1/_2+^1/_2$ $^1/_2$ $^1/_2$ $^1/_2$ $^1/_2$	3
4	(a) Suitable examples for each. (b) Virus-Takes control over the genetic mechanism of host cells. Bacteria - The toxins produced by bacteria cause harm to the cells.	$^1/_2+^1/_2$ 1 1	3
5	(a) Reflex action (b) i - Spinal cord ii- Cerebrum/brain (c) - Connects the sensory neuron and the motor neuron - Generates quick responses according to the sensory impulses	1 $^1/_2$ $^1/_2$ $^1/_2$ $^1/_2$	3
6	Pinna- Auditory canal - Tympanum- ear ossicles- oval window - cochlea - Auditory nerve - Brain (For arranging four continuous parts correctly)	 $^1/_2$x4	2
7	A. (a) 9-11 mg./ 100 ml. litre. (b) Parathormone (c) (i) Deposits calcium in the bones from blood (ii) Preventing the deposition of calcum with blood from the bones. OR B. (a) Hypothalamus (b) Diabetes insipidus (c) The releasing hormone produced by the hypothalamus stimulates the pituitary gland and produces ACTH. ACTH stimulates adrinal cortex and produces cortisol.	1 1 $^1/_2$ $^1/_2$ 1 1 1	3

Qn. No.	Scoring Indicators	Split up Score	Total Score
8	(a) Haemophila (b) No. genetic disease/gene disorder (c) Thromboplastin converts prothrombin into thrombin in the presence of vitamin K. Thrombin converts the fibrinogen into fibrin.	1 1 1 1	4
9	(a) X sensory neuron, Y - Motor neuron (b) Controls the speed and direction of impulses.	1 1	2
10	d→b→f→c→e→a	$^1/_2$x6	3
11	A. (i) Struggle for existence. (ii) Those with favourable variations survive - natural selection (iii) Favourable variation - Transfers to next generation (iv) Accumulation of variations - origin of new species. OR B. (a) Yes / The rapid one as a result of human intervention. (b) Activities that prevent climatic change due to human intervention, Ecosystem conservation activities. (Any two)	$^1/_2$ $^1/_2$ $^1/_2$ $^1/_2$ $^1/_2$+$^1/_2$	2
12	(a) Fever should be treated by finding out the real cause. Body temperature rises when infection becomes uncontrollable Rise in body temperature adversely affect the internal organs. (b) • Reduces the mulltiplication rate of pathogens. • Increases the effect of phagocytosis	1 $^1/_2$+$^1/_2$ $^1/_2$+$^1/_2$	3
13	i- Abscisic acid - Dormancy of the embryo ii- Cytokinin - Cell divsion, cell differentiation	$^1/_2$+$^1/_2$ $^1/_2$+$^1/_2$	2
14	a) Genetic engineering / recombinant DNA technology b) i- Cutting insulin producing gene ii- Cutting bacterial DNA iii- Joining iv- Inserting DNA in the bacterial cell/ Providing a favourable medium for the multipilcation of bacteria.	1 $^1/_2$ $^1/_2$ $^1/_2$ $^1/_2$	3
15	a) For copying the diagram For labelling parts correctly b) i) Cornea - Refracts light rays to retina. ii) Ciliary muscle - Alter the curvature of lens. iii) Optic nerve - Transmits impulses to the brain.	1 $^1/_2$x3 $^1/_2$ $^1/_2$ $^1/_2$	4
	Total	**40**	

B

Terminal Evaluation - 2016-17
Sample Question Paper
BIOLOGY

Standard: X **Time: 1½ Hours**
Score: 40

Instructions

1. The first 15 minutes is cool off time. Use this time to read and understand the questions clearly.
2. Answer as per the instructions and questions only.
3. Write answers on the basis of score and time.
4. Answer only one from the option A, B for questions 7 and 11.

1. Rewrite the following sentences by correcting the underlined word if it is wrong. 1

   a) Neurotransmitter acts as stimulant on dendrite.
   b) Thalamus plays a major role in maintaining homeostasis.
   c) Sensory impulses reach the brain through the dorsal root.
   d) Destruction of specialized cells in the ganglions causes Parkinson.

2. The technology to identify the location of a gene in the DNA responsible for a particular trait is known as. 1

   i) DNA finger Printing
   ii) Gene Mapping
   iii) DNA Profiling
   iv) Gene therapy

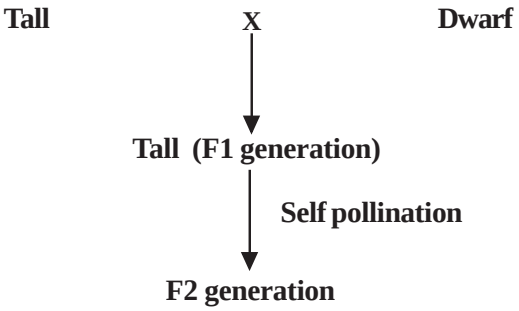
   (a) (i) and (iii) are correct (b) only (ii) is correct
   (c) only (iv) is correct (d) (ii) (iv) are correct

3. Analyse the newsreport and answer the following questions. 2

Dengue fever –
Municipality authorities decided to speed up clearing surroundings.

   a) Which are the vectors of dengue virus?
   b) Is it possible to reduce the spread of disease through social hygiene? Explain.

4. Analyse the description on Mendel's hybridization experiment and answer the questions. 3

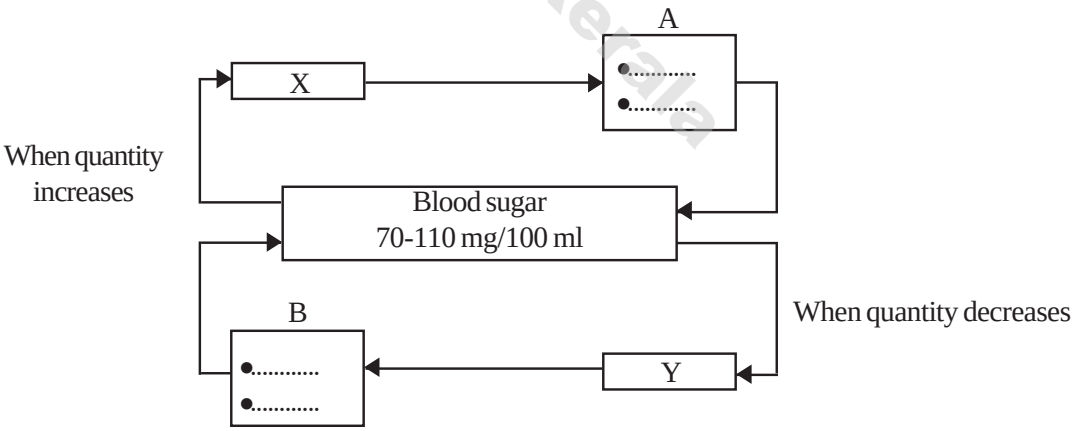


Total Plants produced	-	1064
Tall	-	787
Dwarf	-	277

a) Why is the trait dwarf not expressed in the F1 generation?

b) What are the inferences made by Mendel after observing the F2 generation?

5. (A) Observe the illustration given below. 3

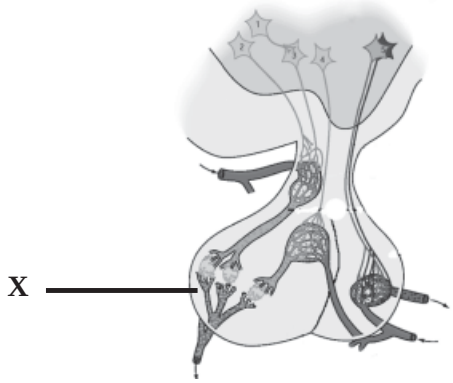


a) Name the hormones X and Y

b) Explain the processes indicated by A and B

OR

B. Observe the picture and answer the questions.



a) What does 'X' indicate?

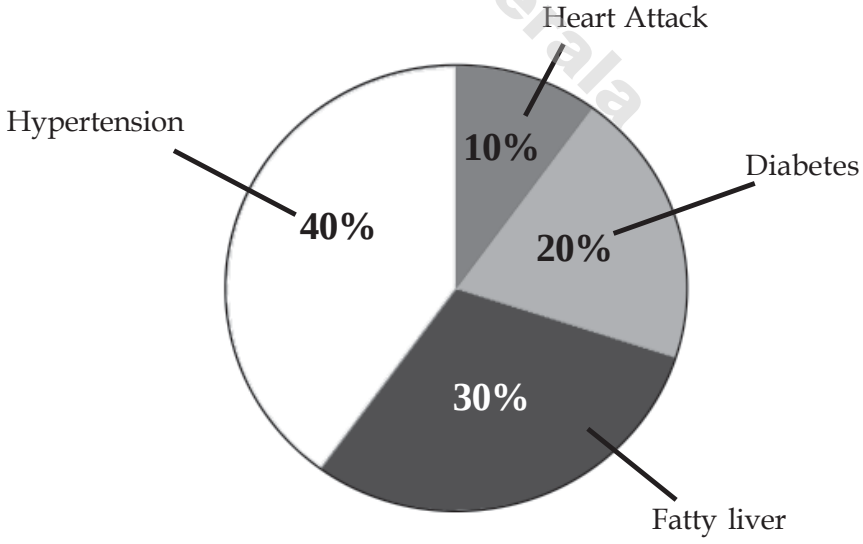
b) Which are the hormones that reach 'X' that have an influence in the production of tropic hormones?

6. Given below is a note from Thara's diary on 'Evidences of evolution.' 3

> The evolutionary relationship can be found out through the study of protein molecules of different organisms.

Justify your answer with a suitable example from molecular biology.

7. The illustration given below indicates the extent of different diseases. Analyse it and answer the following. 3



a) Which disease affected the largest number of people?

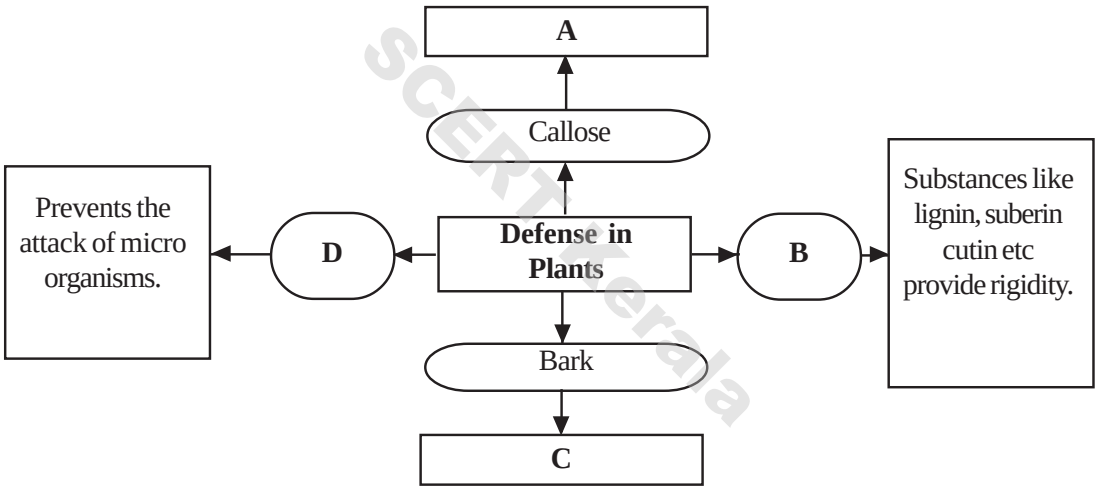
b) Under which category do the different diseases in the illustration fall?

c) What are the things to be taken care of regarding food to prevent such diseases?

8. Arrange Columns B and C based on A. 3

A	B	C
Disease	**Symptom**	**Remedy**
Glaucoma	Lens become opaque	Food which contain Vitamin A
Xerophthalmia	Nearby objects are not seen clearly	Lens replacement surgery
Cataract	Cornea become opaque	Laser Surgery
	High pressure	Spectacles using convex lens

9. Complete the illustration 2



10. Analyse the statement and answer the following. 4

Components of bacteria and separated insulin gene are used to produce insulin through genetic engineering

a) From where are the insulin producing genes separated?
b) What is the role of mRNA and tRNA in the production of proteins like insulin?
c) Is it beneficial to use animals instead of bacteria in such experiments?

11. Both the increase and decrease in the level of hormones will adversely affect body activities. Based on the activity of thyroxin, evaluate the statement using the given indicators. 3

- Functions of thyroxin
- If the level of thyroxin increases
- If the level of thyroxin decreases

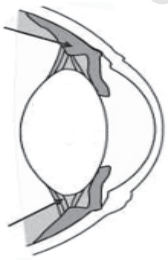
12. Analyse the statement and answer the following "There are merits and demerits of using antibiotics." 3

a) To prevent which type of pathogens are antibiotics used?
b) What are the side effects of antibiotics?

13. Find out the reason for the given statements.

a) Favourable variations lead to the origin of new species.
b) New species are not formed by the combination of acquired characters.

14. A. Observe the pictures and answer the following. 3



Picture I

Picture II

a) Which picture indicates the change in lenses while seeing a nearby object?

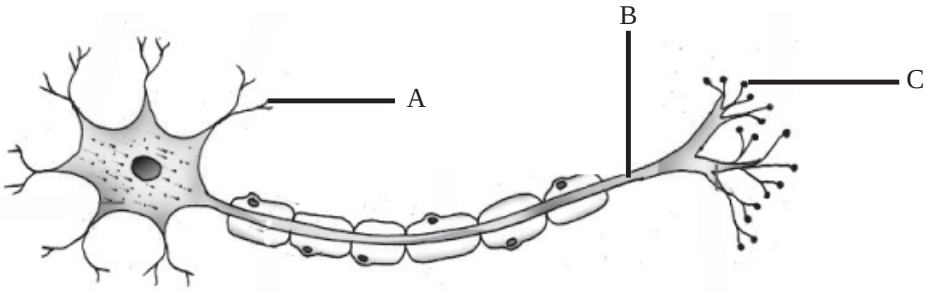
b) Explain the changes that take place in the lenses while observing nearby and distant objects.

OR

B. Prepare a flow chart of body balance using the following indicators.

- Cerebellum
- Movement of hair cells.
- Body movements.
- Vestibular nerve
- Maintaining body balance through muscular activities.
- Formation of impulse.
- The movement of fluid in the vestibular apparatus.

15. Draw the picture and answer the following questions. 4



a) Identify the parts A, B, and C.
b) Write down the functions of these parts.

B

Scoring Indicators

Qn. No.	Scoring Indicators	Split up Score	Total Score
1	Hypothalamus plays an important role in maintaining homeostasis.	1	1
2	(b) ii is correct	1	1
3	(a) Mosquito/Aedes mosquito (b) Yes, situations that lead to the multiplication of mosquitoes like the stagnation of water, dirty surrounding etc. (any two appropriate situations)	1 2 $^1/_2+^1/_2$	4
4	(a) Since its is a recessive trait. (b) (i) The character which remains hidden in the first generation appears in the second generation. (ii) The ratio of the dominant character and recessive character in the second generation is 3 : 1.	1 1 1	3
5	A. (a) X- Insulin Y- Glucagon (b) A. Enhances cellular uptake of glucose molecules converts glucose into glycogen in the liver and muscles. A. Converts the glycogen stored in the liver to glucose. Synthesis glucose from amino acids. OR B. (a) Pituitary gland. (b) Releasing, inhibitory hormones. Releasing hormones stimulate the anterior lobe of the pituitary gland. But inhibitory hormones prevent the secretion of tropic hormones by the anterior lobe.	$^1/_2+^1/_2$ $^1/_2$x4 1 1 $^1/_2+^1/_2$	3
6	- Protein molecule - Haemoglobin in man - No difference in the number of aminoacids in the beta chain of chimpanzee. - Gorilla - slight difference/difference in one amico acid. - Rat - great difference/ difference in 31 amino acids. - Chimpanzee has evolulionary relationship with human - Gene mutation causes difference in amino acids.	$^1/_2$x6	3

Qn. No.	Scoring Indicators	Split up Score	Total Score
7	(a) Hypertension (b) Life style diseases (c) Avoid fatty food items/ fast food/ soft drinks. Practice balanced diet (Any two)	1 1 $^1/_2$x2	3
8	**A** / **B** / **C** Disease / Symptom / Remedy Glaucoma / Increase in pressure / Laser surgery Xerophthalmia / Cornea becomes opaque / Food containing Vitamin A Cataract / Lense become opaque / Transplantation of lens	$^1/_2$x6	3
9	A. Prevents the entry of germs which have crossed the cell wall. B. Cell wall C. Protects the inner cells D. Cuticle in leaves.	$^1/_2$x4	2
10	(a) From human DNA (b) mRNA - Messengers/ controls protein syntheis. tRNA - Carry amino acids to the ribosome (c) Yes. Bacteria should be cultured with utmost care. It is easy to rear animals. Medicines can be extracted from blood or milk.	1 $^1/_2$+$^1/_2$ 2	4
11	- Functions of thyroxine Raises the rate of metabolism. Increases energy production (Any two functions) - Over secretion of thyroxine - Hyper thyroidism - High metabolic rate (Any two) - Under secretion of thyroxin - Hypothyroidism - Cretinism, Myxoedema (Any two)	 $^1/_2$x2 $^1/_2$x2 $^1/_2$x2	3
12	(a) To prevent bacteria Pathogens develop resistance. Destroy useful bacteria in the body. Reduce the quantity of some vitamins (Any two side effects)	1 2	3
13	a. Organisms with favourable variations survive, others destroyed/ natural selection. Favourable variations are transferred to the next generation. Accumulation of variations - origin of species. b. Acquired characters are not inherited.	$^1/_2$x3 $^1/_2$	2

Qn. No.	Scoring Indicators	Split up Score	Total Score
14	A. a) Figure II b) While viewing distant object - Ciliary muscle - Relax. - Ligaments - Stretch While viewing near objects -Ciliary muscle - relax. Ligaments - stretch OR B. Body movements → Movement of fluid in the vestibular apparatus → Movement of hair cells→ Impulses are formed → Vestibular nerve → Cerebellum → Regulate muscular movements and maintain the equilibrium of the body	1 $^1/_2$x2 $^1/_2$x2 $^1/_2$x6	3
15	For copying the diagram. a) A - Dendrite, B - Axon C - Synaptic knob b) A - Dendrite - Receives impulses from the adjacent neuron. B - Axon - Carries impulses from the cell body to outside. C - Synaptic knob - secretes neuron transmitter.	1 $^1/_2$x3 $^1/_2$x3	4
	Total		**40**

A

FIRST TERMINAL EVALUATION - 2016

BIOLOGY

Standard : X **Score : 40**

Time : 1½ hour

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 for each question is given along with the question
4. 10 and 13 are questions having choices, only one need to be answered.

1. Identify the odd one and write the common features of the others. (1)
   Headache, Smell, Hunger, Thirst

2. Observe the figure and answer the following questions. (2)

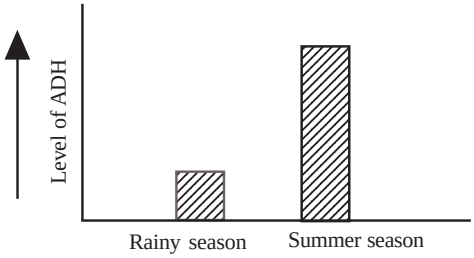
X **Y**

   (a) Identify X and Y.
   (b) Name the pigment present in Y.

3. Choose the correct statements with relation to endocrine system. (2)
   (a) Hormones are the secretions of the endocrine glands.
   (b) Hormones are carried through lymph.
   (c) Hormones are transported by blood.
   (d) All the hormones produced by the endocrine glands are proteins.

4. The following are some reflex actions. (3)
   (i) Secretion of saliva on seeing food items.
   (ii) Involuntarily withdrawing the hand on touching a hot object.
   (a) Identify their control centres.
   (b) Draw the reflex arc representing statement (ii).

5. Observe the graph that shows the level of ADH of a person. (3)



   (a) What difference do you observe in the production of ADH?
   (b) Justify your observation.

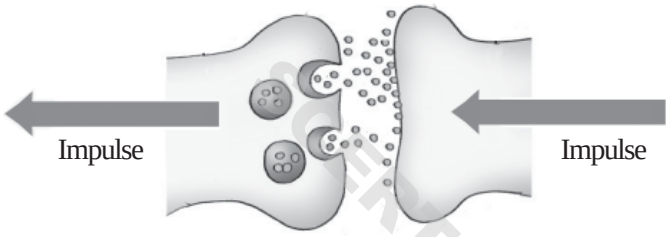
6. Justify the following statements with reasons. (2)
   (a) Tears have the ability to destroy germs.
   (b) We see objects in three dimensional form.

7. Examine the case sheets given below and answer the questions. (3)

Case 1	Case 2
Age - 4 years Mental retardation Stunted growth	Age - 42 years High rate of metabolism Increased heart beat Bulging of eye balls

   (a) The above symptoms indicate certain diseases. What are they?
   (b) What are the causes of these diseases?

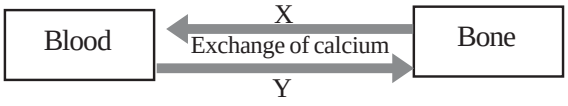
8. Analyse the illustration of synapse given below and answer the following questions. (2)



   (a) Correct the illustration and redraw it.
   (b) Prepare a note on impulse transmission through synapse.

9. Based on the hints given below, prepare a flowchart on the process of hearing. (3)
   - Vibration is created in the ear ossicles.
   - Impulses are transmitted to the cerebrum through the auditory nerves.
   - Vibration causes movement in the fluid in the cochlea.
   - Sound waves vibrate the tympanum.
   - Vibration is caused in the oval window.
   - Impulse is formed.

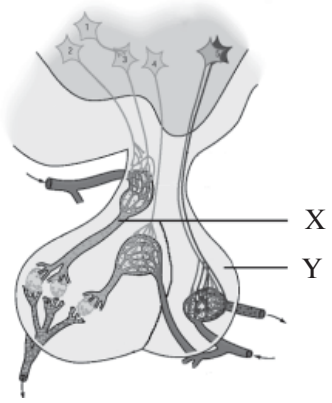
10. A. The process of maintaining the calcium level in blood is illustrated. (3)



   (a) Name the hormone marked as 'X'.
   (b) Which gland secretes the hormone marked as 'Y'.
   (c) Write another process that can rectify the deficiency of calcium in blood.

OR

B. Observe the picture and answer the questions.



a) Identify X and Y

b) What is the function of Y.

11. Observe the table given below and find a, b, c and d. (4)

Eye diseases	Causes	Remedy
Cataract	**a**	Replace the lens
b.....	High pressure in the eye as reabsorption of aqueous humour does not take place	**c** .....
d.....	Conjunctiva and cornea become dry	Consume food containing vitamin A

12. Observe the names of certain hormones given below. (4)

Indol Butyric Acid, Ethylene, Ethyphon, Abscisic acid, NaphtheleneAcetic Acid

(a) Choose any two artificial hormones that come under the category auxins.Write their functions.

(b) What are the problems due to the uncontrolled use of artificial plant hormones?

13. A. Analyse the figure illustrating the power of accommodation of eyes and answer the questions given below. (4)

I II

(a) Which figure shows the change that takes place in the lens when viewing distant objects? What is the change?

(b) Explain the process that occurred in the eye that caused the change in curvature of the lens in Figure II?

OR

B. Answer the following questions.

(a) Write the general term given for the parts of the inner ear that help in maintaining the balance of the body.

(b) Prepare a flow chart illustrating the maintenance of the balance of the body using the terms given below.

Controlling muscular activities, Body movements, Maintaining the balance, Reaching cerebellum through the vestibular nerves, Formation of impulses due to the movement of the hair cells, Movement of the fluids inside the vestibule.

14. Draw the figure, identify the parts mentioned and label them. (Do not label any other parts). (4)

(a) The part that controls sensory experiences.

(b) The part that maintains the internal equilibrium.

(c) The part that controls involuntary actions.

Scoring Indicators

A
Std. X

Qn. No.	Scoring Indicators	Split up Score	Total Score
1	Smell, others are internal stimuli	1	1
2	(a) X = Rod cell, Y - cone cell (b) Photopsin / Iodospin	$^1/_2+^1/_2$ 1	2
3	(a) Hormones are the secretions of the endocrine glands. (c) Hormones are transported through blood.	1 1	2
4	(a) i - Cerebrum ii - Spinal cord (b) Receptor, sensory neuron, interneuron, motor neuron, muscle. (Correct illustration using these words)	$^1/_2$ $^1/_2$ 2	3
5	(a) The production of ADH decreases during rainy season. Increases during summer. (b) Since the water loss through sweat is high during the summer season, reabsorption of water in the kidney increases. Since there is no water loss in the rainy season the production decreases.	 1 1+1	3
6	(a) Tears contain an enzyme called lysozyme. (b) When the brain combines the images from two sides of the same object.	1 1	2
7	(a) Case 1 - cretinism, Case 2 - Graves disease. (b) Cretinisms - Deficiency of thyroxine during infancy. Graves disease - Excessive production of thyroxine/ Persistant hyperthyroidism.	1 1+1	3
8	(a) For illustrating the correct pathway of impulses. (b) Neurotransmitters - Synaptic cleft - Adjacent dendrite. (For preparing notes including any two terms)	1 1	2
9	Sound waves vibrate the tympanum. Causes vibration in the ear ossicles. Causes vibration in the oval window. Causes the movement of fluid inside the cochlea. Impulses are generated. Impulses reach the cerebrum through auditory nerve. (For all processes 3 score, for continuous 4 processes - 2 score for continuous 3 processes 1 score.)	 3	3

Qn. No.	Scoring Indicators	Split up Score	Total Score
10	A . (a) X - Parathormone (b) Y - Thyroid gland (c) Helps in the reabsorption of calcium from the kidney to the blood.	1 1 1	3
	B . (a) X - Portal vein (b) Posterior lobe of pituitary gland Storage of oxytocin and vasopression produced by hypothalamus/ Releases them into the blood when required.	1+1 1	
11	(a) Lens become opaque (b) Glaucoma (c) Laser surgery (d) Xerophthalmia	1 1 1 1	4
12	(a) IBA, NAA rooting, prevents dropping of premature fruits. (b) Health issues, Environmental issues.	1+1 1+1	4
13	A. a - Curvature of the lens decreases. b - Ciliary muscles contract ligaments relax	1+1 1+1	4
	B. a - Vestibular apparatus b - Body movement - Movement of fluid inside the vestibule- movements of the sensory hair cells generate impulses - to the cerebellum through the vestibular nerve - controls muscular action - maintaining of equilibrium. (For all processes 3 score, for continuous 4 processes 2 score)	1 3	
14	For copying the diagram a) Cerebrum b) Hypothalamus c) Medula oblongata	1 1 1 1	4
	Total		**40**

B

FIRST TERMINAL EVALUATION - 2016
BIOLOGY

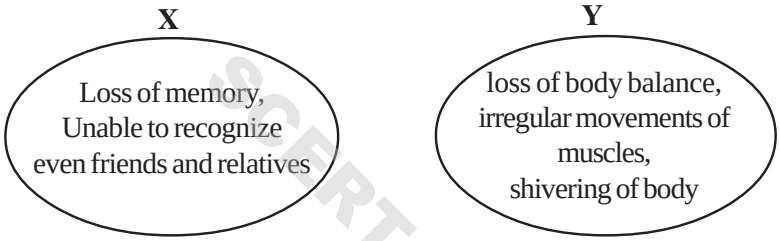
Standard : X **Score : 40**

Time : 1½ hour

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 for each question is given along with the question
4. 6 and 11 are questions having choices, only one need to be answered.

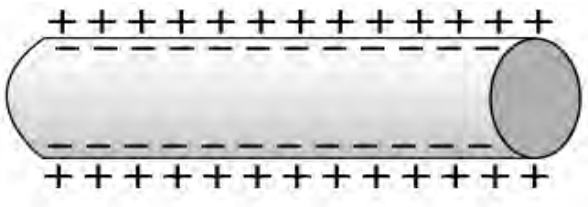
1. From those given below, identify the hormone that is not produced by the adrenal gland.
   Aldosterone, Epinephrine, Cortisol, Vasopressin. (1)
2. Given below are the symptoms of diseases seen in two persons X and Y. (3)



   (a) Identify the diseases of both X and Y.
   (b) Write the cause of Y's disease.
3. Observe the figure and answer the following questions. (3)

   (a) Which gland does X represent?
   (b) Which are the two hormones produced by this gland to control physical activities along with the sympathetic system?
4. Choose the correct statements related to sense organs from those given below. (2)
   (a) Chemoreceptors seen on papillae are called taste buds.
   (b) Receptors are uniformly distributed all over the skin.
   (c) Impulses from the olfactory receptor reach the cerebrum through the olfactory nerve.
   (d) Taste is experienced when impulses from the taste buds reach the cerebellum.

5. Observe the figure that shows the distribution of charge on either side of the plasma membrane of axon. (3)



(a) What is the reason for the formation of different charges on either side of the plasma membrane?

(b) What change does the stimuli bring in the charge on either side of the plasma membrane? How does this change get transmitted as impulses through the axon?

6. A. Maintaining the balance of the body is also a main function of the ear. (3)

(a) Which part of the internal ear is related to this function?

(b) How does this part help in maintaining the balance of the body?

OR

B. Prepare a flow chart to show the process of hearing, using the hints given below.

- Vibration of the oval window
- Vibration of the tympanum
- Impulses reach the cerebrum through the auditory nerve.
- The sensory hair cells in the basilar membrane are stimulated.
- Vibration of the ear ossicles.
- Vibration of the fluid in the cochlea.

7. Organisms like honey bees, termites etc., live in colonies with the help of certain chemical substances that function as chemical messages. (3)

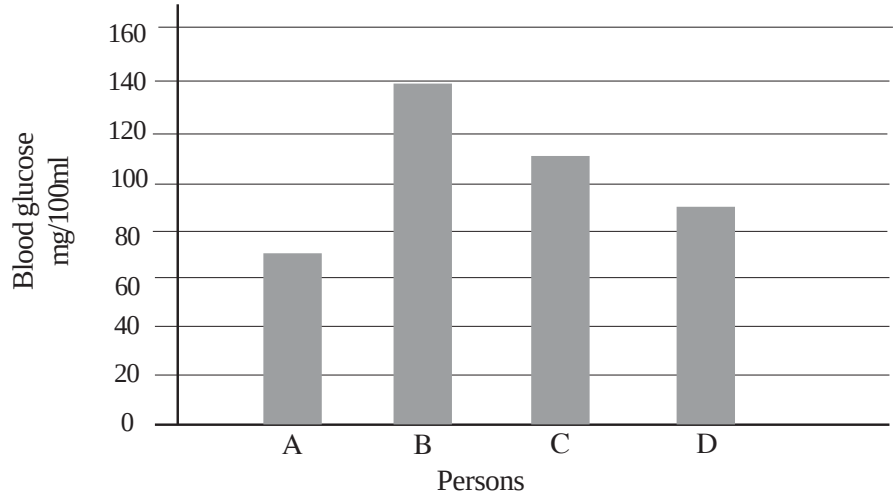
(a) What is the common name for such chemical substances?

(b) Write examples of two such chemical substances and the organisms that produces these chemical substances.

8. Make suitable pairs based on the organisms and their receptors given in the box below. (4)

Planaria, snake, ommatidia, shark, insect, eye spot, Jacobson's organ, lateral line

9. Observe the graph that shows the level of glucose in the blood of various individuals before breakfast. (4)



(a) Which persons is diabetic?

(b) Who have normal levels of glucose in blood?

(c) Write two functions of insulin that help to maintain the normal level of glucose in blood.

10. Write the changes that take place in the ciliary muscles and the lens while viewing distant objects. (2)

11. A. Observe the table and find out a, b, c and d. (4)

Disease	Level of hormones	Symptoms
a)	Deficiency of growth hormone while growing up	Stunted growth
Gigantism	b)	Excessive growth of the body
Acromegaly	c)	d) .....

OR

B. Two endocrine glands maintain the level of calcium in blood.

(a) Which are the glands mentioned?

(b) Name the hormones that help to maintain the calcium level.

(c) Explain the functions of these hormones.

12. If the reabsorption of aqueous humor does not occur, it will cause blindness. How? How can this defect be rectified? (2)

13. Choose the correct statements from those given below. (2)

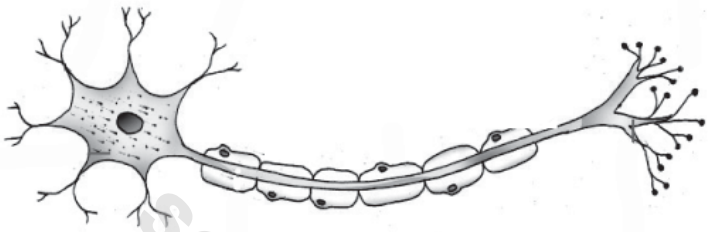
(a) Pituitary glands produce thyroid stimulating hormone.

(b) Hypothalamus produces growth hormone.

(c) Adreno Cortico Tropic Hormone stimulates the activities of the medulla of the adrenal gland.

(d) Oxytocin and vasopressin are produced by special nerve cells in the hypothalamus and are stored in the posterior lobe of the pituitary gland.

14. Draw the figure, identify the parts mentioned and label them. (Do not label any other parts). (4)



a) The part that secretes acetylcholine.

(b) The part which receives messages from the adjacent neuron.

(c) The part that carries impulses from the cell body to outside.

Scoring Indicators

B
Std. X

Qn. No.	Scoring Indicators	Split up Score	Total Score
1	Vasopressin	1	1
2	(a) X-Alzheimer's, Y - Parkinsons (b) Destruction of specialised ganglions in the brain/ Decrease in the production of dopamine, a neurotransmitter	$^1/_2+^1/_2$ 1 1	3
3	(a) Adrenal (b) Epinephrin, norepinephrin	1 1+1	3
4	a/ Task buds are chemoreceptors seen in the papillae. c/ Impulses from the olfactory receptors reach the brain through olfactory nerve.	1 1	2
5	(a) The difference in the distribution of ions on either side of the plasma membrane. (b) When stimulated, the outer surface of the plasma membrance becomes negatively charged and the inner surface becomes positively charged. The momentary charge difference stimulates its adjacent parts and impulses get transmitted.	1 1 1	3
6	A . (a) Vestibular apparatus. (b) Body movements create movement of fluid inside the vestibular apparatus of the internal ear. This creates movements of the sensory hair cells and generates impulses. These impulses are transmitted by the vestibular nerve to the cerebellum. Controls muscular movements and maintain the equilibrum of the body.	1 2	3
	B . • Vibration of tympanum • Vibration of the ear ossicles. • Vibration of the oval window. • Vibration of the fluid inside the cochlea. • Stimulates the hair cells of the basilar membrane. • Impulses reach the cerebrum through the auditory nerve. (Correct pairs $^1/_2$ mark)	3	
7	(a) Pheromone (b) Musk deer - musk Civet cat - civeton Female silk worm bombycol (Any four)	1 1+1	3

Qn. No.	Scoring Indicators	Split up Score	Total Score
8	Planaria - Eye spot Snake - Jacobson's organ Shark - Lateral line Insect - Ommatidia	1 x 4	4
9	(a) Person B (b) A, C, D (Any two) (c) Enhances cellular uptake of glucose molecules.	1 1 1+1	4
10	Ciliary muscles relax. Curvature lens decreases.	1+1	2
11	A . (a) Dwarfism (b) Increases the production of growth hormone during the growth phase. (c) Excessive production of growth hormone (somatotrophin) after the growth phase. (d) Growth of the bones on face, jaws and fingers.	1 1 1 1	4
	B . (a) Thyroid gland and parathyroid gland. (b) Calcitonin, parathormone (b) Calcitonin - deposits excess calcium from the blood to the bones/ prevents the mixing of calcium with blood from the bones. Parathormone - reabsorption of calcium/ Prevents the deposition of calcium in bones.	1 $^1/_2+^1/_2$ 1 1	
12	Increase in pressure inside the eyes causes damage to the retina and the photoreceptors Laser surgery	1 1	2
13	Pituitary gland prodeuces Thyroid stimulating hormone. The posterior lobe of the pituitary stores oxytocin and vasopressin produced by the special nerve fibres in the hypothalamus.	1 2 1	
14	For copying the diagram. a) Synaptic knob b) Dendrite c) Axon C for correct labelling	1 1 1 1	4
	Total		**40**

C

FIRST TERMINAL EVALUATION - 2016
BIOLOGY

Standard : X **Score : 40**
Time : 1½ hour

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 for each question is given along with the question
4. 10 and 13 are questions having choices, only one need to be answered.

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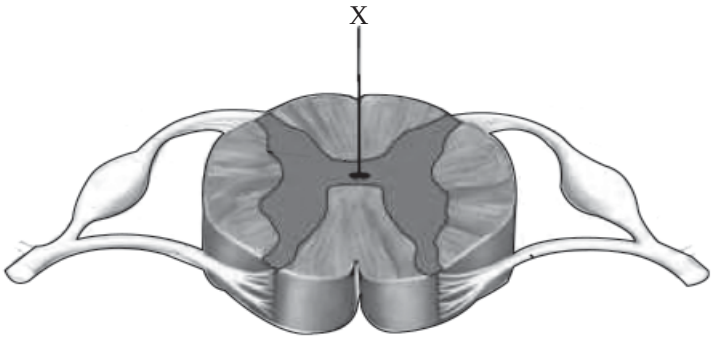
1. Which membrane protects the central nervous system?
   Myelin sheath, Skull, Meninges, Nerve fibres. (1)
2. Identify the word pair relationship and fill in the blank. (1)
   Planaria : Eye spot
   Insect : .....
3. Arrange columns B and C of the table to match with column A. (3)

A	B	C
Pituitary gland	Calcitonin	Protects the foetus
Ovary	Prolactin	Stores calcium in the bones
Thyroid gland	Glucagon	Reabsorption of the calcium to the blood
	Progesterone	Production of breast milk

4. Justify the statements given below. (2)
   a. Smell can be detected only if mucus is present.
   b. People with colour blindness cannot identify red and green colours.
5. Observe the figure given below and answer the following questions. (3)



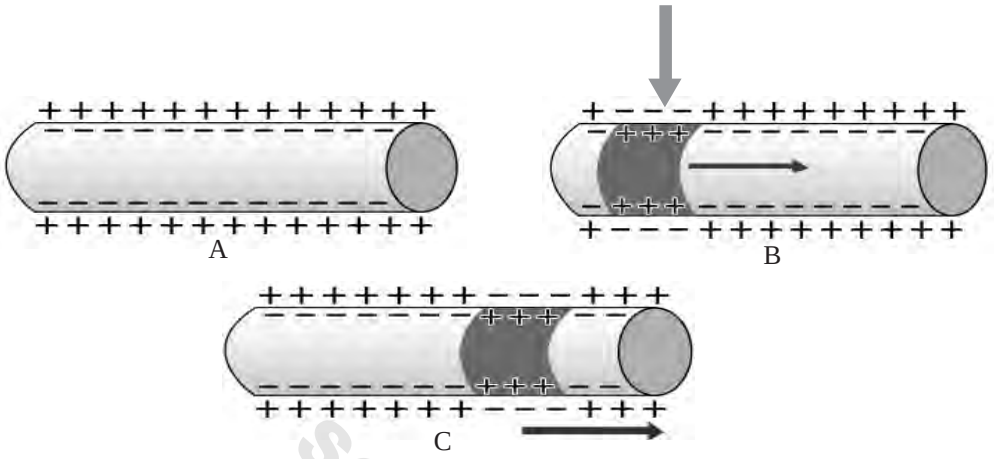
   a. Identify X.
   b. What are the peculiarities of the impulses that are transmitted through the dorsal root and the ventral root?

6. Justify the statements with suitable reasons. (2)

   a. In diabetic patients, the glucose level in blood will be above 126mg/100ml in the test done before taking any food in the morning.

   b. Pineal gland is also known as the biological clock.

7. Observe the figure showing the transmission of the nerve impulses through axons and answer the following questions. (4)



   a. What is the change seen in Figure B? Give the reason.

   b. Explain how the change is transmitted as impulses through the axon.

8. Answer the following questions. (4)

   a. Which hormone helps in the reabsorption of water in the kidneys? Where is it produced?

   b. Which disease is caused due to the deficiency of this hormone? Write down the symptoms of the disease.

9. Light rays that reflect from an object focus on the retina to form an image. (3)

   a. List the peculiarities of this image.

   b. How are the images that are formed in the two eyes combined? What is the advantage of this?

10. A. Artificial plant hormones are widely used in the agricultural sector. Prepare a write up on their advantages and disadvantages. (4)

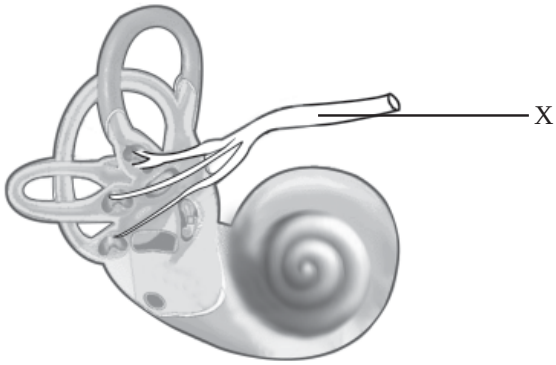
OR

   B. Answer the following questions.

   a Which hormone accelerates the growth and development of the brain in the foetal stage and infancy and also raises the rate of metabolism?

   b. Prepare a flow chart showing the relation between hypothalamus and pituitary glands leading to the production of this hormone.

11. Observe the figure and answer the questions given. (4)

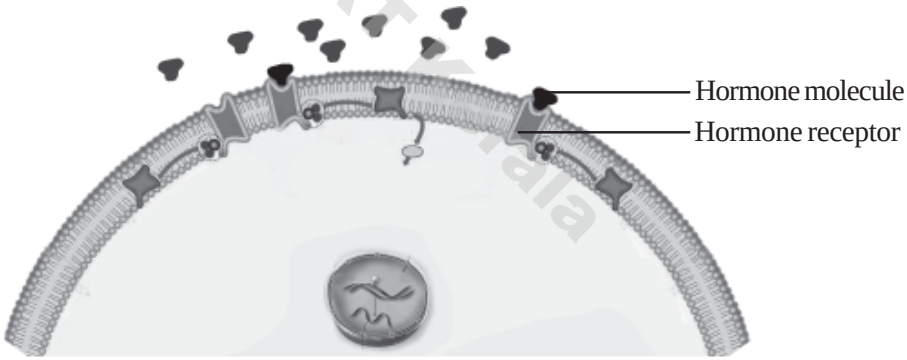


a. What does the figure represent?

b. Identify 'X' and write its functions.

c. Name the nerve that carries impulses of hearing to the cerebrum.

12. Observe the illustration given below and explain how the hormones function in the target cells. (3)



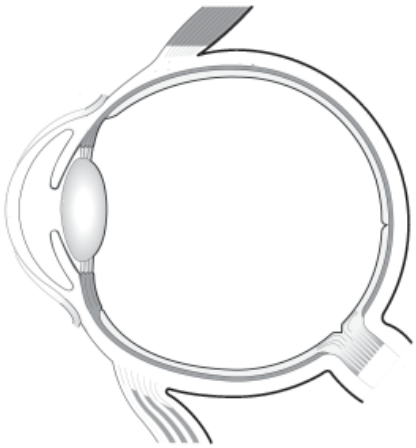
13. A. Synapse is the junction only between two neurons. Respond to this statement. (2)

OR

B. Write the action of sympathetic and parasympathetic systems on the organs given in the table below.

Organs	Parasympathetic system	Sympathetic system
Eyes	.....	.....
Intestine	.....	.....

14. Draw the figure given below. Identify the parts from the hints given and label them. (Do not label other parts). (4)



a. The part where the fluid that nourishes the tissues of the eye is present.

b. The part of the retina that has no photoreceptor cells.

c. The muscles that adjust the curvature of the lens.

C

Scoring Indicators

Qn. No.	Scoring Indicators	Split up Score	Total Score
1	Meninges	1	1
2	Omatidia 1	1	
3	Pituitary gland - Prolactin - Production of milk - Ovary - Progisterone - implantation - of embryo in the uterus - Thyroid - Calcitonin - deposits calcium in bones	1 1 1	3
4	(a) Olfactory receptors are stimulated only if aromatic particles dissolve in the mucus. (b) Defect of cone cells which detect red and green colours.	1 1	2
5	(a) 'X' - Central canal (b) Sensory impulses reach the spinal cord through the dorsal root. Motor impulses go out of the spinal cord through the ventral root.	1 1+1	3
6	A. Either decreased production of insulin or its malfunctioning. B. Melatonin synthesised by the pineal gland regulates the rhythm of life.	1 1	2
7	(a) Positive charge outside and negative charge inside the plasma membrane. Received impulses/ difference in the distribution of ions. (b) When stimulated, the ionic equilibrium in the particular part changes. This change does not persist for long. This change stimolates the adjacent part and impulses get transmitted through axon.	1+1 2	4
8	(a) Vasopressin/ADH, Hypothalamus. (b) Diabetes insipidus, frequent urination/ excess amount of urine increased thirst.	1+1 1+1	4
9	(a) Real, small, inverted (Any two) (b) Images formed in both the eyes are combined together in the visual area of our brain. Helps to see the 3 dimensional image of the object.	$^1/_2+^1/_2$ 1+1	3
10	A . For writing any two uses of artificial hormones. For writing environmental issues, health issues	1+1 1+1	4.

Qn. No.	Scoring Indicators	Split up Score	Total Score
	OR		
	B. (a) Thyroxine	1	
	(b) Hypothalamus - Releasing hormone - pituitary gland - TSH - Thyroid gland - Thyroxine.	3	
	For illustrating the correct flow chart.		
11	(a) Vestibular apparatus/ internal ear.	1	
	(b) X - Vestibular Nerve - Carries impulses related to body balancing to cerebellum.	1 +1	
	(c) Auditory nerve/ cochlear nerve.	1	4
12	Hormones act upon only those cells which have specific receptors. Hormones combine with receptors to form Hormone receptor complex. Enzymes are activated within the cells. Changes occur in cellular activities.	3	3
13	A- Do not agree completely.	1	
	Synapse can be formed between two neurons or neuron and a muscle cell.	1	2
	OR		
	B- Eye - Parasympathetic - pupil constricts.		
	Sympathetic - pupil dilates.	$^1/_2+^1/_2$	
	Intestive - parasympathetic - peristalsis become normal.		
	Sympathetic - peristalsis slows down.	$^1/_2+^1/_2$	
14	For copying the diagram.	1	
	a) Aqueous chamber	1	
	b) Blind spot	1	4
	c) Ciliary muscle	1	
	Total		**40**