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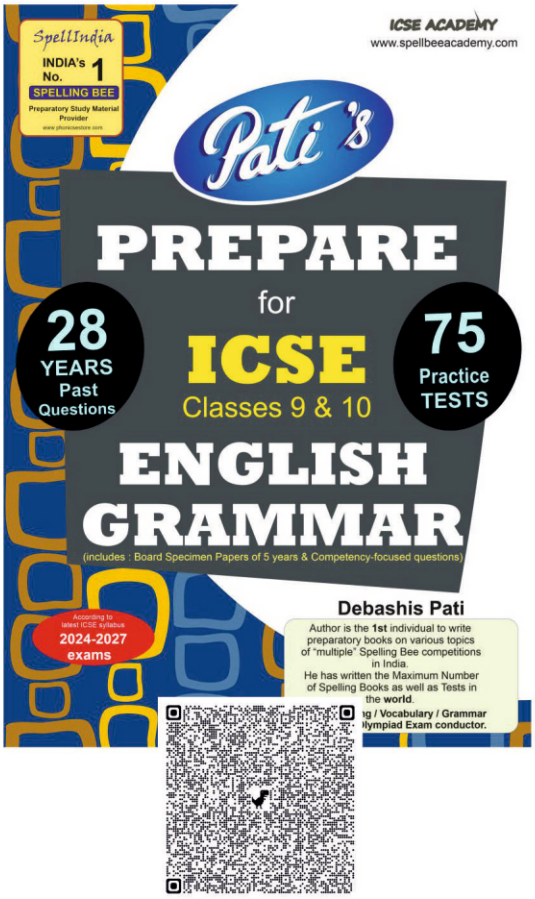

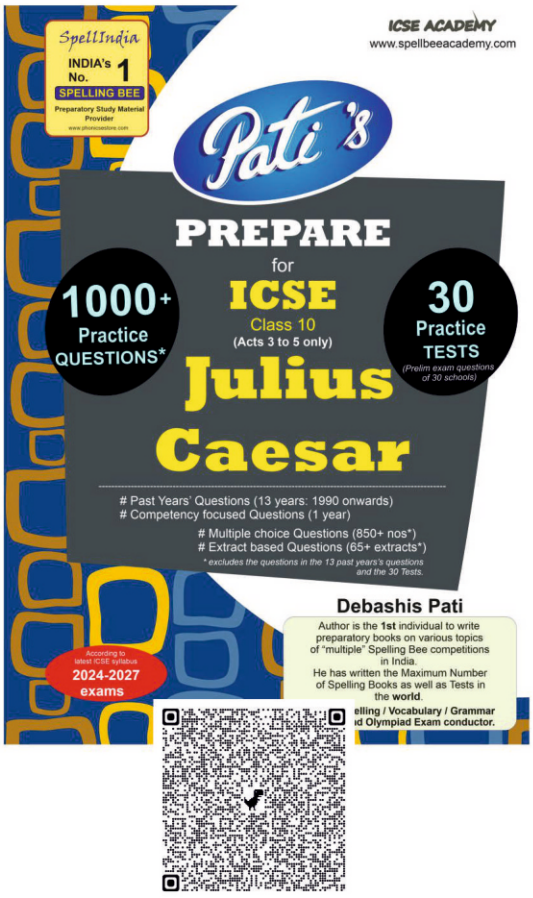

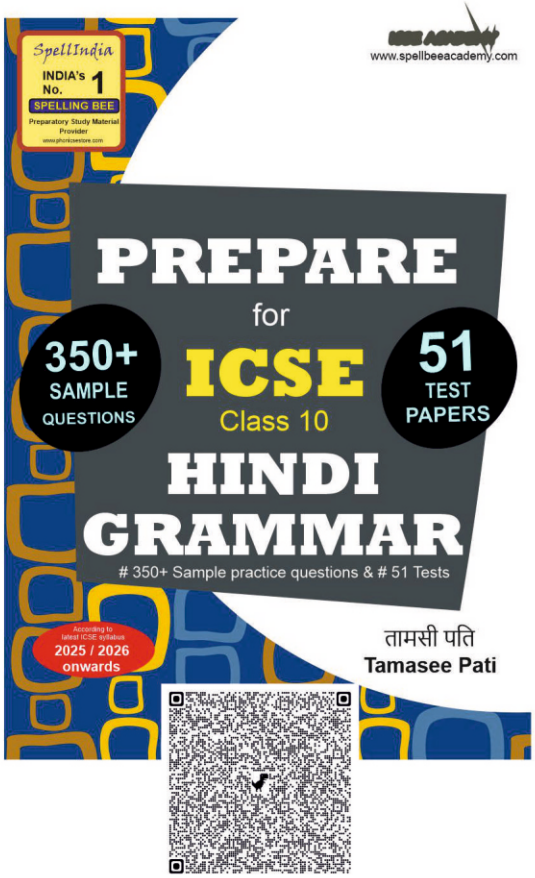

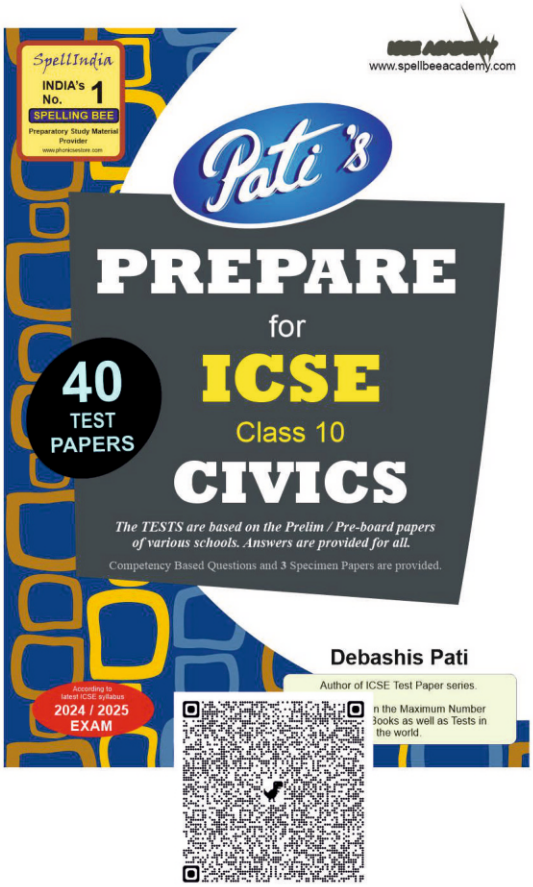

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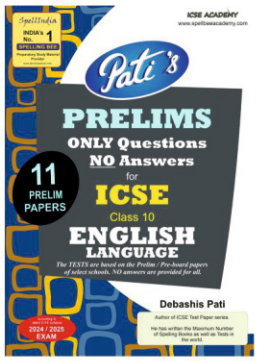

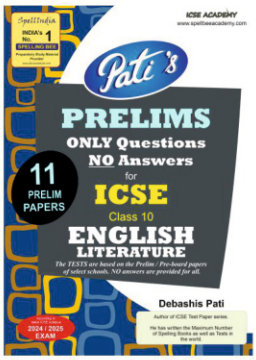

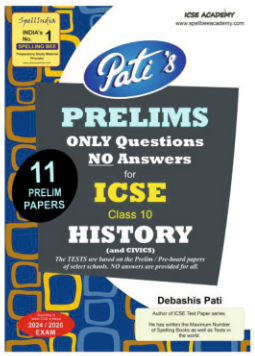

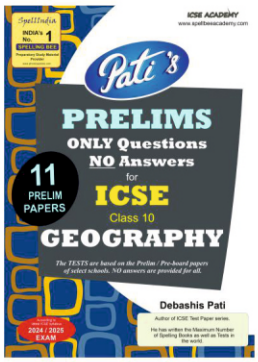

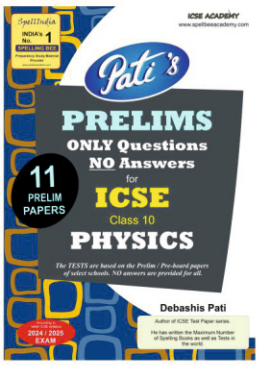

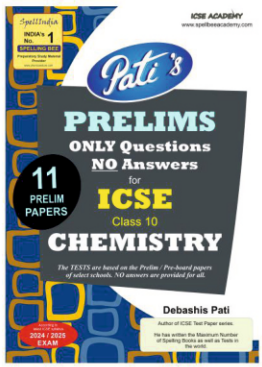

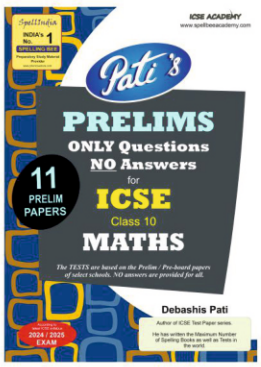

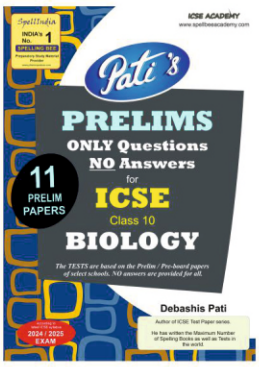

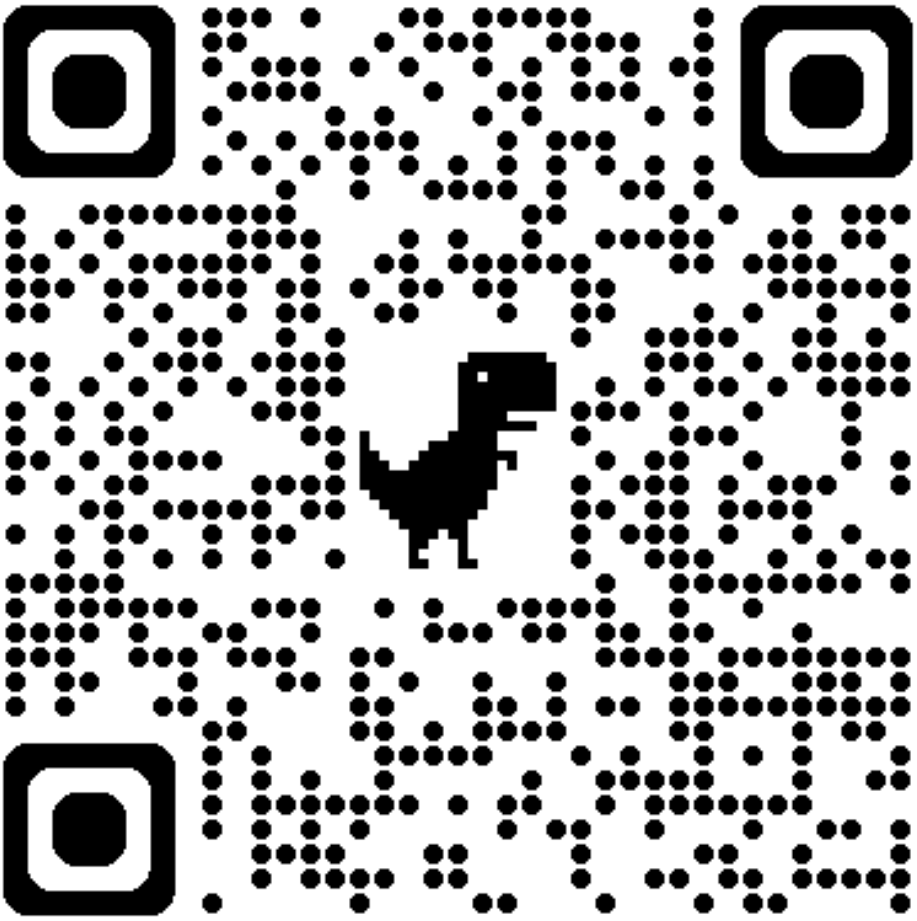

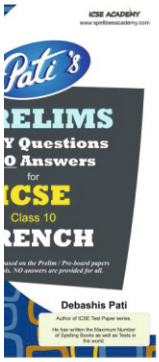

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(In this flipbook for 3a)

1. Sulochanadevi Singhania, Thane - Set A
2. Sulochanadevi Singhania, Thane - Set B
3. Parle Tilak Vidyalaya, Mumbai
4. Jankidevi Public, Mumbai
5. Lokhandwala Foundation, Mumbai
6. Don Bosco, Kolkata
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Set 3b : Question Papers

(Not in this flipbook but in the following one for 3b)

11. Loreto House, Kolkata
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14. Maneckji Cooper, Mumbai
15. Vissanji, Mumbai
16. Cathedral & John Connon, Mumbai
17. Pawar Public, Chandivali, Mumbai
18. Orion, Mumbai
19. Pawar Public, Hadapsar, Pune
20. Lilavati Podar, Mumbai

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22. Jamnabai Narsee, Mumbai

23. Anand Niketan, Nashik

24. J B Petit, Mumbai

25. Karnataka ICSE SchoolS Association KISA

26. Bai Avabai F Petit Girls, Mumbai

27. Unknown - 1, Kolkata

28. Unknown - 2, Kolkata

2025-2026 - Prelim 2

Question Paper 1

SMT.SULOCHANADEVI SINGHANIA SCHOOL, THANE

Class	Subject	Exam	Date	Marks	Time	No.of sides
10	BIOLOGY	Prelims	6.01.2026	80	2Hrs	8

Section A

(Attempt all questions from this section)

Question 1.

Choose the correct answers to the questions from the given options. [15]

(Do not copy the question, write the correct answers only)

i. In females, why are X-linked diseases less common?

(a) Females both X chromosomes may not carry the recessive gene.
(b)Females have stronger genes
(c)Females have a Y chromosome to compensate
(d) Females lack the ability to carry genetic mutations

ii. The first man like ancestor to hunt animals .

(a)Homo erectus (b) Homo habilis
(c) Neanderthal man (d) Cro-Magnon

iii. **Assertion (A)** - The phenomena involving the movement of plant part in response to touch is called thigmotropism.
Reason (R)- Plants such as sweet peas, *Cuscuta* and vines have tendrils which coil around other parts in response to one sided contact or touch.

(a) Both A and R are true (b) Both A and R are false
(c) A is true and R is false (d) A is false and R is true

iv. Laila attained puberty at the age of 14. She observed some changes in her body. Which of the following were the hormones involved in the process mentioned above?

1. Oestrogen 2. Testosterone 3. Progesterone 4. LH and FSH

(a) Only 3 (b) Only 1 and 4 (c) Only 1, 3 and 4 (d) Only 1, 2 and 3

v. Sita matched pollutants with their effects on the environment. She tabulated the pairs as follows:

Pollutant	Effect on the environment
A	Causes global warming and ice cap melting.
B	Pollutes water, leading to algal blooms.

Identify the correct pair of pollutants:

a. A – Methane, B –Potassium .
b. A – Carbon monoxide, B – Pesticides.
c. A – Ozone, B – Heavy metals.
d. A – Carbon dioxide, B – Phosphates.

vi. Birth rate is the number of live births per thousand persons in:

[a] 1 year (b) 2 years (c) 10 years (d) 20 years

vii. A neuroscience student is learning how signals are transmitted between nerve cells. The professor explains that certain chemicals are released at the synapse to help carry these signals across the junction. Chemicals which are released at the synaptic junction are called _____

[a]Hormones [b] cerebrospinal fluid
[c] Neurotransmitter [d]lymph

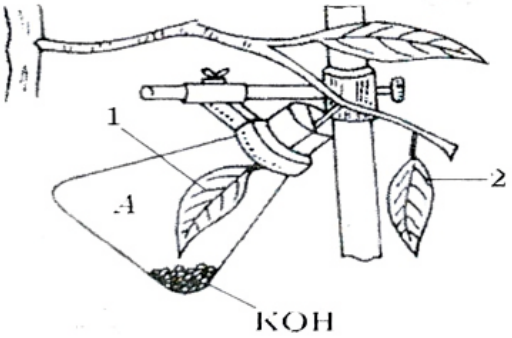
viii. An eye surgeon explains to a patient that when an eye is donated, a specific part is commonly grafted to restore vision, the part of eye which is grafted in a needy patient from a donated eye is _____

[a] cornea [b] conjunctiva
[c] choroid [d] ciliary muscles

ix. Cell division by meiosis of a parent cell with 23 pairs of chromosomes will result in: _____

(a)2 cells, each with 23 pairs of chromosomes.
(b)2 cells, each with 23 single chromosomes.
(c)4 cells, each with 23 pairs of chromosomes.
(d)4 cells, each with 23 single chromosomes.

x. The diagram given below represents an experiment to demonstrate a particular aspect of Photosynthesis. The letter 'A' indicates a certain condition inside the flask. Answer the question:



In what manner do the leaves 1 and 2 differ at the end of the starch test?
(a)Leaf 1 turns brown, Leaf 2 turns blue black.
(b)Leaf 1 turns blue black, Leaf 2 turns brown.
(c)Leaf 1 turns purple, Leaf 2 remains green.
(d) There is no change in the colour of the leaves.

xi. A biology student is learning about glands in the human body and discovers that one particular gland is unique because it produces both hormones and enzymes, which play a crucial role in digestion and metabolism. A gland which secretes both hormone and enzyme is _____

[a] Pituitary [b] Pancreas
[c] Thyroid [d] Adrenal

xii. The main nitrogenous waste formed in the human body is
[a] Uric acid [b] Urea
[c] Ammonia [d] Creatinine

xiii. Match the items in column I with those which are most appropriate in column II and choose the correct option.

Column I	Column II
A. Turgid	(i) intake of mineral salts
B. Diffusion	(ii) a cell charged with water
C. Active transport	(iii) limiting membrane of a vacuole
D. Osmosis	(iv) movement of particles from higher to lower concentration
E. Tonoplast	(v) movement of solvent across semi-permeable membrane

(a) A-(ii), B-(v), C-(i), D-(v), E-(iii)

(b) A-(iii), B-(iv), C-(i), D-(v), E-(ii)

(c) A-(i), B-(iv), C-(ii), D-(v), E-(iii)

(d) A-(ii), B-(iv), C-(i), D-(v), E-(iii)

xiv. **The mineral ion needed for the formation of blood clot is:**

[a] Potassium [b] Sodium

[c] Calcium [d] Iron

xv. If a pure tall plant is crossed with a pure dwarf plant the offsprings will be

[a] All Tall [b] 3 Tall , 1 Dwarf

[c] All Dwarf [d] 50% Tall , 50% Dwarf

Question2:

Q2A. Name the following:- **[5]**

a) The layer of the eyeball that provides nourishment to the eye.

b) One gaseous compound which depletes the ozone layer.

c) The structure which connects the placenta to the foetus.

d) A pair of corresponding chromosomes of the same shape and size, one from each parent.

e) The compound formed when haemoglobin combines with carbon monoxide in the blood.

Q2B. Choose the odd term out from each of the following set of terms. Mention the category to which the remaining three belong: **[5]**

i) Haemoglobin, Glucagon, Iodopsin, Rhodopsin.

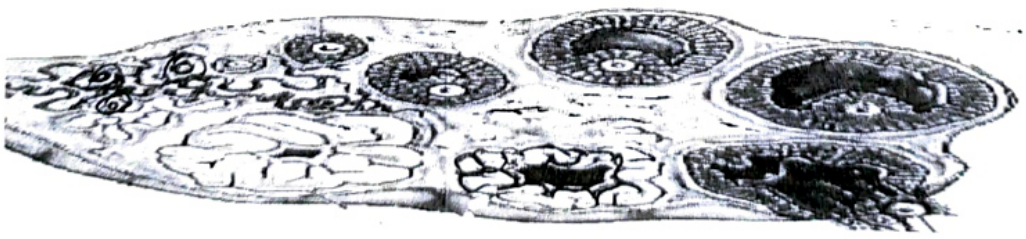
ii) Urethra, Uterus, Urinary, bladder, Ureter.

iii) Transpiration, Photosynthesis, Phagocytosis, Guttation.

iv) Cyton, Photon, Axon, Dendron.

v) Oxytocin, Insulin, Prolactin, Progesterone

Q2C. Given below is the structure of the ovary, read the information given below and fill in the blanks: **[5]**



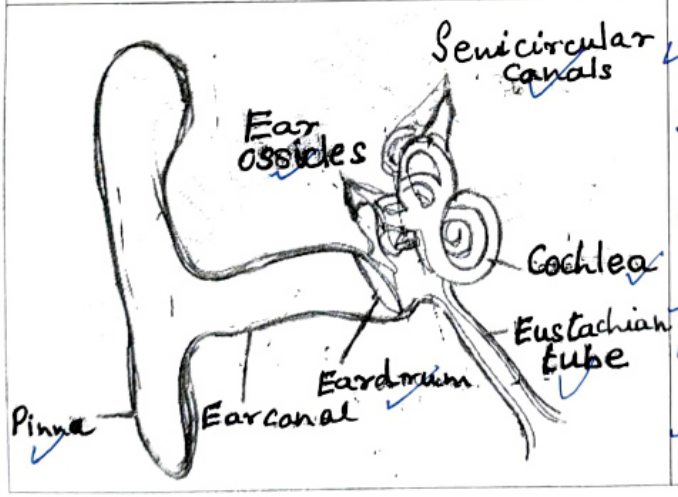
A pair of ovaries are two whitish oval bodies almond shaped. Lying in the lower half of the abdomen on either side of the uterus. They produce the female gamete by the process of oogenesis. The surface of ovary has many granular appearances which develops into the egg and releases two female hormones.

The human female gonads are ovaries. A maturing egg in the ovary is present in a sac of cells called (i)..... . As the egg grows larger, the follicle enlarges and gets filled with a fluid and is now called the (ii) ..... follicle. The process of releasing the egg from the ovary is called (iii).....The ovum is picked up by the oviducal funnel and fertilization takes place in the (iv).....In about a week the blastocyst gets fixed in the endometrium of the uterus and this process is called(v) .....

Q2D. Nisha, a 30-year-old woman, has been feeling unusually fatigued, gaining weight, and experiencing hair loss. Her doctor diagnosed her with hypothyroidism, a condition where the thyroid gland does not produce enough thyroxine. This hormone is crucial for regulating metabolism, and its deficiency has slowed down her body's metabolic rate. **[5]**

a) What is the function of thyroxine in the body?
b) Name the inorganic mineral required for production of thyroxine.
c) What are common symptoms of hypothyroidism?
d) State the location of the thyroid gland in the human body.
e) Mention the disorder caused due to hyperthyroidism.

Q2E. Study the diagram given below and match the structure with its function: [5]
Example – Cochlea – f) Convert sound vibrations to impulse

Column A- Structure	Column B- Function
	a) Converts sound waves to vibrations b) Equalizes air pressure on either side of the eardrum c) Amplification of sound vibrations d) Collects sound waves e) Maintains dynamic balance in the body f) Converts sound vibrations to impulse

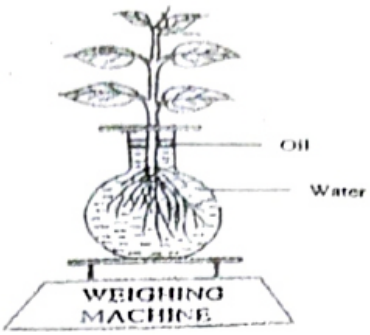
SECTION B (40 Marks)

*(Attempt **any four** questions from this Section.)*

Question 3 (10)

i. Explain the term – Menopause . [1]

ii. Reena performed an experiment on a plant and arranged the set-up as shown below, observe the same and help her to answer the question: [2]



a) What will Reena observe with regard to the level of water when this setup is placed in bright sunlight?

b) Why did Reena use the weighing machine in the given set -up?

iii. Aditya is fond of roller – skating, he wants to excel in his performance, which of the body parts will help him perform better. [2]

a) The part of his body which helps him to maintain body balance.

b) The part of his body that keeps him focused.

iv. Differentiate between: Natality and Mortality based on- Definition. [2]

v. Draw a neat labelled diagram of the prophase in animal cell with four chromosomes. [3]

Question 4: (9)

i) Substances which are made up of cellulose or proteins are hydrophilic. What will happen to the wooden doors in rainy season? [1]

(ii) What is apical dominance? [2]
Name the hormone that controls it.

(iii) Give differences between - [2]
Cranial nerves and Spinal nerves.

(iv) Explain - [2]
A trait may be inherited but may not be expressed.

(v) Draw a clear diagram of human kidney and label following parts - [3]
Renal capsule, Renal cortex, Pelvis and Ureter.

Question 5: (10)

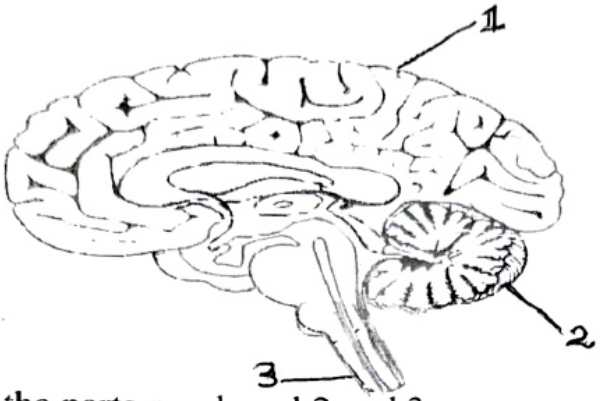
i) Define – Reflex action [1]

ii) Testis is the male gonad an essential organ which releases male hormone A and produces sex cells B. [2]

a) Name A and B.

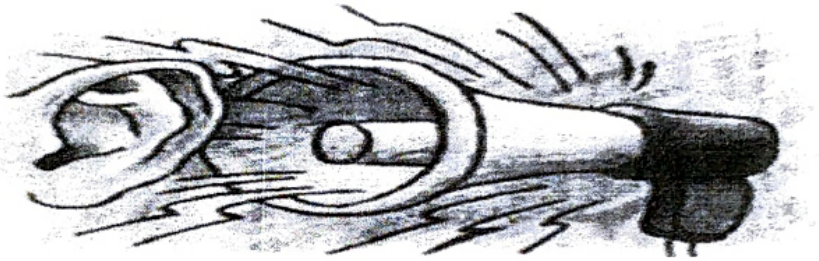
iii) Draw a neat labelled diagram of the male gamete. [2]

(iv) The diagram given below is that of a human brain. Answer the questions that follow: [2]



(a) Label the parts numbered 2 and 3.
(b) State any one function of the part numbered 1.

(v) Given below is a representation of a kind of pollution. Study the same and answer the questions that follow: [3]

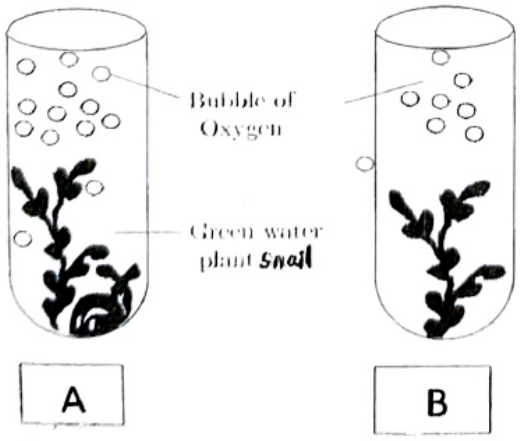


(a) Name the kind of pollution.
(b) List any two common sources of this pollution.
(c) Mention one harmful effect of this pollution on human health.

Question 6 (8)

(i) What is Demography? [1]

(ii) Shree was conducting an experiment to check the amount of oxygen bubbles released during photosynthesis for which she made the setup shown below, with two test-tubes A and B. Test-tube A with a green water plant. Test-tube B with a green water plant and a snail. She then kept both test-tubes in sunlight: [2]



(a) What is the purpose of keeping a snail in test- tube 'A'?
(b) Why does test-tube 'A' have more bubbles of oxygen than B?

iii) Expand the abbreviation: [2]

(a) DNA

(b) ADH

iv) Distinguish between Red Blood Cells and White Blood cells based on – [2]

(a) Structure

(b) Function

v) A pea plant which is homozygous for Green pods which are inflated [GGII] is crossed with a homozygous plant for yellow pods which are constricted [ggii]. Answer the following questions: [3]

(a) Draw a punnet square to show the cross to obtain F1 generation.

(b) Write the phenotypic ratio of the F2 generation.

(c) Write the possible combinations of the gametes that can be obtained if two F1 hybrid plants are crossed.

Question7: (10)

i) Define – Osmosis. [1]

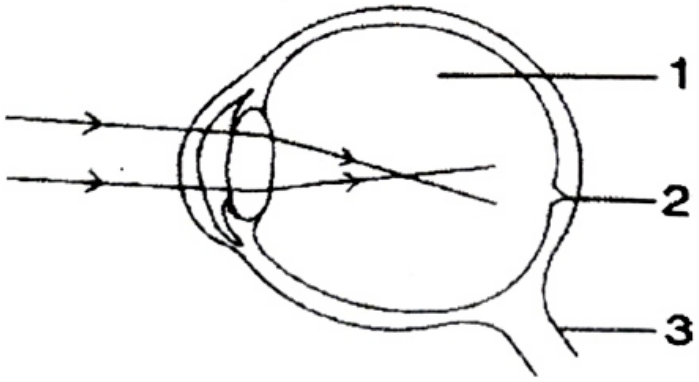
ii) Cro-Magnon were early humans living in Europe around 30,000 years ago. They had larger brains than Neanderthals, prominent chins, and demonstrated advanced tool-making and hunting skills. [2]

(a) What was the brain size of Cro-Magnon?

(b) Mention one structural feature of Cro- Magnon.

iii) Differentiate between bicuspid valve and tricuspid valve – Based on its location [2]

iv) Given is a diagram depicting a defect of the human eye. Study the same and then answer the questions that follow: [2]



(a) Name the part labelled 2, and the cells contained in it.

(b) Give one possible reason for this eye defect.

v. Draw a neat labelled diagram of a plasmolysed cell, when observed under a microscope. [3]

Question 8:

i. Define – Semen . [1]

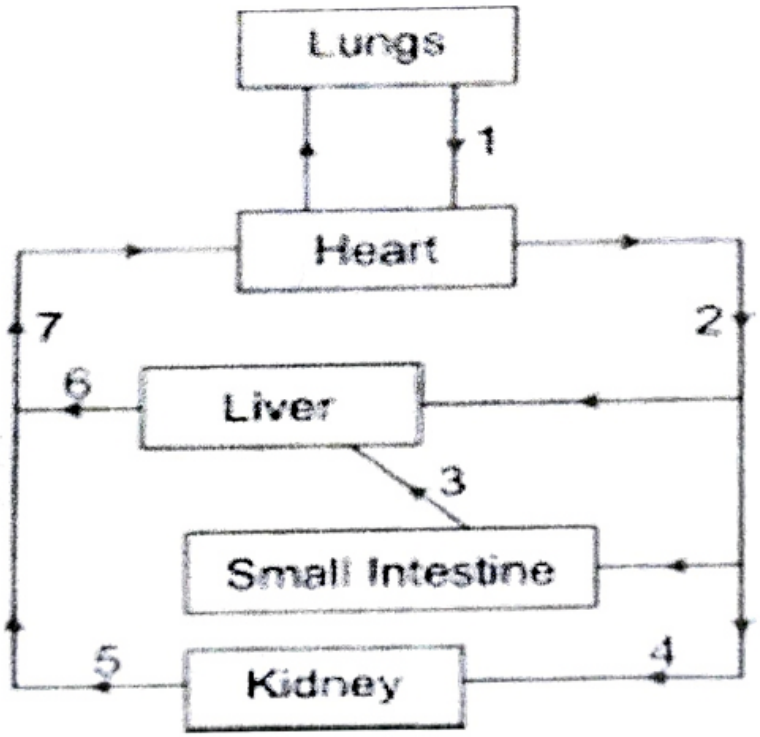
ii. Renal cortex and Renal medulla [*Parts of the nephrons present*] [2]

iii. Justify – Twins need not be identical . [2]

iv. Two individuals during a street fight, had certain effects on some of the organs in the body. Mention the effects of two individuals in a street fight on the following organs by the autonomous nervous system [2]

Organ	**Sympathetic system**	**Parasympathetic system**
(1) Heart	a)	b)
(2) Pupil of the eye	c)	d)

v. The schematic diagram below shows the human circulatory system. Answer the following questions: [3]



(a) Name the blood vessel 3.
(b) Name the blood vessel which carries maximum urea in the above diagram, long hours after food.
(c)Mention one structural difference between part labelled 2 and 7.

Question Paper 2

SMT.SULOCHANADEVI SINGHANIA SCHOOL, THANE

Class	Subject	Exam	Date	Marks	Time	No.of sides
10	Biology	Prelims	8.01.2026	80	2 hrs	8

Section A

(Attempt all questions from this section)

Question 1.

Choose the correct answers to the questions from the given options. **[15]**

(Do not copy the question, write the correct answers only)

i. Susheel a colour-blind man is married to Susheela a woman with normal vision, which of the following combinations would be possible in their children-

[a] Colourblind daughter and Colourblind son
[b] Carrier daughter and Normal son
[c] Carrier daughter and Colourblind son
[d] Normal daughter and Colourblind son

ii. The human ancestor with a cranial capacity between 800-1125cc is -

(a) Homo habilis (b) Neanderthals
(c) Cro-Magnon (d) Homo-erectus

iii. Rohit went to fruit market to buy fruits. He saw the shopkeeper is spraying some powder like substance on the unripe fruits. He asked the shopkeeper about the powder. The shopkeeper replied that it helps in ripening of fruits quickly. This is due to

(a) ethylene (b) abscisic acid
(c) auxin (d) oxytocin

iv. The biology teacher was explaining the correct route that a sperm follows when it leaves the testis of a mammal, and that would be -

(a) Epididymis – vas deferens –urethra
(b) Vas deferens- epididymis – urethra
(c) Urethra – epididymis – vas deferens
(d) Epididymis – urethra – vas deferens

v. Neha matched pollutants with their effects on the environment. She tabulated the pairs as follows:

Pollutant	Effect on the environment
A	Leads to hearing loss and stress in humans.
B	Pollutes water and harms marine life.

Identify the correct pair of pollutants:

a. A – Loud speaker, B – Oil spills.
b. A – Particulate matter, B – Phosphates.
c. A – Lead, B – Nitrates.
d. A – Nitrogen oxides, B – Carbon dioxide.

vi. A medical student studies the layers of the brain and learns that the innermost membrane protects the brain's surface. Which one of the following is an innermost membrane that covers the brain?

(a) Arachnoid (b) Duramater
(c) Grey matter (d) Piamater

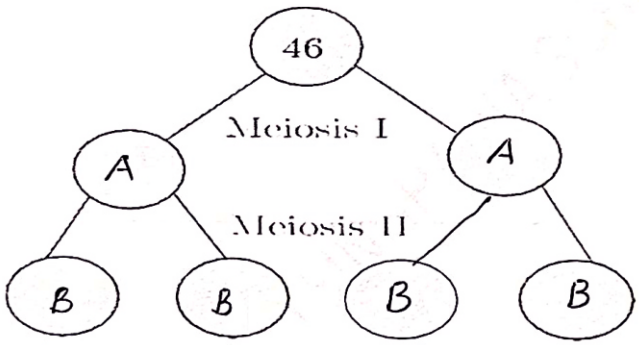
vii. In an anatomy class, students learn that the part of the eye responsible for detecting light and colour contains specialized cells called rods and cones. The part of the human eye, where rod cells and cone cells are located is the-

(a) cornea (b) retina
(c) choroid (d) sclera

viii. Death rate is the number of death -

(a) Per hundred people per year
(b) Per hundred people per decade
(c) Per thousand people per decade
(d) Per thousand people per year

ix. The diagram shows stages of meiosis in a human testis:



	After meiosis I- A	After meiosis II -B
(a)	46	46
(b)	46	23
(c)	23	46
(d)	23	23

x. A plant physiologist is investigating the effects of de-starching on a plant. The plant is treated to remove stored starch from certain parts before conducting experiments on photosynthesis.
A destarched plant is one whose:

[a] leaves are free from chlorophyll.
[b] aerial parts are free from starch.
[c] leaves are free from starch.
[d] plant is free from starch.

xi. Sneha sprinkled some common salt on the grass growing on a lawn. It was observed that after sometime the grass got killed at that spot. This was due to -

(a) Plasmolysis (b) Deplasmolysis
(c) Endosmosis (d) Evaporation

xii. Gigantism and Acromegaly are due to:
a) Hyposecretion of Thyroxine
b) Hyposecretion of Growth hormone
c) Hypersecretion of Thyroxine
d) Hypersecretion of Growth hormone

xiii. Assertion (A): The foetus respires but does not breathe
Reason (R): The maternal blood supplies oxygen to the foetus through placenta.
(a) A is True and R is False
(b) A is False and R is True
(c) Both A and R are True
(d) Both A and R are False

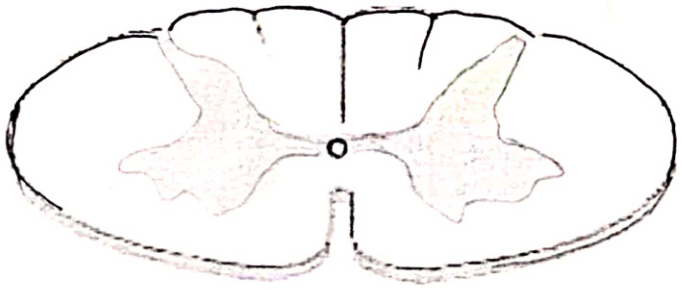
xiv. Pigment providing colour to urine-
[a] Melanin [b] Bilirubin
[c] Urochrome [d] Iodopsin

xv. Haploid number of chromosomes is found in:
(a) Nephrons (b) Neurons
(c) Skin cells (d) Sperms

Question 2

Q2A. Name the following: - **[5]**
a) The nutritive layer of the eye which also prevents the reflection of light.
b) The process causing an undesirable change in the environment.
c) The canal through which the testes descend into the scrotum just before the birth of a male baby.
d) The type of gene, which in the presence of a contrasting allele is not expressed.
e) The process by which white blood cells engulf bacteria.

Q2B. Given below is the transverse section of the spinal cord. Read the information below the diagram and fill in the blanks: **[5]**



The spinal cord extends from the medulla oblongata of the brain and runs down through the whole length of the vertebral column. It conducts impulses from the skin and muscles to the brain. It also conducts impulses from the brain to the muscles of the trunk and limbs.

The spinal cord is a part of the (a) _____ Nervous System. The spinal cord is covered by three protective membranes (b) _____. The grey matter in the picture given above is made up of (c) _____ while the white matter consists of (d)_____. The spinal cord is protected by a bony structure (e) _____.

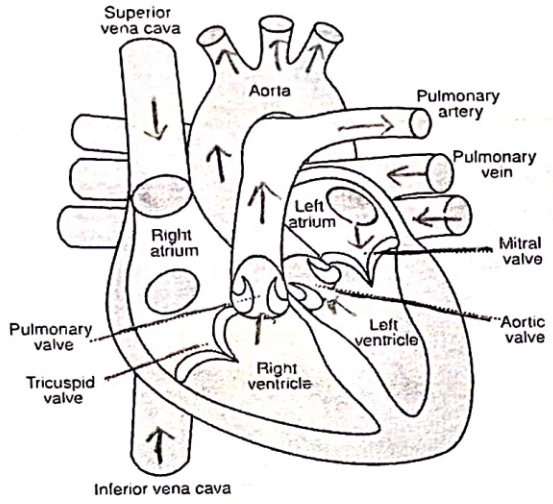
Q2C. Choose the odd term out from each of the following set of terms. Mention the category to which the remaining three belong: **[5]**
a) Sewage, Newspaper, Styrofoam, Hay
b) Thymine, Cytosine, Adenine, Pepsin

c) Malleus, Iris, Stapes, Incus
d) Stomata, Lenticles, Cuticle, Root hair.
e) Ovary, Fallopian tube, Ureter, Uterus

Q2D.Amit, a 45-year-old man, was diagnosed with diabetes mellitus after experiencing excessive thirst, frequent urination, and fatigue. His doctor explained that his pancreas was not producing enough insulin, a hormone responsible for regulating blood sugar levels. [5]

a) What is the role of insulin in the body?
b) Give the technical term for the endocrine part of pancreas
c) Name the cells of the pancreas which produce insulin.
d) Why is pancreas referred as a heterocrine gland?
e) Name the hormone responsible for the diabetes insipidus.

Q2E. Study the diagram given below and match the Column A structure with its function in Column B - [5]
Example – Mitral valve – c) Prevents back flow of oxygenated blood from the left ventricle into the left auricle .

Column A – Structure	Column B – Function
	a) Brings oxygenated blood to the heart from the lungs b) Brings deoxygenated blood from the lower parts of the body c) Prevents back flow of oxygenated blood from the left ventricle into the left auricle. d) The first chamber to receive deoxygenated blood. e) The artery carrying deoxygenated blood. f) The structure preventing back flow of deoxygenated blood into the right ventricle.

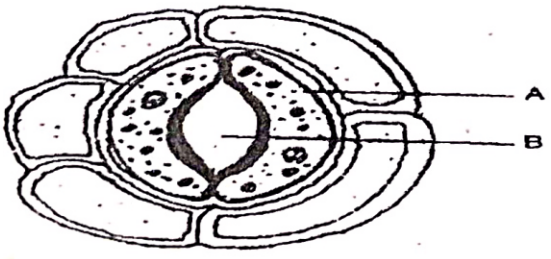
SECTION B (40 Marks)

*(Attempt **any four** questions from this Section.)*

Question 3

i. Explain the term – Gestation. [1]

ii. Meena was performing an experiment on transpiration when she observed the figure given below on the leaf surface, help her to solve the questions below: [2]



a. Identify the given structure and part labelled B.
b. State the role of part A, in the figure.

iii. Aditya is fond of roller – skating, as he was practicing on the road, he saw a man walking zig-zag and clumsily. Justify the reason why the man would have walked in this manner. [2]

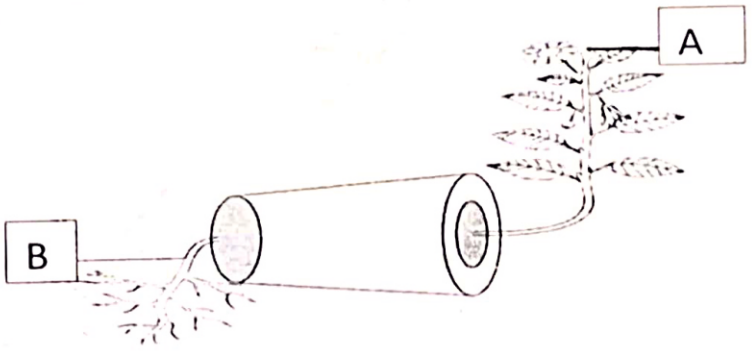
iv. Differentiate between: [2]
Vasectomy and Tubectomy – based on the parts ligated.

v. Draw a neat labelled diagram of the Metaphase in plant cell with four chromosomes. [3]

Question 4:
i) Give the exact location of Fovea centralis. [1]
(ii) Differentiate between Mitosis and Meiosis – based on [2]
a) The number of daughter cells
b) The number of chromosomes.

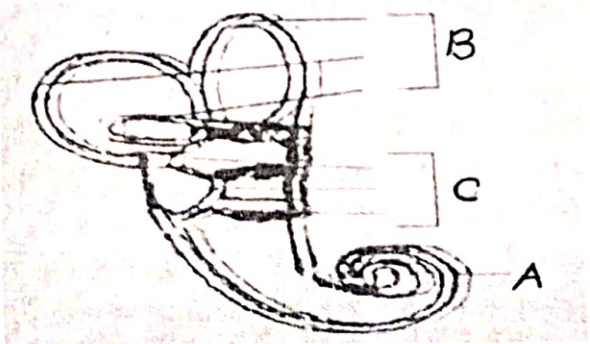
(iii)Prakash is a resident of hilly region where there is deficiency of a particular mineral in the soil and hence in the food grown there. He started developing swelling in the neck. [2]
a) Name the disorder Prakash has and the hormone responsible for it.
b) Which mineral is deficient in the soil which caused this problem?

iv)The diagram shows an experiment on a type of tropic movement in plant- [2]



a) Name the stimuli acting on parts marked A and B?
b) Define the type of movement in part A due to the stimulus acting on it.

(v) Study the given diagram and answer the questions that follow- [3]



(a) Name the part labelled A.
(b) State the function of part labelled B.
(c) Name the audio receptor cells present in the part labelled A.

Question 5:

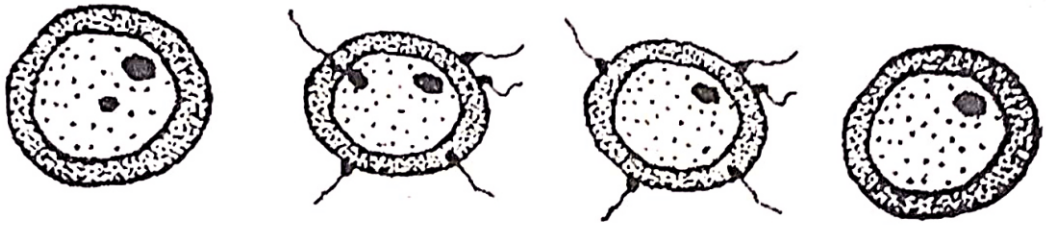
i) Define – Synapse. [1]

ii) Mention any two aims of Swachh Bharat Abhiyan. [2]

iii) Give differences between Xylem and Phloem. [2]

iv) Draw a neat, labelled diagram of a mature human sperm. [2]

v) Given below are diagrams showing the different stages in the process of fertilisation of an egg in the human female reproductive tract.
Study the diagrams and answer the questions [3]



A B C D

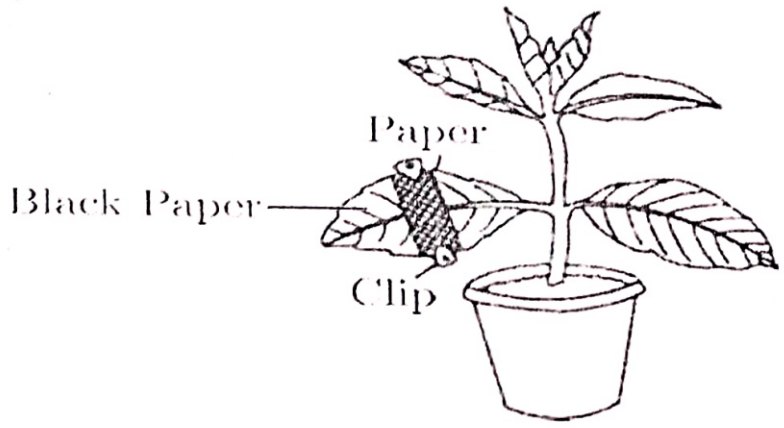
a) Arrange the letters given below each diagram in a logical sequence to show the correct order in the process of fertilisation.
b) How long does Gestation last in humans?
c) State the site of fertilization in human female.

Question 6

i) State Mendel's law of Segregation. [1]

ii) Explain - One feels blinded for a short while on coming out of a dark room. [2]

iii) Kiran arranged the below set up to study photosynthesis in plants , help him to answer the questions that follow: [2]

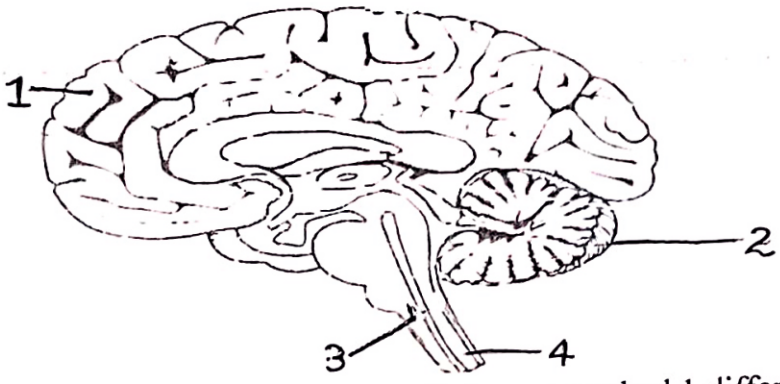


a) Name the factor studied in the above experimental set -up.
b) What will you observe in the experimental leaf after the starch test?

iv) Expand the following abbreviations: [2]

a) ACTH
b) ABA

v)The diagram represents human brain as seen in an external view. [3]



a) How is the arrangement of the nerve cells in part marked 1 different from 4?

b) What is the main function of part marked 3.

c) Name the sheet of nerve fibres that connects the two halves of the part labelled 1.

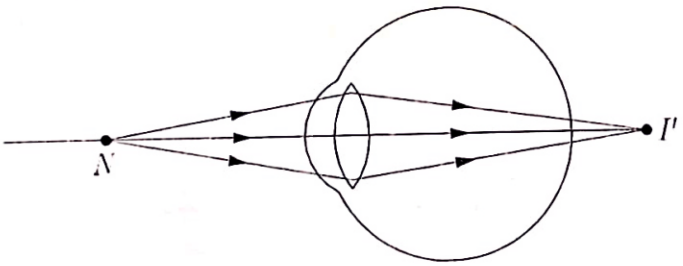
Question 7

i) Define – Population density. [1]

(ii) The gene for tallness is dominant over the gene for dwarfness. [2]
a) What will be the height of the plant if a cross is made between a tall plant [TT] and a dwarf plant [tt], show this cross with the help of a punnet square?
b) Mention the phenotype ratio and genotype ratio obtained in the F2 generation.

iii) Draw a neat labelled gram of the single root hair when it is surrounded by a hypertonic solution of salt water. [2]

iv) Study the diagram given below and answer the questions that follow:[2]



(a) Identify the defect of the eye by mentioning the technical term.
(b) Name the type of lens used to correct this defect.

v) Given below is a representation of a type of pollution. Study the picture and answer the questions: [3]

a) Name the type of pollution shown in the picture.
b) Write one measure to reduce this pollution.
c) State one gaseous compound that leads to the depletion of the ozone layer and creates 'Ozone holes'.

Question 8:

i. Define – Diapedesis [1]

ii. Name the type of cells in the retina and their respective pigments which get activated- [2]

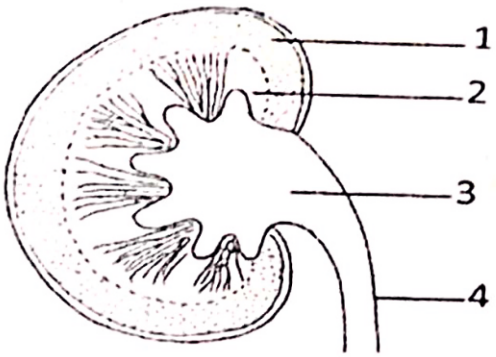
a) In dim light -
b) In bright light -

iii. Distinguish between – [2]
Neanderthal and Homo sapiens based on
a)The cranial capacity
b) The height in centimetres

iv. During a health check-up, Mr. Verma learns about the components of blood and their vital roles in the body. Blood serves multiple functions, including transporting oxygen and nutrients, removing waste, and providing defence against infections. [2]

a) Name the soluble blood protein, which helps in blood clotting.
b) Why is red blood corpuscles called oxygen carriers?

v. The diagram given below shows a section of a human kidney. Study the diagram carefully and answer the questions that follows: [3]



a) Label the parts numbered 1 and 3.
b) Name the fluid in part 4 and the main nitrogenous waste present in it.
c)Name the two major steps in the formation of the fluid mentioned in (b).

****

PARLE TILAK VIDYALAYA(ICSE)

Grade: X
Date: 6/1/26

PRELIMINARY EXAMINATION
SCIENCE PAPER 3 (BIOLOGY)

Marks: 80
Time: 2 hours

INSTRUCTIONS

You will not be allowed to write during the first 15 minutes.
This time is to be spent in reading the question paper.
The time given at the head of the question paper is the time allowed for writing the answers.
This paper consists of nine printed pages

Attempt all questions from Section I and any four questions from Section II

The intended marks for questions or parts of questions are given in brackets []

SECTION I (40 marks)

(Attempt all questions from this section.)

Question 1

Choose the correct alternative from the options given below. [15]

i) Riya was reading a book and then looked out of the window to see a bird flying in the sky.Her eyes automatically adjusted the focus from a near object to a far one. This process of adjusting focus is called----------.

a) Power of adaptation
b) Stereoscopic vision
c) Power of accomodation
d) Dark adaptation

ii) Assertion (A): When turgid, the cell is in a somewhat balanced state ie.no water entering or leaving it.

Reason (R) : The turgor pressure counter-balances the wall pressure and there is no further absorption of water.

a) Both A and R are True
b) A is True and R is False
c) A is False and R is True
d) Both A and R are False

iii) P is a plant hormone that stimulates plant growth by cell division and Q is a plant hormone that induces ripening of fruits. The plant hormones P and Q are---------.

i) P- Cytokinins Q- Auxins
ii) P- Abscisic acid Q- Ethylene
iii) P- Gibberellins Q- Ethylene
iv) P- Cytokinins Q- Ethylene

iv) **Assertion (A): In follicular phase of the menstrual cycle, the follicle ruptures and egg is released**

Reason (R) : During the follicular phase the amount of oestrogen produced by the ovary increases.

a) Both A and R are false

b) A is True and R is False

c) A is False and R is True

d) Both A and R are true

v) **Choose the event that does not occur in photosynthesis.**

a) Absorption of light energy by chlorophyll

b) Oxidation of carbon to carbon dioxide

c) Reduction of carbon dioxide to carbohydrates

d) Conversion of light energy to chemical energy.

vi) **Assertion (A): Diaphragms prevent the implantation of the blastocyst.**

Reason (R) : Diaphragms are caps fitted in the vagina on the mouth of the uterus.

a) Both A and R are True

b) A is True and R is False

c) A is False and R is True

d) Both A and R are False

vii) **A woman who is a carrier of colourblind gene marries a man with normal vision.What is the probability that their son will inherit the colourblind gene?**

a) 0%

b) 25%

c) 100%

d) 50%

viii) **Which of the following is an incorrect pair?**

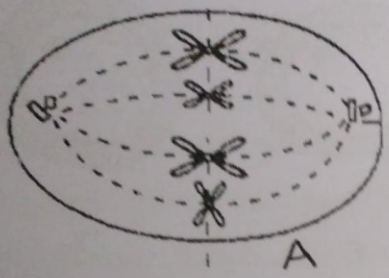
a) Adrenaline-derived from amino acids

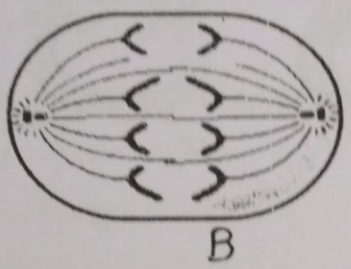
b) Hypersecretion of insulin- hypoglycemia

c) Hyposecretion of cortisone-Cushing's syndrome

d) Glucocorticoids- increases blood glucose concentration.

ix) The figures A and B show———— and ————————stages of cell division.





a) A- Metaphase B- Anaphase

b) A- Prophase B- Telophase

c) A- Metaphase B- Prophase

d) A- Anaphase B- Metaphase

x) A reflex arc in man is described as movement of stimuli from

a) Receptor , sensory neuron , association neuron , effector muscles.

b) Receptor , efferent nerve , association neuron , muscles of the body.

c) Receptor , motor neuron , spinal cord , effector muscles.

d) Receptor , synapse , motor neuron , association neuron.

xi) Fully erect posture with cranial capacity 1450-1600 cm3 and broad arched forehead were the features of————————human ancestor.

a) Homohabilis

b) Cro-Magnon

c) Neanderthal

d) Australopithecus

xii) Assertion (A): Blood flows in spurts in veins

Reason (R): Veins have thick muscular wall and narrow lumen.

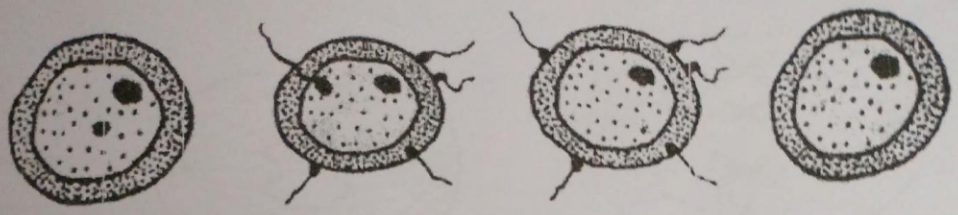
a) Both A and R are True

b) A is True and R is False

c) A is False and R is True

d) Both A and R are False

xiii) Which of the following is the correct logical sequence of stages in fertilization of an egg?



A B C D

a) B, D, C, A

b) D, B ,C, A

c) D, C, B, A

d) A, C, B, D

xiv) The difference between the birth rate and the death rate is called----------

a) Population density

b) Growth rate of population

c) Mortality

d) Demography

xv) The radiation pollutant that raises the risk of thyroid cancer is----------.

a) Cobalt 60

b) Uranium

c) Cobalt 30

d) Iodine 131

Question 2 [5]

i) Name the following.

a) The cross between two parents having one pair of contrasting characters.

b) Special openings that develop on the barks of the older stems and allow diffusion of gases.

c) The large lymphatic organ that produces red blood cells in an embryo.

d) The knot like mass of blood capillaries in Bowman's capsule.

e) The part of the eye affected by cataract.

ii) Arrange and rewrite the terms in each group in the correct order so as to be in logical sequence beginning with the term that is underlined. [5]

a) Karyokinesis , S-phase , Cytokinesis , <u>G1-phase</u> , G2 phase

b) Fibrin , <u>Platelets</u> , Thromboplastin , Fibrinogen , Thrombin.

c) Morula , Embryo , Blastocyst , Zygote , Foetus.

d) Australopithecus , Neanderthal , Homo erectus , Homo habilis , Cro-Magnon

e) Stoma , Mesophyll cells , Xylem , Substomatal space , Intercellular space.

iii) Choose the odd man out from each of the following sets and give the category of others. [5]

a) Endolymph , Eustachian tube , Conjunctiva , Round window.

b) Carbon dioxide , Sulphur dioxide , Flyash , Nitrogen dioxide.

c) Transpiration , Photosynthesis , Phagocytosis , Guttation.

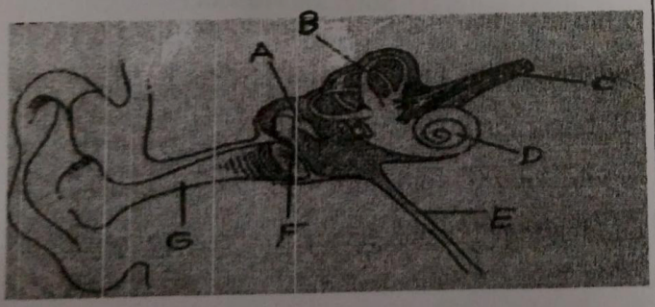
d) Urea , Sodium chloride , Uric acid , Creatinine.

e) Eosinophil , Monocyte , Basophil , Neutrophil.

iv) Fill in the blanks with suitable words. Do not copy the statements, write only the answers. [5]

The amount of urine output is under the regulation of a hormone called (a)----------secreted by the (b)----------lobe of the pituitary gland. If this hormone secretion is reduced, there is an increased production of urine. This disorder is called (c)----------. Sometimes excess glucose is passed with urine due to hyposecretion of another hormone called (d)---------- leading to a disease called (e)----------.

v) Match the parts of the ear marked A to E in with their function. [5]

Parts of the ear	Function
	1. balance while the body in motion 2. converts vibrations to nerve impulses 3. equalises air pressure 4. amplifies sound vibrations 5. carries impulses to the brain

SECTION II (40 marks)

(Attempt any four questions from this section.)

Question 3

i) Name the instrument used to measure blood pressure. [1]

ii) In a homozygous pea plant yellow seeds (Y) are dominant over green seeds (y) [2]

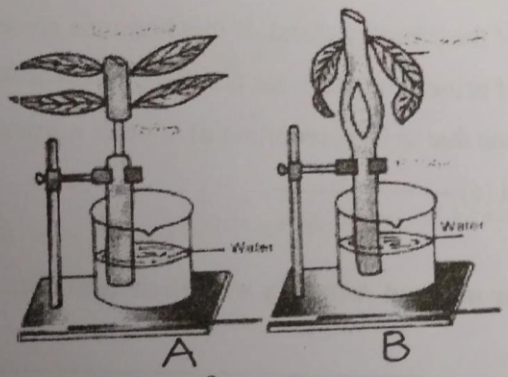
a) Draw a Punnett square to show the gametes and offspring when both the plants are heterozygous for the character.

b) State Mendel's Law of Dominance.

iii) Name the condition and reason for the development of certain male characteristics in females. [2]

iv) State the exact function of a) retina b) prostate gland [2]

v) The experiment given below shows a certain physiological process in plants.Observe the same and answer the questions that follow. [3]



a) What is the aim of the experiment?

b) Name the vascular tissue that is removed in setup A.

c) What change is observed in the leaves of the setup B? State the reason.

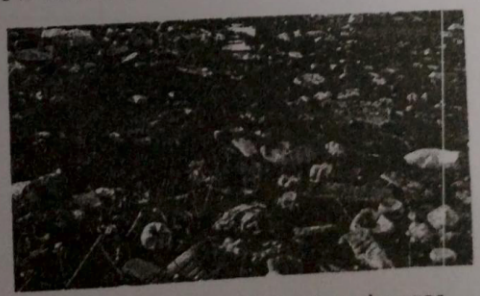
Question 4

i) Explain - Crossing over [1]

ii) Differentiate between Cuscuta and Drosera (type of tropic movement) [2]

iii) Draw a labelled diagram of a mature human sperm. [2]

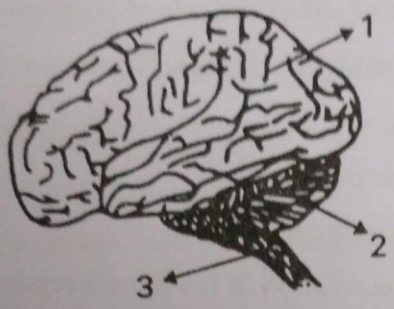
iv) Study the picture given below and answer the following questions. [2]



a) Identify the type of pollution.

b) Mention one effect of the above pollution on human health.

v) The diagram given below represents the human brain. Answer the following questions. [3]



a) Identify the part labelled 3.

b) Name the sheet of fibres that connects the two halves of the part labelled 1.

c) What is the arrangement of nerve cells in the part marked 2

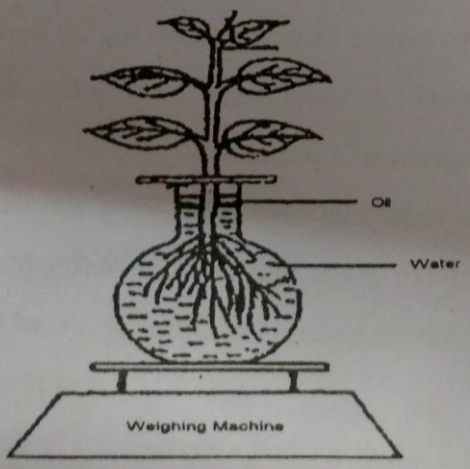
Question 5

i) Expand the abbreviation- MTP. [1]

ii) State any two reasons for the increase in population in India. [2]

iii) Transplanting of seedling to a flower bed in the evening is better than doing so in the morning. Give reason [2]

iv) The diagram below represents a process in plants.The set up was placed in bright sunlight Answer the following questions. [2]



a) When placed in bright sunlight for four hours, what do you observe with regard to initial and the final weight of the plant?

b) What happens to the level of water when this setup is placed in humid conditions?

v) Draw a neat labelled diagram of cell cycle. [3]

Question 6

i) Name the blood vessel that carries blood from the stomach and intestine to the liver. [1]

ii) Give the location and function of yellow spot. [2]

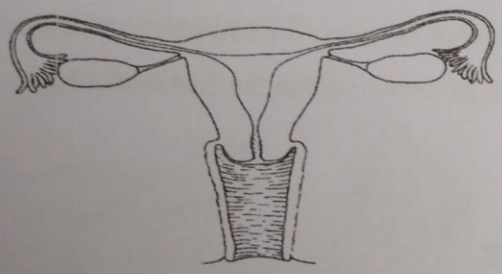
iii) Explain any two external factors that affect the rate of photosynthesis. [2]

iv) A 35 year old male patient has swelling in his legs. His urine test showed the presence of albumin. [2]

a) Name the condition he is suffering from.

b) What is the cause of albumin in the urine?

v) Given below is a diagrammatic presentation of the female reproductive system. Answer the questions that follow. [3]



a) Redraw the same on your answer sheet and label the following parts: 1) right ovary 2) uterus

b) Using the symbol X indicate the region in the diagram where fertilization occurs.

Question 7

i) A seed company needs to store a large batch of highly perishable seeds before planting. Which plant hormone would be most useful to keep the seeds in a dormant state? [1]

ii) Draw a neat labelled diagram of a nerve cell. [2]

iii) In Manchester, after the industrial revolution there was darkening of the tree trunks with soot which caused the death of the lichens. Due to this phenomenon, certain variant species of an insect which had advantageous variations survived while those without the variations were routed out. [2]

a) Name the phenomenon described above.

b) Give the scientific name of the insect species in which the above described phenomenon was observed.

iv) When an ovum gets fertilized, the menstrual cycle stops temporarily in a woman.Give reason.

v) Seema is suffering from a defect of vision in which she can see the nearby objects clearly while distant objects appear blurred. [3]

a) Name the defect of vision.

b) State one possible reason for this defect of vision.

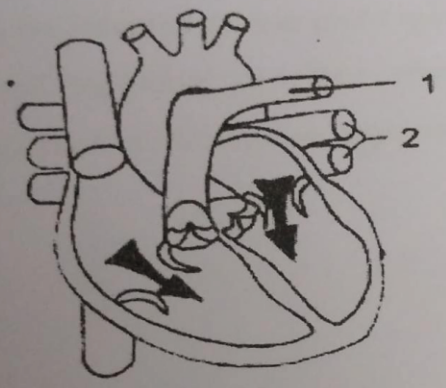
c) Draw a neat labelled diagram to show how this defect can be rectified.

Question 8

i) What is the genotype of a person with blue eyes, given that brown eye colour (B) is dominant over blue eye colour (b). [1]

ii) What is the cause of acromegaly? Mention any one symptom of acromegaly. [2]

iii) The diagram below represents the human heart in one phase of its activity. Study the same and answer the following questions. [2]

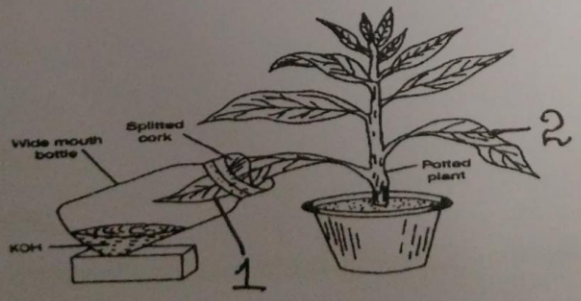


a) Name the phase.

b) Which part of the heart is contracting in this phase? Give a reason to support your answer.

iv) Differentiate between mitosis in plant and animal cell (site of occurence) [2]

v) The figure given below represents an experiment to demonstrate a particular aspect of photosynthesis. Study the same and answer the following questions. [3]



a) What is the aim of the experiment?

b) Name an alternative chemical that can be used instead of KOH.

c) In what manner do the leaves 1 and 2 differ at the end of the starch test?

xxxxxxxx

Question Paper 4

JANKIDEVI PUBLIC SCHOOL
New Dimensions in Learning
Established:1999

SECOND PRELIMINARY EXAMINATION 2025-2026
BIOLOGY
(SCIENCE PAPER - 3)

STD: X **DATE: 8.01.2026**

Maximum Marks: ***80***

Time allowed: ***Two hours***

Answers to this paper must be written on the paper provided separately.

You will not be allowed to write during the first ***15 minutes.***

This time is to be spent in reading the question paper.

The time given at the head of this paper is the time allowed for writing the answers.

Section A *is compulsory.* ***Attempt any four*** *questions from* ***Section B.***

The intended marks for questions or parts of questions are given in brackets [ ].

This question paper consists of ***six*** *printed pages.*

Nothing should be written on the question paper.

SECTION A
(Attempt ***all*** *questions from this section.)*

Question 1

Choose the correct answers to the questions from the given options. **[15]**
(Do not copy the question, write the correct answer only.)

(i) A child has stunted growth but normal intelligence. Which gland is under-active?
(a) Thyroid
(b) Pituitary
(c) Adrenal
(d) Pancreas

(ii) A cell is observed with a distinct nuclear membrane and doubled chromosomes. Which stage is it in?
(a) Prophase
(b) Metaphase
(c) Telophase
(d) Interphase

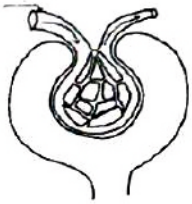
Cont'd on page 2

(iii) The image on the retina is
(a) Real and upright
(b) Virtual and inverted
(c) Real and inverted
(d) Virtual and upright

(iv) Which hormone maintains pregnancy after implantation?
(a) LH
(b) Progesterone
(c) FSH
(d) Estrogen

(v) If a cell's mitochondria are destroyed, which process will be most affected?
(a) Protein synthesis
(b) Respiration
(c) Photosynthesis
(d) Excretion

(vi) The diagram given represents a part of nephron.
Identify the part.
(a) Bowman's capsule
(b) Malpighian capsule
(c) Renal tubule
(d) Glomerulas



(vii) If a human cell has 46 chromosomes, how many chromatids are present just before mitosis begins?
(a) 23
(b) 46
(c) 92
(d) 184

(viii) During which stage of menstrual cycle is the endometrium thickest?
(a) Menstrual phase
(b) Follicular phase
(c) Ovulatory phase
(d) Luteal phase

(ix) The human population growth rate is calculated as:
(a) Birth rate – Death rate
(b) Death rate – Birth rate
(c) Immigration – Emigration
(d) Birth rate + Death rate

(x) Which of the following statements about Bharat Stage (BS) emission norms is correct?:
(a) BS norms aim to increase nitrogen and sulphur emissions from vehicles.
(b) BS IV norms were enforced across India from April 2017 to control vehicle pollution.
(c) BS numbers are unrelated to European emission standards.
(d) BS VI norms were enforced in India in 2010.

(xi) Assertion (A): Alleles are different forms of a gene.
Reason(R): Alleles occupy the same locus on homologous chromosomes.

(a) A is True, and R is False.
(b) A is False, and R is True.
(c) Both A and R are True.
(d) Both A and R are False.

(xii) Which of the following pairs is correctly matched regarding plant hormone and its effect?
(a) Auxin – Cell division
(b) Ethylene – Cell elongation
(c) Abscisic acid – Inhibition of growth
(d) Gibberellin – Leaf abscission

(xiii) A student forgets to cut the shoot under water while setting up Ganong's potometer. How will this affect the experiment?
(a) Water uptake will be higher than normal because the shoot is exposed to air.
(b) Water uptake will remain normal; it will not affect the results.
(c) Water uptake will be reduced or inconsistent because air bubbles enter the xylem.
(d) The shoot will absorb more water due to increased transpiration.

(xiv) Assertion (A): Lymph is considered a part of the circulatory system.
Reason(R): Lymph carries digested food and returns excess tissue fluid to the bloodstream.

(a) A is True, and R is False.
(b) A is False, and R is True.
(c) Both A and R are True.
(d) Both A and R are False.

(xv) During dehydration, which changes occur in urine?
(a) Volume ↑, concentration ↓
(b) Volume ↓, concentration ↑
(c) Volume ↑, pH ↑
(d) Volume ↓, glucose ↑

Question 2

(i) Choose the **odd** man out and name the category to which the others belong. **[5]**
(a) Pancreas, Thyroid gland, Adrenal gland, Pituitary gland
(b) Seed germination, Stem elongation, Parthenocarpy, Rooting in some plants
(c) Ovary, Fallopian tube, Uterus, Urethra
(d) Upper epidermis of leaf, Palisade tissue, Spongy layer, Guard cells
(e) Thin and less muscular walls, Wide lumen, Superficial, Elastic walls

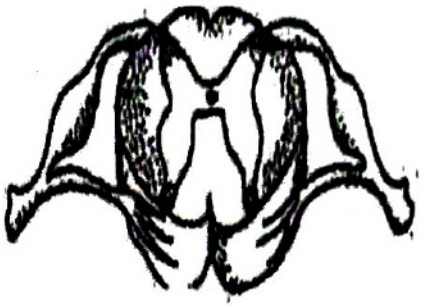
(ii) Arrange the following in logical sequence: **[5]**
(a) Fibrin, Platelets, Thromboplastin, Fibrinogen, Thrombin.
(b) Cochlea, Malleus, Pinna, Stapes, Incus.
(c) Receptor, Spinal cord, Effector, Motor neuron, Sensory neuron.
(d) Uterus, Parturition, Fertilisation, Gestation, Implantation.
(e) Absorb energy, Photons, Stroma, Grana, Splits water molecule

Cont'd on page 4

(iii) Aarav, a 13-year-old boy, visited a science fair where he saw a working model of the human heart. He decided to test his knowledge about the circulatory system. Help Aarav answer the following questions:. [5]

(a) Which blood vessels have valves to prevent backflow of blood?
(b) Which is the largest artery in human body?
(c) Which part of heart separate right and the left side?
(d) Name the tendon responsible for connecting the cusps to the papillary muscle of heart.
(e) Which component of blood lacks endoplasmic reticulum.

(iv) Given below is the diagram of a human ~~heart~~ spinal cord. Read the information below the diagram and fill in the blanks: [5]



The spinal cord functions as a major conduit for information traveling between the brain and the peripheral nervous system. It is divided into segments corresponding to the vertebrae. Each segment gives rise to spinal nerves that carry sensory and motor information.

The spinal cord is protected by (a) _____, which consist of three membranes. The outermost membrane is known as the (b) _____. Neurons within the spinal cord are categorized into (c) _____ neurons and (d) _____. The reflex actions are primarily mediated by spinal nerves without direct involvement of the (e) _____.

(v) Give the biological/technical terms for the following: [5]

(a) Stage of the cell division in which, chromosomes are the most condensed
(b) The inward flow of water into the roots from the soil through the cell membranes..
(c) A diagrammatic method used to predict the genotypes and phenotypes of offspring resulting from a genetic cross between two parents.
(d) The tissue that initiates and regulates the heartbeat.
(e) The disorder caused by over-secretion of growth hormone in adults.

SECTION B

*(Attempt **any four** questions from this section.)*

Question 3

(i) Explain the term chiasma. [1]

(ii) A woman wants a non-hormonal, reversible contraceptive method. Suggest suitable options and justify your choice. [2]

(iii) In what way is active transport opposite to diffusion? [2]

(iv) During the last 30,000 years or even more, *Homo sapiens* close to modern man lived mainly in Europe and were known as Cro-Magnons. They were much more advanced than the Neanderthals. The Cro-Magnon man possibly represented the transition between the Neanderthal man and the modern man. [2]

(a) What was the cranial capacity of Cro-Magnon?
(b) What skill did Cro-Magnon developed?

Cont'd on page 5

(v) Roshni conducted an experiment on pea plants to study the inheritance of pod shape. She crossed a plant with inflated pods and another with constricted pods. In the first generation (F_1), all the offspring produced inflated pods. When these F_1 plants were self-pollinated, the second generation (F_2) showed both inflated and constricted pods. [3]

(a) Based on Roshni's experiment, what conclusion can be drawn about the inheritance pattern of pod shape in pea plants.

(b) Which of the Mendal's laws are demonstrated in the first and second generations of Roshni's pea plant experiment?

Question 4

(i) What is demography? [1]

(ii) Interphase is not considered a part of mitosis even though important preparatory events occur during it. Give reason. [2]

(iii) Seeds of a plant fail to germinate even under favourable conditions. On testing, it was found that they contain a high amount of a certain hormone. Name the hormone likely to be responsible and explain how it affects seed germination. [2]

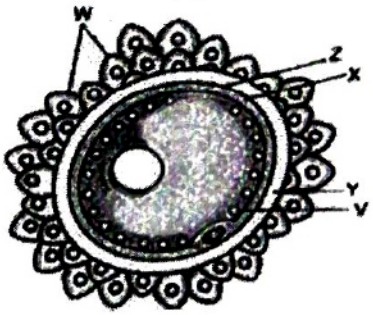
(iv) Explain how temperature and carbon dioxide impact the rate of photosynthesis. [2]

(v) The diagram given below represents a mature ovum. Study the same and answer the following questions. [3]

(a) Identify the part labelled W and Y.

(b) Which enzyme is released by sperm to dissolve Y?

(c) At which phase of menstrual cycle the given structure is released into oviduct?



Question 5

(i) Define: Parthenocarpy [1]

(ii) Differentiate between stomata and lenticels depending on their location. [2]

(iii) During a medical test, it was found that a man's semen was very watery and lacked nutrients. Which accessory gland could be underactive? Explain the function of this gland. [2]

(iv) State any two conditions necessary for osmosis to occur. [2]

(v) Draw a neat, labelled diagram of the membranous labyrinth. [3]

Question 6

(i) Who gave the theory of use and disuse? [1]

(ii) State any two harmful effect of water pollution on aquatic life. [2]

(iii) Explain how the excretory system helps maintain water and salt balance. [2]

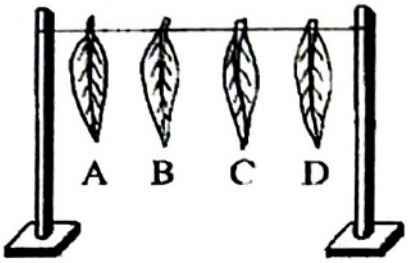
Cont'd on page 6

(iv) Differentiate between rods and cones. [2]

(v) In an experiment, four freshly picked leaves of a china-rose plant were treated as follows: [3]

A - Coated with vaseline on both the surface.
B - Coated with vaseline on lower surface.
C - Coated with vaseline on the upper surface.
D - Left uncoated.

All the four leaves are left at room temperature for about 24 hours.



(a) Which leaf dries first and the last?
(b) What is the aim of the experiment?
(c) Suggest an alternative experiment to prove the aim.

Question 7

(i) Expand the abbreviation NADP. [1]

(ii) Differentiate between adrenal cortex and adrenal medulla. [2]

(iii) Give two significant roles of amniotic fluid. [2]

(iv) Explain how nervous system and endocrine system work together to maintain coordination in the human body. [2]

(v) Draw a neat diagram of the Plastid responsible for photosynthesis. [3]

Question 8

(i) Define- Tropic movement. [1]

(ii) State the location of vitreous humor and mention one function. [2]

(iii) Two parents with normal vision have a colour-blind son. [2]
(a) Which parent is the carrier of the colour blindness gene?
(b) What is the pattern of inheritance shown in this case?

(iv) Explain why dialysis cannot completely replace the function of a normal kidney. What alternative treatment provides a permanent solution for kidney failure? [2]

(v) Study the picture given below and answer the questions that follow: [3]

(a) Name the category of waste that is being disposed.

(b) Are they hazardous to humans and animals? Give a suitable reason to justify your answer.

(c) Write the definition of the category of waste identified in (a).

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LOKHANDWALA FOUNDATION SCHOOL
PRELIMINARY EXAMINATION-2025-26
SUBJECT - BIOLOGY

Date : 07/01/2026
Grade: 10

Duration: 2hrs
Max. Marks: 80

General Instructions: *Answers to this paper must be written on the paper provided separately. You will not be allowed to write during the first 15 minutes. This time is to be spent in reading the question paper. The time given at the head of this paper is the time allowed for writing the answers.*

Section A is ***compulsory***. *Attempt* ***any four*** *questions from* ***Section B.*** *The intended marks for questions or parts of questions are given in brackets [ ]* ***This paper consists of 8 printed sides.***

Section A (40 Marks)

(Attempt **all** *questions from this section)*

Question 1

Choose the correct answers to the questions from the given options. [15]
(Do not copy the question, write the correct answers only.)

(i) A patient's blood report shows: very high WBC count, very low RBC count and frequent internal bleeding. Which of the following condition does this indicate?
- (a) Leukaemia
- (b) Erythropenia.
- (c) Leukopenia
- (d) Dengue

(ii) During drought, a plant's leaves curl and growth slow down. Which hormone increases under such stress?
- (a) Cytokinin
- (b) Abscisic acid
- (c) Auxin
- (d) Ethylene

(iii) **Assertion (A):** Photolysis of water occurs only in the presence of light.
Reason (R): Light energy activates chlorophyll, which then splits water molecules.
- (a) Both A and R are true and R correctly explains A
- (b) Both A and R are true but R does **not** explain A
- (c) A is true but R is false
- (d) A is false but R is true

(iv) When Reena feels anxious, her hypothalamus activates the "fight or flight" pathway. Which sequence correctly describes the pathway?
- (a) Hypothalamus → Thyroid → Heart rate increases
- (b) Pituitary → Adrenal cortex → Adrenaline release
- (c) Adrenal cortex → Cortisone → Increases Adrenaline secretion
- (d) Hypothalamus → Sympathetic nerves → Adrenal medulla → Adrenaline

(v) The diagram given alongside is that of a blood cell. Identify the correct pair : The name of the blood cell and its function.

(a) Neutrophil - engulfs bacteria
(b) Eosinophils - fights parasitic worm infection
(c) Eosinophils - produces antibodies
(d) Basophils - produces histamines.

(vi) **Assertion (A):** A woman can reproduce even if one ovary is removed.
Reason (R): The remaining ovary can still produce eggs and hormones for reproduction.
(a) A is false and R is true.
(b) A is true and Ris false.
(c) Both A and R are true, and R is **not** the correct explanation of A.
(d) Both A and R are true, and R is the correct explanation of A.

(vii) What does the pupil do in bright light?
(a) Dilates to let in less light.
(b) Constricts to let in less light.
(c) Dilates to let in more light.
(d) Constricts to let in more light.

(viii) During a football match, a player instinctively ducks to avoid a fast-approaching ball. This behaviour is useful because—
(a) It helps the player to maintain body balance.
(b) It prevents potential head injury.
(c) It improves coordination between brain and muscles.
(d) It allows more oxygen to reach the brain by lowering the head position.

(ix) Industrial melanism is a classic example of
(a) Artificial selection of species due to presence of melanin.
(b) Acquired inheritance of genetic characters.
(c) Natural selection based on environmental changes.
(d) Vestigial organs

(x) An increase in which two hormones help in thickening of the uterine lining during the follicular phase and implantation of the embryo?
(a) Estrogen and Progesterone
(b) Estrogen and Luteinising hormone.
(c) Progesterone and Prolactin
(d) Progesterone and Oxytocin.

(xi) Menarche refers to :
(a) The release of the first ovum
(b) The first menstrual bleeding in girls
(c) Menstrual irregularity during puberty
(d) The cessation of menstruation.

(xii) Which of the following was the *first* major evolutionary change in early humans?
(a) Bipedal locomotion
(b) Was capable of making simple stone tools
(c) Development of agriculture
(d) Loss of canine teeth

(xiii) How many cells are formed when the epidermal skin cells and germ cells of seminiferous tubules divide?

(a) Skin cells - 23 and germ cells - 46
(b) Skin cells - 4 and germ cells - 4
(c) Skin cells - 2 and germ cells - 4
(d) Skin cells - 46 and germ cells- 23.

(xiv) Which option gives the correct match?

Column A	Column B
i. Phenotype	A. Genetic constitution
ii. Genotype	B. Physical expression
iii. Allele	C. Same pair of alleles
iv. Homozygous	D. Different forms of the same gene

(a) i–C, ii–A, iii–D, iv–B
(b) i–A, ii–C, iii–B, iv–D
(c) i–B, ii–A, iii–D, iv–C
(d) i–D, ii–B, iii–C, iv–A

(xv) Rohit jumps from one rock to another while trekking. His ability to judge body position and movement is due to:

(a) Semicircular canals and cerebellum
(b) Cerebellum and cerebrum
(c) Perilymph and Endolymph
(d) Spinal cord and Semicircular canal

Question 2

(i) Give the biological/ technical term for the following: [5]

(a) The phenomenon of algal bloom due to concentration of nutrients in water bodies.
(b) The stage of the developing zygote which is implanted on uterine wall.
(c) The condition of a cell placed in a hypotonic solution.
(d) The structure in chloroplast where photophosphorylation takes place.
(e) The fluid present between the layers covering the heart.

(ii) Given below is a diagram of human brain. Read the information below the diagram and fill in the blanks. (Write only the words with the designated letter in the blanks) [5]

The human brain is the control centre of the nervous system. It is about 1.2 to 1.4 kilograms in weight. It is protected by the skull and surrounded by three membranes. The brain consists of three main parts — the cerebrum, cerebellum and medulla oblongata. Together, these parts ensure smooth functioning of the body.

The folds and grooves on the surface of the cerebrum are called ____(a)____ and ____(b)____, which increase the surface area for neural connections. The bridge of nerve fibres connecting the two cerebral hemispheres is known as the ___(c)____. The region of the brain responsible for maintaining homeostasis, including temperature and water balance, is the ____(d)____. The medulla oblongata continues downward to form the ___(e)____, which is part of the central nervous system.

(iii) Choose the odd term out from each of the following set of terms. Mention the category to which the three remaining belong: [5]

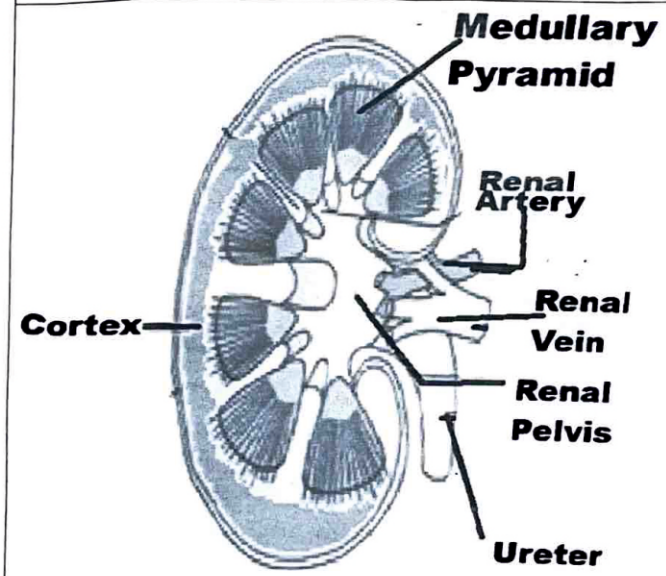
(a) Particulate matter, Carbon dioxide, Sulphur dioxide, Methane.
(b) Corpus callosum, Pons, Thalamus, Occipital lobe.
(c) Malleus, Incus, Auditory canal, Oval window.
(d) Guard cells, Phloem, Stomata, Epidermis.
(e) Natality, Death rate, Demography, Growth rate.

(iv) Riya complained that she could not see objects beyond 1.2 m clearly but can see nearby objects distinctly. [5]

(a) Which condition is Riya suffering from?
(b) What is the function of lens in the eye?
(c) What is power of accommodation of the eye? Name the structure responsible for it.
(d) Draw a neat labelled diagram to show how the image is formed in Riya's eye for near objects.

(v) Study the diagram given below and match the structure with its function: [5]

Example: Ureter - (f)

Structure	Functions
	(a) Contains loop of Henle hence helps in concentrating the urine by reabsorption (b) Initiates urine formation (c) carries nitrogenous wastes and oxygenated blood. (d) Collects urine from Nephrons. (e) Has least amount of urea and carries deoxygenated blood. (f) Carries urine from the kidney to urinary bladder.

SECTION B (40 Marks)

*(Attempt **any four** questions from this Section.)*

Question 3

(i) Explain the term Menopause. [1]

(ii) Xerophytes have their leaves modified to spines.

(a) Identify the type of a certain process, that is most reduced by this adaptation.

(b) How is this process different from bleeding in plants? [2]

(iii) A child is born with a defective septum separating the chambers of the heart. The valves between the chambers function inefficiently, causing abnormal mixing and flow of blood. The child experiences fatigue and breathlessness even after mild physical exertion. [2]

(a) Why does the child feel fatigue after mild activity?

(b) Name the valve involved in maintaining one-way flow of blood from the ventricle to the aorta. During which phase of the cardiac cycle is blood pumped into the aorta?

(iv) An onion epidermal peel is mounted in a concentrated salt solution and observed under a microscope. The protoplast is seen to shrink away from the cell wall. The experiment is then repeated using a boiled onion peel instead of a fresh one. [2]

(a) Explain *why* the protoplasm shrinks away from the cell wall in terms of water potential.

(b) Why does plasmolysis not occur in the boiled onion peel? What does this observation prove about the nature of the cell membrane?

(v) Draw a neat labelled diagram of a part of double stranded DNA. [3]

Question 4

(i) What is Speciation in the process of evolution? [1]

(ii) The table given below shows different plant responses and effects. Identify the hormone or phenomenon represented by A, B, C and D and write their correct names. [2]

Effect	Hormone / Phenomenon
Initiates cell division	A
Response to touch	B
Stimulus of chemicals	C
Control a plant's response to gravity and light	D

(iii) Photosynthesis can be represented by an equation. [2]

(a) Write a balanced chemical equation for photosynthesis.

(b) Give a reason for the statement ' ATP is required for dark reaction'

(iv) One child grows abnormally tall for his age, while an adult develops enlarged hands and facial features. [2]

(a) Name the disorders seen in the child and adult.

(b) Name the hormone responsible for the disorders. Which gland secretes this hormone?

(v) In a monohybrid cross, the F_2 generation shows 75% tall plants and 25% dwarf plants. [3]

(a) Deduce the genotypes of the parental plants used by Mendel. Explain why the genotypic ratio differs from the phenotypic ratio.
(b) Give one reason why Mendel chose height of plant as a trait.
(c) State the Mendelian law based on this cross.

Question 5

(i) What kind of wastes can be composted? [1]

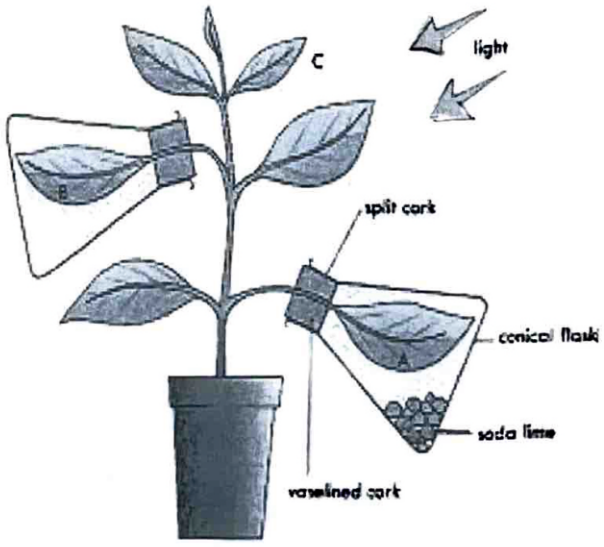
(ii) Mention any two reasons why nuclear wastes should be disposed carefully. [2]

(iii) Arrange the following in proper sequence. [2]
(a) Hawk →Tree leaves → Small bird → Snake → Caterpillar
(b) Gene → Chromatid →DNA → Chromosome.

(iv) Write one point of difference between: [2]
(a) Autonomic Nervous System and Somatic Nervous System (actions controlled)
(b) Seminiferous tubules and Seminal vesicle (location).

(v) In the given setup, two similar leaves of the plant were enclosed separately in conical flasks. One flask contained soda lime at the bottom, while the other flask did not. Both flasks were sealed air-tight using cork to prevent the entry of external air. The plant was kept in sunlight for several hours. On the basis of this information, answer the following questions. [3]

(a) What is the purpose of placing soda lime in one of the conical flasks?
(b) When the test for presence of starch is done, what will be your observation?
(c) What can you conclude from the experiment?

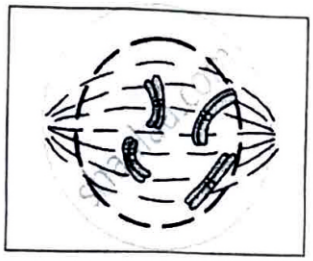


Question 6

(i) What is the location and function of Eustachian tube? [1]

(ii) The population in a country increased rapidly for a few years but later showed a decline. What is negative growth rate? Give a reason for it. [2]

(iii) Study the diagrams of stages of a dividing cell showing mitosis and answer the questions given below: [2]



A

B

(a) Name the stages A, and B.
(b) In which phase of cell cycle is genetic material duplicated?
(c) Name any one stage which ensures identical distribution of DNA to daughter cells?

(iv) Expand the following abbreviations. [2]
(a) NADP
(b) IAA

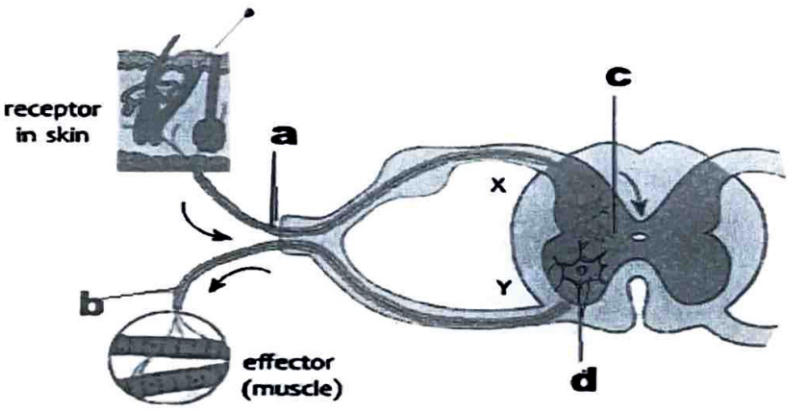
(v) Draw a neat labelled diagram of a sperm cell. [3]

Question 7

(i) How was bipedalism advantageous to early humans.? [1]

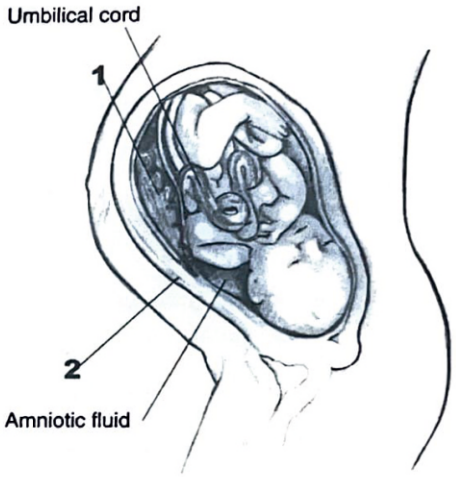
(ii) Biomagnification is an effect of the type of pollution shown in the picture. [2]
Identify the type of pollution and explain how this pollution can affect food chains.

(iii) Given below is a diagram of reflex arc. [2]
(a) Name the parts numbered a, b and d.
(b) Using the letters of alphabet shown in the diagram, indicate the direction in which the impulse enters and leaves part c - X to Y or Y to X



(iv) Given below is the picture of a developing foetus in the womb of a female. [2]

(a) If the structure marked '1' gets damaged during pregnancy, which two life processes of the foetus will be immediately affected?
(b) During a fall, the foetus often remains unharmed. Which labelled part is responsible for this and justify your answer.



(v) Draw a neat labelled diagram to show the internal structure of root hair. [3]

Question 8

(i) What is the difference between centrosome and centromere? [1]

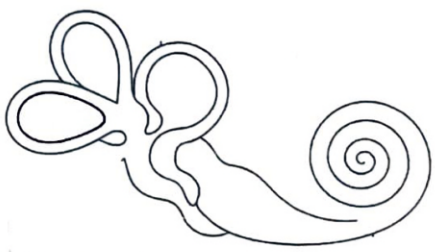
(ii) Two skull fossils are found— A: one with a sloping forehead and another.
B: with a high forehead
Identify which one is more evolved and one reason to support your answer. [2]

(iii) Which two processes of human reproduction are blocked in tubectomy method of birth control? [2]

(iv) Which part of a neuron regulates all cellular activities? Why is synapse considered a unidirectional junction? [2]

(v) A diagram of membranous labyrinth is given below. Redraw it, identify and label the parts responsible for [3]

(a) Hearing by converting sound vibrations into nerve impulses.
(b) Balance during vertical movements of the head while standing.
(c) Detects movements of the head and helps maintain when the body is in a horizontal position.
(d) Maintain dynamic equilibrium by detecting movements of the head.



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DON BOSCO SCHOOL, PARK CIRCUS
PRE-BOARD EXAMINATION-2025- 2026
CLASS X: BIOLOGY (SCIENCE PAPER -3)

TIME: 2 HOURS **FULL MARKS: 80**

1. *Answers to this Paper must be written on the paper provided separately.*
2. *You will not be allowed to write during first 15 minutes.*
3. *This time is to be spent in reading the question paper.*
4. *The time given at the head of this Paper is the time allowed for writing the answers.*
5. ***Section A is compulsory. Attempt any four questions from Section B.***
6. *The intended marks for questions or parts of questions are given in brackets [ ].*

SECTION A – (40 MARKS)
(Attempt all questions from this Section)

Question 1

Choose the correct answers to the questions from the given options. [15]
(Do not copy the question, write the correct answers only.)

i. A certain type of blood cell increases as an adaptive feature for high altitudes. The cell is:
   a. Lymphocyte
   b. Erythrocyte
   c. Thrombocytes
   d. Macrophages

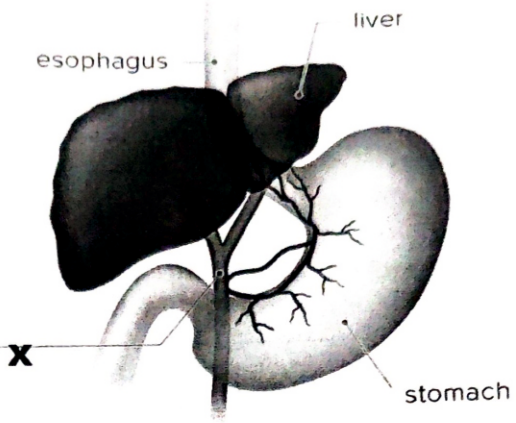
ii. A farmer had to grow grapes within a very short time. Instead of waiting for the complete annual growth cycle, he decided to use certain chemicals to speed up the process of fruiting. As a result, the grapes were produced without seeds. The chemicals he used are:
   a. Auxin and gibberellin
   b. Auxin and ethylene
   c. Gibberellin and cytokinin
   d. Ethylene and abscisic acid

iii. Assertion: Photophosphorylation takes place in the grana.
   Reason: Formation of ATP takes place in presence of light energy.
   a. A is true and R is false.
   b. A is false and R is true.
   c. Both A and Reason are true and R is the correct explanation of A.
   d. Both A and Reason are true but R is not the correct explanation of A.

iv. Ravi was prescribed a medicated cream to suppress the skin inflammation he was suffering from. The essential component of the cream was:
   a. Cortisone
   b. Adrenaline
   c. Thyroxine
   d. Adrenal androgens

v. The structure that maintain stability when you are running a 100 m race is:
   a. Cochlea
   b. Semi-circular canals
   c. Utricle and sacculus
   d. Eustachian tube

vi. Identify the function of the blood vessel marked 'X':



a. Transports oxygen from liver to stomach and intestines
b. Transports oxygen from stomach and intestines to liver
c. Transports absorbed food from stomach and intestines to liver
d. Transports absorbed food from liver to stomach and intestines

vii. Assertion: If a plant is uprooted and its roots are cleaned and washed free of soil, it soon wilts.
Reason: Leaves cannot photosynthesize in absence of water.
a. A is true and R is false.
b. A is false and R is true.
c. Both A and Reason are true and R is the correct explanation of A.
d. Both A and Reason are true but R is not the correct explanation of A.

viii. Which of the following is controlled by the spinal cord?
a. Blinking when a foreign object enters the eye
b. Pulling the hand on touching a hot object
c. Sneezing when nose is irritated
d. Pupil dilation reflex

ix. Wisdom teeth often cause pain and needs removal in man because:
a. They strengthen the jaw
b. They are vestigial and not needed anymore
c. They help to secrete saliva
d. They help to chew the food

x. The hormone that prepares the mammary glands for milk secretion is:
a. Prolactin
b. Oxytocin
c. FSH
d. LH

xi. Surgical method of sterilization in women involves cutting and ligation of:
a. Ureter
b. Uterus
c. Fallopian tube
d. Urethra

xii. A specific type of pollution is illustrated below. The effects of the pollution are:
1. Asthma
2. Interference in communication
3. Disturbs sleep

Which among the following options are correct?

a. 1,2
b. 2,3
c. 1,3
d. 1,2,3

xiii. Ryan was asked to label the parts of the meninges. He labelled the following: Arachnoid, Grey matter, Piamater, Duramater, He was awarded zero marks. Select the labelling that led him to lose marks:

a. Grey matter
b. Piamater
c. Duramater
d. Arachnoid

xiv. Identify the correct sequence:

a. Seminiferous tubule, epididymis, vas deferens, urethra
b. Seminiferous tubule, vas deferens, epididymis, urethra
c. Urethra, epididymis, seminiferous tubules, vas deferens
d. Epididymis, seminiferous tubules, vas deferens, urethra

xv. The nitrogenous bases present in DNA are:

a. Adrenaline, adenine, guanine, cytosine
b. Adenine, thiamine, guanine, cytosine
c. Adrenaline, thymine, guanine, cytosine
d. Adenine, thymine, guanine, cytosine

Question 2

i. Give technical terms for the following: [5]

a. The layer of the uterus where the blastocyst gets embedded.
b. The site for Biosynthetic phase of photosynthesis.
c. The phenomenon that causes wooden doors to swell up during monsoon.
d. The pancreatic hormone whose primary function is to raise the blood glucose level by converting stored glycogen to glucose.
e. Type of genetic cross whose phenotypic ratio is 9:3:3:1.

ii. Given below is the diagram of the human brain. Read the information and fill in the blanks [5]

Brain is the control centre of the human body It is a very delicate organ and remains well protected by bony and membranous coverings. An adult human brain weighs approximately 1.35 kg and forms 2% of the body weight. The bony protective covering of the brain is -(a) (Skull/Cranium). Brain is part of the -(b)(CNS/PNS). Cranial nerves arise from the -(c) (Brain/Cranium). Cortical region of the brain is made up of-(d) (White matter/Grey matter). The -(e) (CSF/Tissue fluid) is present in the brain ventricles.

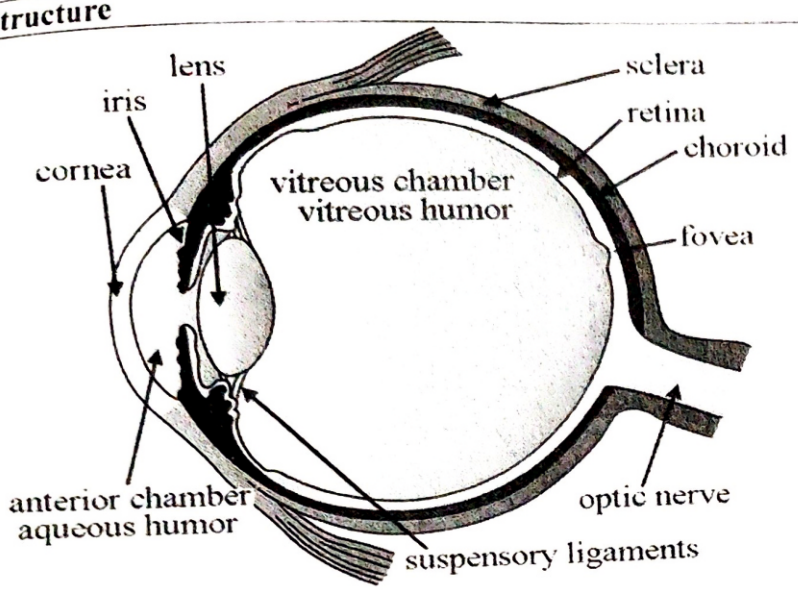
iii. Choose the odd term out from each of the following set of terms. Mention the category to which the remaining three belong: [5]

a. Needles, Syringes, Used bandages, Cobalt 60
b. Rhodopsin, Iodopsin, Chlorophyll, Haemoglobin
c. Photon, Glucose, Water, oxygen
d. Tonsil, Macrophage, Spleen, Lymph node
e. Sickle-cell anemia, Night-blindness, Colour-blindness, Haemophilia

iv. In a region of England, both light-winged and dark-winged varieties of the peppered moth were found. Both rested on tree trunks during the day.
Before industrialization, the tree barks were covered with lichen, so light-winged moths were camouflaged from birds, while dark-winged moths were easily spotted and eaten.
After factories developed in the area, soot from chimneys killed the lichens and blackened the tree trunks. Within a few decades, the population of dark-winged moths increased sharply, while the light-winged variety almost disappeared. [5]

a. The above case study is an example of which environmental phenomenon?
b. Write the biological name of the specimen under study.
c. The above case study illustrates which Darwinian Principle?
d. Name the agent that brought about the change, mentioned by you in (c).
e. State with a reason what will happen if the pollution level decreases.

v. Study the diagram given below and match the structure with its function: [5]
Example: Aqueous humor-(f)

Structure	Functions
	a. Controls the diameter of pupil b. Contains photoreceptor cells c. Provides nourishment d. Transmits visual stimulus to the brain e. Protects nerve endings f. Moisturises the lens

SECTION B – (40 MARKS)

(Attempt any four questions from this Section)

Question 3

i. Name the cell division that leads to the formation of embryo from the zygote. [1]

ii. State the use of: [2]

a. Sphygmomanometer

b. Potometer

iii. While being confined in the elevator. Shubh noticed fire and smoke emitting from the elevator. He panicked and felt that his heartbeat and breathing becoming rapid and palms becoming sweaty. Do you think any hormonal change was responsible for the condition that Shubh went through? Give reasons for your answer. [2]

iv. State the difference between the following *w.r.t.* the aspect given in ( ): [2]

a. Corpus luteum and Corpus callosum (function)

b. *Australopithecus* and *Homo sapiens sapiens* (cranial capacity) [3]

v. Draw a neat labelled diagram of the structure that helps in ultrafiltration.

Question 4

i. Write the scientific name of the plant material selected by Gregor Mendel for his experiments on genetics. [1]

ii. 'It is the need of the hour to adopt population control measures. Justify with suitable reasons. [2]

iii. A plant cell can show both exosmosis and endosmosis. Write the respective conditions under which each can happen. [2]

iv. Give a significant reason for each of the following: [2]

a. Acrosome plays an important role during fertilization.

b. Circulation is human beings is called closed circulatory system.

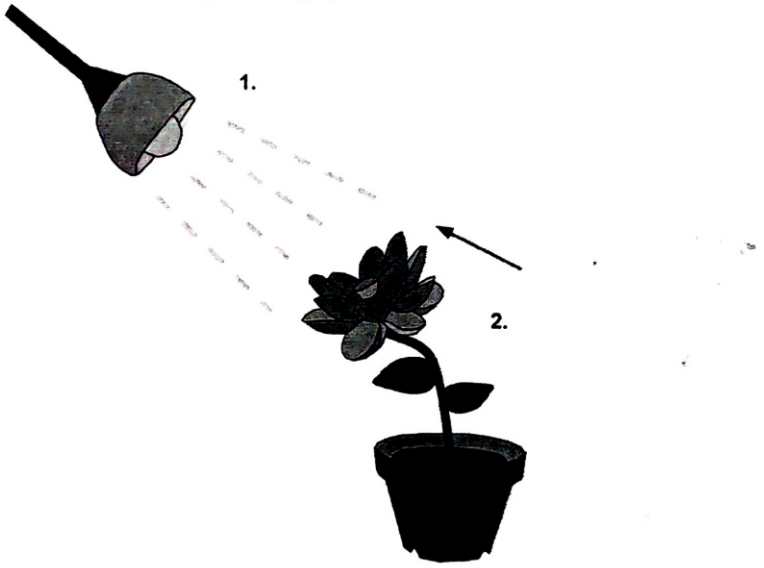
v. The following set-up was kept in sunlight for three hours. Answer the questions *w.r.t.* experiment: [3]

a. Account for your observation after three hours.
b. Define the phenomenon mentioned by you in (a).
c. What will happen in absence of the phenomenon?

Question 5

i. Arrange the following organisms in a sequence depending on the energy flow: [1]
Shrimp, Phytoplankton, Seal. Fish, Polar Bear

ii. Study the diagram and answer the corresponding questions: [2]



a. Identify 1and 2.
b. Name the hormone that is responsible for the above phenomenon.

iii. Study the relationship between the first and second terms and similarly fill up the fourth term: [2]
Example: Human female: *homozygous* :: Human male: *heterozygous*
a. Guttation: *Hydathode*:: Bleeding:
b. SO_2: *Acid rain* :: CH_4:

iv. State one function of each of the following: [2]
a. Eustachian tube
b. Guard cells

v. Draw a labelled diagram of the human sperm. [3]

Question 6

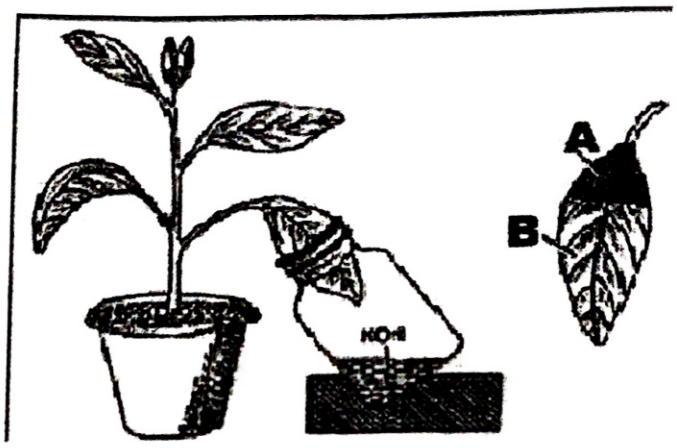
i. Define homologous chromosome. [1]

ii. Give two examples of each of the following: [2]
   a. Biodegradable waste
   b. Barrier methods of contraception

iii. Arrange the following in logical sequence beginning with the underlined term: [2]
   a. Effector, Receptor, Motor neuron, Sensory neuron
   b. Hypothalamus, Thyroxine, Thyroid, Pituitary

iv. Expand the following abbreviations: [2]
   a. MTP
   b. ABA

v. The following figure represents an experimental set-up that determines the necessity of a factor in photosynthesis. Study the figure and answer the questions that follow: [3]



   a. What is being studied through the above experiment?
   b. Account for the difference between A and B, *w.r.t* the factor under study.

Question 7

i. Explain the term 'Demography'. [1]

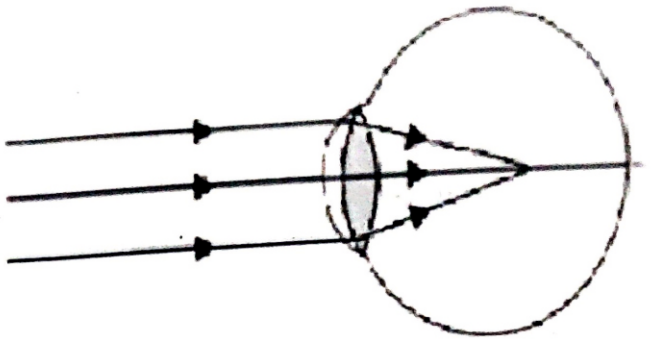
ii. Write two objectives of the campaign represented by the figure below: [2]

एक कदम स्वच्छता की ओर

iii. State one similarity between each pair: [2]
   a. Cretinism and Myxoedema
   b. ADH and Oxytocin

iv. Name any two: [2]
   a. Abnormal constituents of urine
   b. Fluid present in ear

v. The figure below illustrates an eye defect. Identify the defect and answer the questions that follow: [3]



a. Name the defect that is illustrated in the figure.
b. State the cause of the defect.
c. With a labelled diagram to correct the eye defect.

Question 8

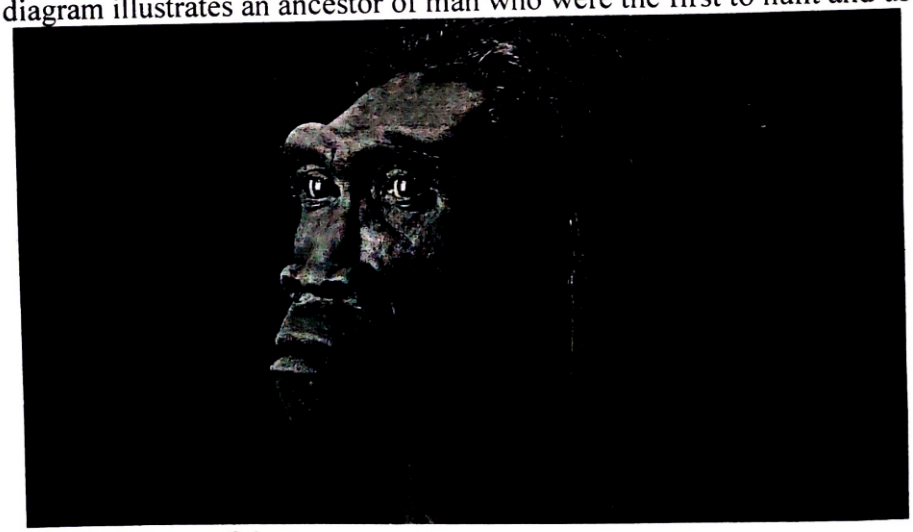
i. State the cause of 'LUBB' sound. [1]

ii. Draw the Punnett square of the F_2 generation in a cross between homozygous and heterozygous tall plant. [2]

iii. Rohan is fond of playing basketball. His concentration is on shooting the ball into the opponent's basket. [2]
a. Which part of the brain helps Rohan to concentrate on the ball?
b. Which part of brain co-ordinates all the voluntary muscles of the body?

iv. Write the exact location of each of the following: [2]
a. Amniotic fluid
b. Lenticel

v. The following diagram illustrates an ancestor of man who were the first to hunt and use fire. [3]



a. Write the biological name of the ancestor.
b. Describe the organism *w.r.t.*:
1. Forehead and brow ridges
2. Chin development

Lagdu Singh Charitable Trust's (Regd.)
THAKUR PUBLIC SCHOOL
(Established 2003)
(Affiliated to the Council for the Indian School Certificate Examinations, New Delhi)
ISO 9001 : 2015 CERTIFIED

Science

Paper 3 (Biology)

Maximum Marks: 80

Time allowed: Two Hours

Answers to this paper must be written on the paper separately.

You will **not** be allowed to write during the first **15** minutes.

This time is to be spent in reading the question paper.

The time given at the head of this paper is the time allowed for writing the answers.

Section A is compulsory. Attempt **any four** questions from **Section B**.

The intended marks for questions or parts of questions are given in brackets [ ].

SECTION A (40 Marks)

(Attempt all questions from this Section.)

Question. 1

Choose the correct answers to the questions from the given options. [15]

(Do not copy the question. Write the correct answer only):

(i) A cell has 5 pairs of chromosomes. After mitotic division, the number of chromosomes in the daughter cells will be:

(a) 5 (b) 10 (c) 20 (d) 40

(ii) Darwin's potometer is mainly designed with an aim of demonstrating _____.

(a) Unequal transpiration from the two surfaces of a dorsiventral leaf.

(b) Equal transpiration from the two surfaces of a dorsiventral leaf.

(c) Rate of water intake by a plant.

(d) Suction force created due to transpiration.

(iii) Assertion (A): The axon is covered by the myelin sheath.

Reason (R): It prevents mixing of impulses in the adjacent axons.

(a) Both A and R are true (b) Both A and R are false

(c) A is true and R is false (d) R is true and A is false

(iv) While studying the stages in the evolution of man, cranial capacity of about 680-735 cm^3 is observed in:

(a) Homo habilis (b) Neanderthal (c) Homo sapiens (d) Australopithecus

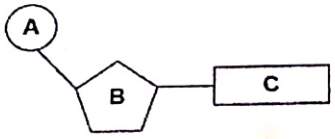
(v) While studying genetics, Abdul wonders about the 3 components shown in the following diagram which forms a nucleotide. The components are:

(a) A= Base, B= Sugar, C= Phosphate

(b) A= Phosphate, B= Sugar, C= Base

(c) A= Phosphate, B= Sugar, C= Phosphate

(d) A= Base, B= Phosphate, C= Sugar



(vi) The colour of the inverted triangle symbol for family planning is:

a) Blue b) Pink (c) Yellow (d) Red

(vii) Assertion (A): Pavlov's experiment on a dog is an example of conditioned reflex.

Reason (R): In the experiment, the stimulus is sound & the reflex is salivation.

(a) Both A and R are true (b) Both A and R are false

(c) A is true and R is false (d) R is true and A is false

(viii) Arya is getting ready for a 100m race. The adrenal gland releases adrenaline. Which of the following are its effects?

(1) Increase in heart rate
(2) Increase in blood supply to the muscles
(3) More glucose is released into the blood by the liver
(4) Fat is stored in the body.

(a) Only 1, 2 and 3 (b) Only 1, 3 and 4 (c) Only 4 (d) Only 1 and 3.

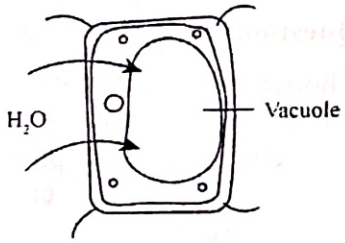
ix) After crossing a tall pea plant with a dwarf pea plant, all the offsprings were tall. If one of these new tall pea plants is crossed with a dwarf plant, the ratio of tall to dwarf in the next generation would be:

(a) 1 tall: 1 dwarf (b) 3 tall: 1 dwarf (c) all tall (d) all dwarf

(x) Assertion (A): Sunflowers exhibits chemotropic movement.
Reason (R): Sunflower plant contains auxins which are sensitive to sunlight.

(a) Both A and R are true (b) Both A and R are false
(c) A is true and R is false (d) R is true and A is false

(xi) The following figure shows a plant cell which has been put in a _____ solution, and the state of cell is: _____.



(a) Hypertonic, flaccid (b) Hypotonic, Turgid
(c) Hypotonic, flaccid (d) Hypertonic, Turgid

(xii) Assertion (A): The blood sugar level in our body is regulated by glucagon.
Reason (R): Diabetes insipidus is caused due to insufficient secretion of insulin.

(a) Both A and R are true (b) Both A and R are false
(c) A is true and R is false (d) R is true and A is false

(xiii) Arun is tallest in class & has long bones lengthened beyond normal. Which of the following hormone is involved: _____.

(a) Growth hormone (b) Insulin (c) Glucagon (d) Progesterone.

(xiv) A biology teacher asked her students to give two examples of greenhouse gas.
Arya said: CO_2 and CH_4
Kavya said: CO_2 and O_2
Rahi said: N_2 and CH_4
Siddhi said: CH_4 and CFC's
Who was correct?

(a) Arya and Kavya (b) Rahi and Arya (c) Siddhi and Rahi (d) Siddhi and Arya.

(xv) A single highly coiled tube where sperms are stored, it gets concentrated and matured is known as:

(a) Epididymis (b) Vas efferentia (c) Vas deferens (d) Seminiferous tubule

Question 2

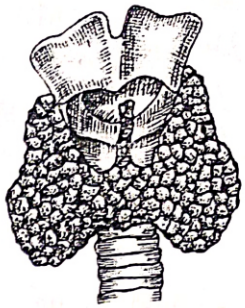
(i) Name the following: - [5]

(a) The photosensitive pigment present in the rod cells in the retina.
(b) Place where the waste is dumped in a ground depression and covered with dirt every day.

(c) Intra- uterine device commonly used in India as a method of contraception.
(d) One vestigial organ found in humans.
(e) Enzyme released by thrombocytes at the site of wound. [5]

(ii) Fill in the blanks with suitable words:

The Endocrine system consists of several glands which bring about the overall common function of chemical coordination in the body.



The thyroid gland is situated in front of the neck just below the (a)_____. It has a bilobed butterfly like structure connected by a narrow band called the (b) _____. It is stimulated by the (c)_____ of the pituitary to secrete its hormones. The two main hormones secreted by this gland are (d) _____ and (e) _____. [5]

(iii) Read the explanations given below and name the structure:

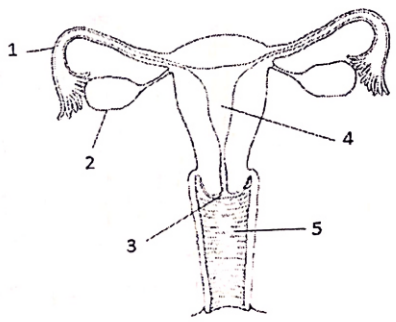
Example: Complex of DNA and proteins. **Answer:** Chromatin.

(a) The part of chloroplast where light dependent reaction takes place.
(b) A membrane covered opening on which the flat part of the stirrup of middle ear fits.
(c) Branched fibres that are present in the ventricular walls of heart.
(d) A notch present in median surface of each kidney from which the ureter arises.
(e) Part of forebrain that relays pain and pressure impulses to cerebrum. [5]

(iv) Arrange and rewrite the terms in each group in the correct order to be in a logical sequence beginning with the term that is underlined.

(a) Spinal cord, Effector, Receptor, Motor neuron, Sensory neuron.
(b) Oviducts, Vulva, Vagina, Uterus, Ovaries.
(c) Mid brain, Medulla oblongata, Cerebrum, Pons, Spinal cord.
(d) Second growth phase, Synthesis phase, First growth phase, Prophase.
(e) Cuticle, Spongy mesophyll cells, Upper epidermis, Palisade mesophyll cells, Lower epidermis. [5]

(V) Given below is the diagram of female reproductive system. Match the structures marked (1) to (5) with their correct functions:

Female reproductive system	Functions
	a) fertilized egg is implanted. b) provides passage for child birth. c) site for fertilization to occur & transports fertilized egg to the uterus. d) prevent infection by acting as a barrier to the uterus. e) produce and store ovum.

Section B [40 Marks]

*(Attempt any **four** questions from this Section)*

Question 3

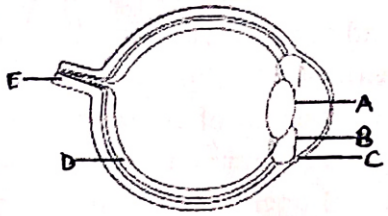
(i) Explain the term 'Dialysis'. [1]

(ii) What are acid rains? State its harmful effect (any one). [2]

(iii) Differentiate between Tubectomy and Vasectomy. [2]

(iv) 'Excessive use of fertilizers in agricultural fields reduces the yield of crops'. Justify the statement. [2]

(v) Dr. Verma is an ENT surgeon. He explained you an eye diagram having several structures with varying shapes and sizes. Based on your learning, answer the following questions. [3]



(a) Label the parts numbered 'D' and 'E'

(b) What is blind spot?

(c) What is the function of the part labelled 'A.'

Question 4

(i) What is the scientific name for the sweet pea plant? [1]

(ii) Expand the following abbreviations - (a) FSH (b) IAA. [2]

(iii) Mention one change which occurred in the following organism according to Darwin: [2]
a) Giraffe b) Peppered moth

(iv) How does cytokinesis occur in: a) Plant cell b) Animal cell. [2]

(v) Draw a neat labelled diagram of a Root hair of a plant. [3]

Question 5

(i) Define Mortality. [1]

(ii) State the features of Australopithecus with respect to cranial capacity and body hair. [2]

(iii) Distinguish between Transpiration and Guttation. [2]

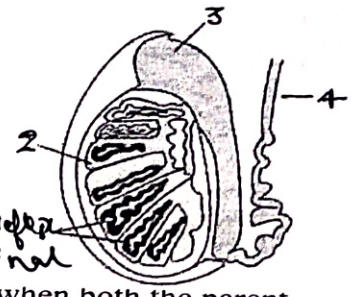
(iv) State the function of the following: a) Loop of Henle b) Lacrimal gland. [2]

(v) The diagram shown below is the L.S of a testis of man. Study the diagram and answer the questions that follow: [3]

(a) What is the function of part labelled '3'.

(b) What will happen if the testis doesn't descend into the scrotum shortly before the birth of male child?

(c) Name the process that occurs in part '1'.



Question 6

(i) Explain the term Flaccidity. [1]

(ii) What is a conditioned reflex? Give one example of a conditioned reflex. [2]

(iii) In a homozygous plant, axial flowers (A) are dominant over terminal. [2]
Draw a punette square board to show the gametes and offsprings when both the parent plants are heterozygous for axial flowers.

(iv) State two objectives of 'Swachh Bharat Abhiyan.' [2]

(v) Draw a neat labelled diagram of a mammalian ovum. [3]

Question 7

(i) State Mendel's Law of Seggregation. [1]

(ii) 'Foetus cannot develop without placenta'. Explain. [2]

(iii) What is interphase? Mention any one significant change that occurs in a cell during interphase. [2]

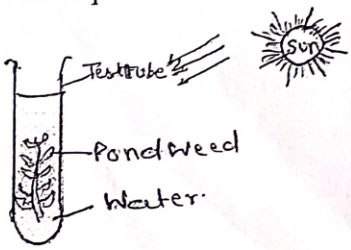
(iv) List 2 reasons for the population explosion in India: [2]

(v) A pondweed was placed in a test-tube containing pond water and exposed to bright sunlight. Bubbles evolved at the cut end of the stem as shown in figure given below. Study the diagram and answer the following questions: [3]

(a) What is the source of this gas that is evolved?

(b) What would you observe in each of the following cases and give an explanation for each observation:

1. The apparatus is placed in the dark.
2. A pinch of sodium bicarbonate is added to the test-tube.



Question 8

(i) Define Blood pressure. [1]

(ii) What is Gigantism and which hormone is involved in this type of condition? [2]

(iii) Given below are two statements which are incorrect. Rewrite the correct statements: [2]

a. In Glycosuria condition, the blood passes with urine.

b. Cell shape and size remains unchanged in a hypotonic solution.

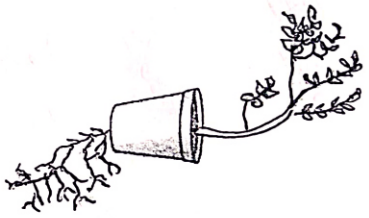
(iv) State the exact location of the following: (a) Mitral valve (b) Arachnoid. [2]

(v) Study the diagram & answer the questions that follow: [3]

(a) What is the aim of the experiment?

(b) What is your observation?

(c) Which instrument is used in demonstrating this movement in laboratory?



Question Paper 8

Children's Academy

Group of Schools

o Bachani Nagar Malad (E) | o Ashok Nagar Kandivli (E) | o Thakur Complex Kandivli (E) | o Ghodbunder Road Thane (W)

HARD WORK & DISCIPLINE ARE OUR TRADITION

PRELIMINARY EXAMINATION 2025-26

Grade : X **Subject :** BIOLOGY **Marks :** 80

Date : 07/01/2026 **Time :** 2 hours

- *You will not be allowed to write during the first 15 minutes.*
- *This time is to be spent in reading the question paper.*
- *The time given at the head of this paper is the time allowed for writing the answers.*
- *This paper consists of **9** printed pages.*

- *Attempt all questions from Section A and any four questions from Section B.*
- *The intended marks for questions or parts of questions are given in brackets [ ].*

Section A (40 Marks)

(Attempt all questions from this Section)

Question 1

Choose the correct answers to the questions from the given options. [15]

(Do not copy the question, write the correct answers only)

(i) The minimum pressure that must be exerted to prevent the passage of the pure solvent into the solution when the two are separated by a semipermeable membrane is :

(a) Turgor pressure (b) Wall pressure

(c) Osmotic pressure (d) Root pressure

(ii) Assertion :Use of diaphragm is a barrier method to prevent pregnancy in the males.

Reason: Diaphragm is used to prevent the entry of germs into the vagina of the females.

(a) A is false and R is true (b) A is true and R is false

(c) Both A and R are false (d) Both A and R are true

(iii) A liver cell with 24 chromosomes completes mitosis. The chromosome number in each daughter cell will be:

(a) 12 (b) 48

(c) 24 (d) 6

(iv) Identify the correct sequence that matches the hormone with its primary function:

Hormone	Function
P - Follicle Stimulating Hormone (FSH)	1 - Repairs and builds uterine lining
Q - Luteinising Hormone (LH)	2 - Stimulates growth of Graafian follicle
R – Progesterone	3 - Causes ovulation and formation of corpus luteum
S – Oestrogen	4 - Maintains thickness of endometrium

(a) P-1, Q-2, R-3, S-4 (b) P-2, Q-3, R-4, S-1

(c) P-4, Q-1, R-2, S-3 (d) P-3, Q-4, R-1, S-2

(v) According to Darwin's theory of natural selection, which factor leads to evolution?

(a) Sudden creation of new species.

(b) Inheritance of acquired characters.

(c) Survival and reproduction of the fittest organisms.

(d) Use and disuse of organs.

(vi) A student designs an experiment using cobalt chloride paper to test transpiration in a dicot plant.Which prediction is most appropriate?

(a) Both surfaces of the leaf lose equal amounts of water.

(b) Lower surface will turn pink faster due to higher transpiration.

(c) The cobalt chloride paper remains unchanged.

(d) The upper surface shows higher transpiration.

(vii) Assertion :The sex of the child will be determined by chromosome received from the father.

Reason: The sperm has one X and one Y chromosome.

(a) A is false and R is true (b) A is true and R is false

(c) Both A and R are false (d) Both A and R are true

(viii) Select the correct statement with respect to the human brain:

1. Diencephalon contains thalamus which is a centre for relaying pain and pressure impulses to cerebrum.
2. Cerebellum controls the activities of the internal organs.
3. Midbrain controls the auditory impulses and the sight.
4. Pons carries impulses from one cerebellar hemisphere to the other.

(a) Statement 1 and 2 (b) Statement 2,3 and 4

(c) Statement 1,3 and 4 (d) All the statements are correct.

(ix) A complex consisting of a DNA strand and a core of eight histones is :

(a) Nucleotide (b) Nucleosome

(c) Chromosome (d) Centrosome

(x) The vitamin required for the synthesis of Rhodopsin is :

(a) A (b) B

(c) C (d) D

(xi) The selective agent that was responsible for causing the change in the population of peppered moth was :

(a) Lichens (b) Humans

(c) Bird (d) Pollution

(xii) During a practical exam a plant cell kept in a particular solution was placed under a compound microscope. Students observed that the cytoplasm had shrunken.Name the tonicity of the solution and the process that occurred in the cell.

(a) Isotonic, Endosmosis (b) Hypotonic Active transport

(c) Hypertonic, Endosmosis (d) Hypertonic, Exosmosis

(xiii) The hormone which stimulates uterine contractions is:

(a) Prolactin (b) Oxytocin

(c) Cytokinin (d) Estrogen

(xiv) The complex process of blood clotting involves a sequence of specific biochemical reactions. The correct sequence will be:

1. Thrombin acts on the soluble plasma protein fibrinogen.
2. Insoluble fibrin threads are formed, which trap blood cells and form the clot.
3. Thromboplastin is released by damaged tissues and platelets.
4. Thromboplastin, in the presence of calcium ions, converts inactive prothrombin into active thrombin.

(a) 1,2,3,4 (b) 2,3,4,1

(c) 3,2,4,1 (d) 3,4,1,2

(xv) Choose the options with two correct statements:

1. Growth of tendrils of pea plant towards the support is an example of hydrotropism.
2. Growth of pollen tube towards the ovary is an example of thigmotropism.
3. Gibberellins help in the elongation of the stem.
4. Ethylene is a gaseous plant hormone.

(a) 1 and 2 (b) 2 and 3

(c) 3 and 4 (d) 1 and 4

Question 2

(i) Name the following:

(a) The number of deaths per 1000 of population per year.

(b) The hormone which promotes chlorophyll synthesis in plants.

(c) The nitrogenous base that pairs with Adenine .

(d) The process involving the splitting of water in presence of light .

(e) The device that prevents implantation of the blastocycst.

(ii) State whether the given statements are true or false, if false rewrite the correct statement by changing the underlined word: [5]

(a) Corresponding chromosomes of the same shape and size, one obtained from each parent are called as autosomes.

(b) Guttation in plants occurs maximum at mid-day.

(c) The phenomenon by which living or dead plant cells absorb water by surface attraction is Imbibition.

(d) Kidneys produce urea.

(e) The median canal of cochlea is filled with Perilymph.

(iii) Arrange and rewrite the terms in each group in the correct order so as to be in a logical sequence beginning with the term that is underlined : [5]

(a) Australopithecus, Cro-Magnon,Homo Habilis, Neanderthal,Homo Erectus

(b) Blastocyst, Zygote, Grafian follicle, Morula, Matured ovum

(c) Renal vein, Secondary capillary network, Glomerulus, Efferent arteriole, Afferent arteriole

(d) Sperm duct, Penis, Testes, Sperms, Semen

(e) Water molecules, Oxygen, Grana, Production of glucose, Photons

(iv) State the location of the following: [5]

(a) Yellow spot

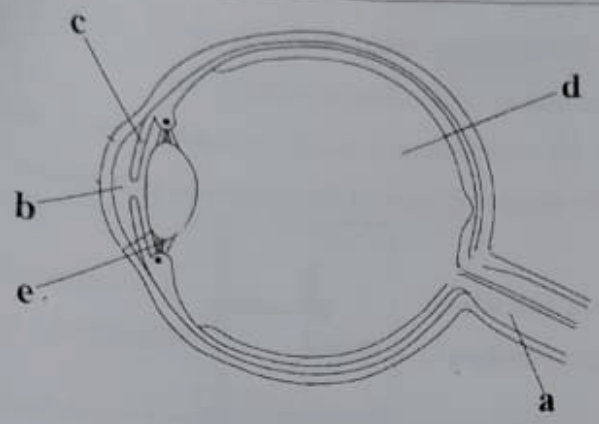
(b) Cytokinins

(c) Vagina

(d) Thyroid

(e) Kidney

(v) Given below is a cross section of the human eye. Match the structures marked **a** to **e** with their correct functions: [5]

Cross section of human eye	Functions
	1. Protects retina. 2. Regulate the size of the pupil. 3. Holds the lens in position. 4. Keeps the lens moist. 5. Transmits the nerve impulse to the brain. 6. Point of no vision.

Section B (40 marks)

(Attempt any four questions from this section)

Question 3

(i) Expand the abbreviation CNG. [1]

(ii) List any two functions of amniotic fluid. [2]

(iii) A traffic-congested road shows high levels of carbon monoxide and particulate matter. Traffic police working for long hours complain of headaches and fatigue. Authorities plan to introduce stricter vehicle emission norms. [2]

(a) Explain how carbon monoxide affects the human body.

(b) Suggest two measures to reduce vehicular air pollution.

(iv) Draw a neat labelled diagram of the internal structure of chloroplast. [2]

(v) Mrs. Kapoor (age 68) visited her ophthalmologist complaining that she finds it difficult to read the ingredient labels on food packages.Her eight-year-old grandson, Arjun, also visited the same doctor with a similar complaint: he finds it difficult to read from the textbook.Based on the information provided to the doctor answer the questions that follow: [3]

(a) Name the specific defect of the eye suffered by:

(i) Mrs. Kapoor (ii) Arjun

(b) Provide the primary reason for the difference in the type of defect suffered by Mrs. Kapoor and Arjun.

(c) The corrective lens prescribed for Arjun would be identical in type to the lens prescribed for Mrs. Kapoor. Justify.

[1]

Question 4

(i) Explain Gestation.

(ii) Differentiate between Astigmatism and Colourblindness with reference to the cause. [2]

(iii) State utility of Hepatic Portal System. (Any two) [2]

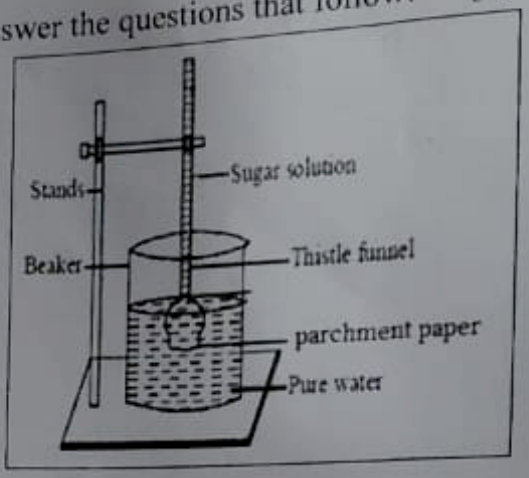
(iv) Explain any two factors for population explosion in India. [2]

(v) The diagram given below is an experimental setup to study a very important physiological process.Study the same and answer the questions that follow: [3]

(a) Define the process.

(b) Name the part of the plant cell which is represented by the sugar solution and parchment paper.

(c) Draw a control setup for the same experiment and label it.



Question 5

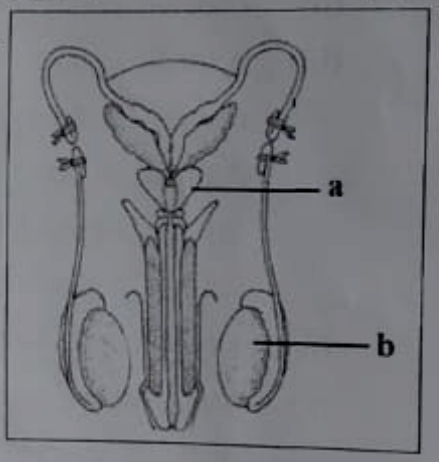
(i) Define Evolution. [1]

(ii) Observe the diagram and answer the questions that follow : [2]

(a) Identify the surgical method of contraception.

(b) State the function of part marked a.

(c) Draw a neat labelled diagram of a gamete produced by part marked b .



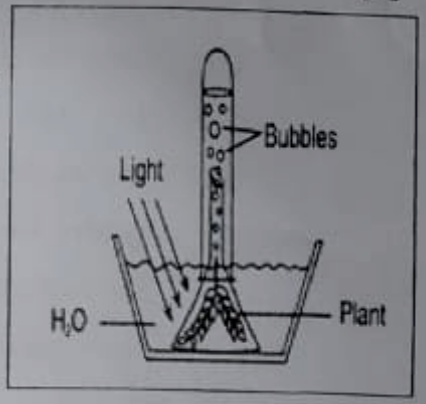
(iii) Differentiate between Auxin and Ethylene based on their location and function. [2]

(iv) Study the diagram and answer the questions that follow: [2]

(a) State the aim of the given experiment.

(b) Which raw material releases the oxygen gas?

(c) Name the chemical substance which can be added in water to enhance the process.

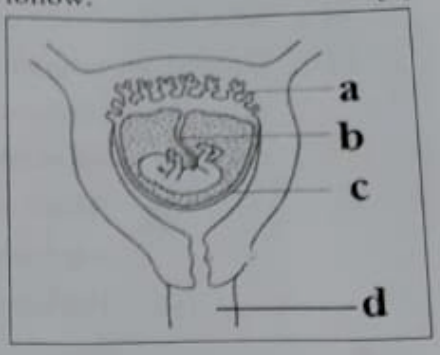


(v) Study the diagram and answer the questions that follow: [3]

(a) Label the parts marked b and c.

(b) State two functions of part marked d.

(c) Name the hormones produced by part marked a.



Question 6

(i) Explain accomodation of an eye. [1]

(ii) In guinea pigs, Black fur (B) is dominant to White fur (b). A scientist performs a cross between two Black-furred guinea pigs, and among their offspring, they find a total of 12 black-furred pigs and 4 white-furred pigs. [2]

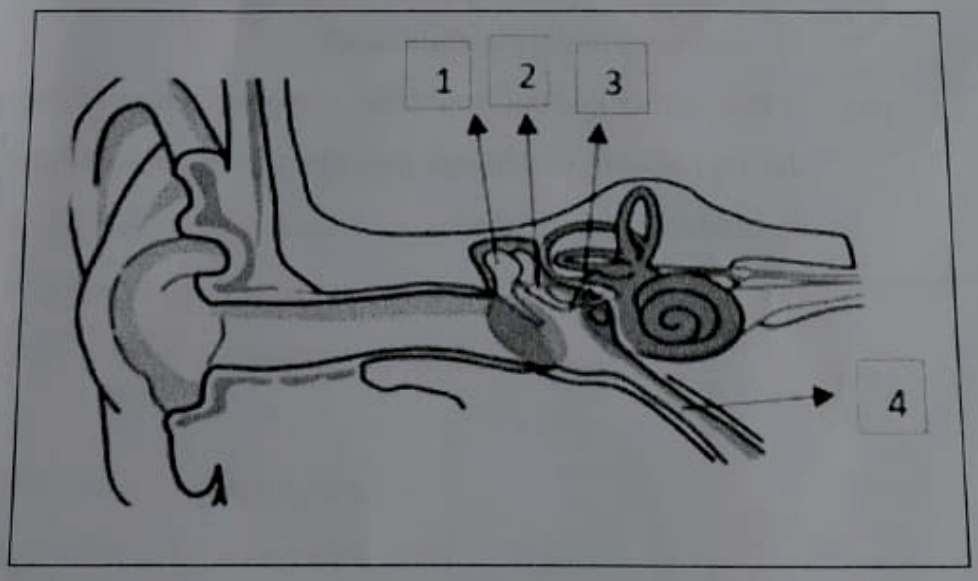
(a) What are the most probable genotypes of the two black-furred parental guinea pigs?

(b) If the scientist then crosses one of the white-furred offspring with one of the black-furred offspring which is heterozygous, what is the percentage of offspring which will be homozygous dominant?

(iii) Explain any two functions of Adrenaline. [2]

(iv) Draw a neat labelled diagram of the cross section of Human Kidney. [2]

(v) Observe the diagram and answer the questions that follow: [3]



(a) What are the parts 1,2,3 collectively called?

(b) State the function of the part marked 4.

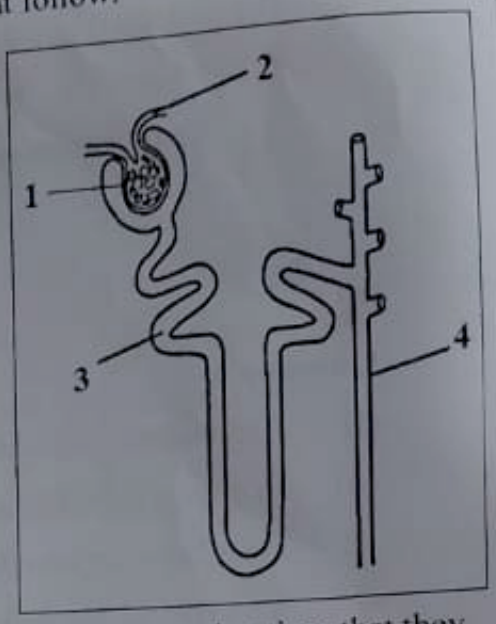
(c) Name the part responsible for dynamic balance.

(d) State the location of organ of corti.

Question 7

(i) State Mendel's law of Independent Assortment. [1]

(ii) Observe the diagram and answer the questions that follow: [2]



(a) Define the process that takes place in part 1

(b) Write the number and name of the part :

(i) Where maximum reabsorption of water takes place?

(ii) The term urine is used for the first time.

(iii) A student observes human red blood cells under a microscope and notices that they lackfew important organelles. Surprisingly, these cells efficiently transport oxygen throughout the body. [2]

(a) Name the organelles that were missing in the red blod cell.

(b) Explain why red blood cells are deficient yet efficient in their function.

(iv) A mother notices that her seven year old son suddenly needs new, larger shoes every few months and has become noticeably taller than his peers in just one year. Her 8-year-old daughter, however, shows only slow, steady growth. [2]

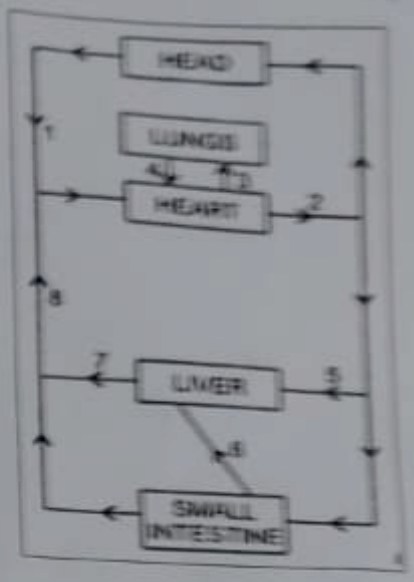
(a) Which endocrine gland is responsible for this increase in the rate of skeletal growth during childhood?

(b) If the mother had suffered from a hyposecretion of this same hormone during her own childhood, describe the resulting clinical condition she would have experienced.

Observe the diagram and answer the questions that follow:

(a) Label the parts 4 and 6.

(b) State the number and name of the vessels carrying deoxygenated blood.



Question 8

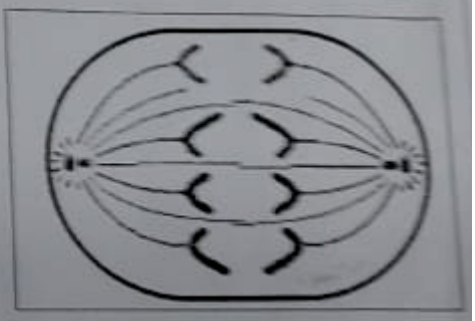
(i) Pituitary gland is called the master gland.Justify. [1]

(ii) Draw a neat labelled diagram of a fully distented root hair. [2]

(iii) Observe the diagram and answer the questions that follow : [2]

(a) Identify the stage and give reason to support your answer.

(b) Mention the type of cells in plants where this type of cell division occurs.



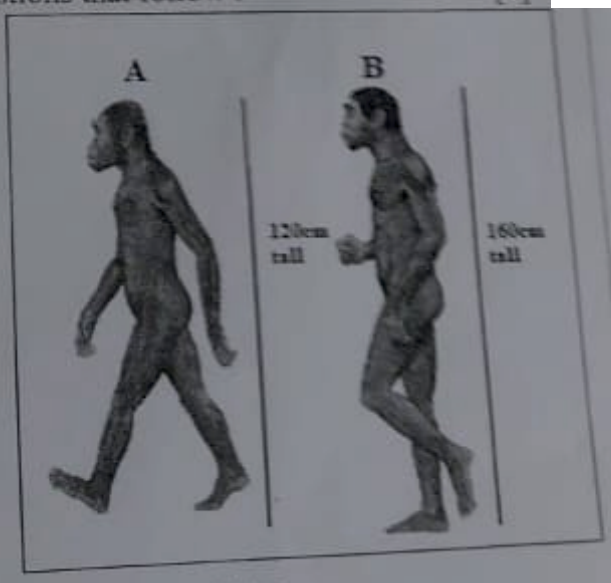
(iv) State two ways to reduce noise pollution. [2]

(v) Observe the diagram and answer the questions that follow : [3]

(a) Identify the stage A and B .

(b) State any two characteristics of stage B.

(c) Differentiate between Lamarck's theory and Darwin's Theory (any one point)



**********THE END**********

Question Paper 9

Gurukul Academy
Pre-Board II- 2025-26
Class X/ Subject: Biology

M.M.-80/ Time: 2 hrs.

SECTION A (40 MARKS)
(Attempt all questions from this Section)

Q1 Select the correct answers to the questions from the given options. [15]
(Do not copy the questions, write the correct answer only).

i) At the end of ……,cytokinesis is completed.
(a)Metaphase (b)Prophase (c)Interphase (d)Telophase

ii)Assertion:On crossing two pea plants,we get 50% tall and 50% dwarf plants .
Reason : One plant was heterozygous and the other plant was dwarf.
(a) Both A and R are True. (b)Both A and R are False.
(c)A is True and R is False. (d) A is False and R is True

iii) The shoot from a Balsam Plant is kept in the beaker containing eosin solution (pink). The pink colour will be distinctly seen in the
(a)Xylem (b)Phloem (c)Epidermis (d) Cortex

iv) Euro Bharat norms have been laid down by the Central Government. In view of these norms, few statements are given below:
I. These norms aim to effectively cut down sulphur and nitrogen oxides from automobile exhausts.
II. These norms focus on the recycling of plastic, metal, and glass materials.
III. The emission standards have been set to check on the pollutant levels emitted by the vehicles that use combustion engines.
IV.The goal of these norms is to make an Open Defecation Free (ODF) India. Which of these statements form the basis of Euro Bharat norms?
(a) I, II (b) II, III (c) I, III (d) I, IV

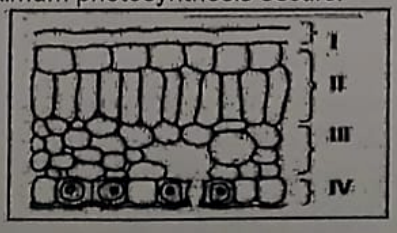
v) Harish and his wife were expecting their second child. However, prenatal screening tests provided definite evidence of a serious genetic disease in the embryo. Therefore, they decided to abort their child. Which of the following methods must be chosen by the couple for the above purpose?
(a) Vasectomy (b) Copper-T (c) MTP (d) Tubectomy

vi)**Assertion (A):** The cortex of a kidney tubule shows a 'dotted' appearance.
Reason (R): Henle's loop and collecting ducts lie in the cortex.

(a) Both A and R are true (b) Both A and R are false

(c) A is true and R is false (d) A is false and R is true

vii) Sahil was asked to draw the transverse section of the leaf during his practical exam.He sketched the below drawing.Identify the layer of cells where maximum photosynthesis occurs.
(a) I , II
(b) II , III
(c) III , IV
(d) I , IV

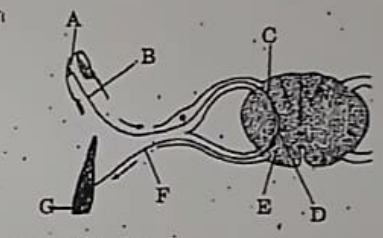


If a plant receives CO_2 normally but the temperature falls very low at night, explain why glucose synthesis in the light-independent phase slows down.

(ii) Name the plant hormone responsible for following functions:- [2]
a) It induces rooting in the cuttings of plants like rose and bougainvillea.
b)Widely used by horticulturists and food industries.
c)Promotes chlorophyll synthesis and inhibits apical dominance.
d)Stimulates closure of stomata in the epidermis.

(iii)Name the type of tropic movement mentioned in the given examples:- [1]
a)The movement of tentacles in the Drosera plant.
b) The movement of tendrils of sweet pea plant

(iv)Observe the given diagram of the internal structure of a spinal cor [4]
depicting a phenomenon and then answer the following questions:
a) Label the parts marked A,B,F and G.
b)Define Reflex action.
c) What will happen if sensory neuron gets damaged ?



Q7 (i) Complete the following table by filling in the blanks spaces numbered 1 to 8. [3]

Gland	Secretions	Effect on the body
(1)Anterior pituitary	(2) ————	(3)Acromegaly
(4)————	(5) ————	(6)Basal metabolism
(7) Pancreas	(8)————	(9)Deposition of extra glucose
(10)————	(11) Mineralocorticoids	(12)————

(ii) List two important functions of placenta. [1]
(iii)Differentiate between a) Mortality and Natality. [2]
b)Tubectomy and Vasectomy

(iv) a)Children often burst plastic balloons near beaches. How can this small action [3]
indirectly harm marine life?
b)A family buys groceries in plastic carry bags every week. Suggest one practical change they can make to reduce plastic pollution and explain why it works?
c) Explain Ozone layer depletion.

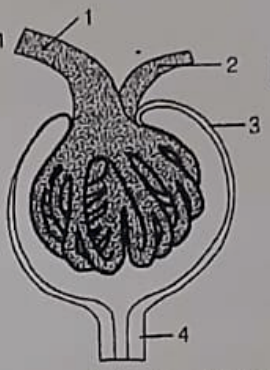
(v)Mention any two major changes occurring in the process of urbanisation. [1]
How is it harmful?

parts through blood vessels.Also mention the name of the blood vessels.

(ii) Explain why tears,sweat and saliva are secretions whereas urine is considered an excretion? [2]

(iii) A man suffers from a blockage in the urethra.What will happen to
a) the urinary bladder?
b) the rate of urine formation in the kidney? [2]

Q4(i) The diagram given below is of a malpighian capsule. Observe the diagram and then answer the questions that follow: [5]

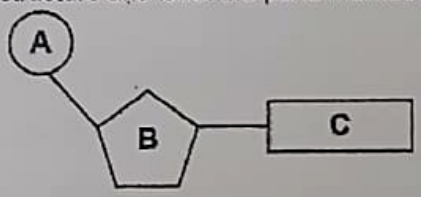


a)Name the parts labeled 1,2,3 and 4.
b)Name and explain the stages involved in the formation of urine.
c) Name the hormone which regulates the concentration of urine by water reabsorption.
d) Define:-Osmoregulation

(ii) A patient's blood is mixed with a reagent containing Anti-A antibodies and shows agglutination (clumping). When the patient's blood is mixed with a reagent containing Anti-B antibodies, there is no agglutination. What is the patient's blood type, and what antibodies are naturally present in their plasma? [2]

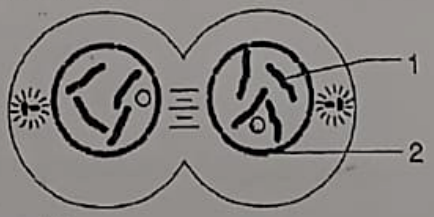
(iii)Draw a neat well labelled diagram of the structural and functional unit of the Nervous System. [3]

Q5 (i) a) Name any two primitive characteristics of Homo erectus. [2]
bi) Give two structural difference between modern humans (Homo sapiens) and Australopithecus.
(ii) Identify the given structure and label the parts marked A, B and C. [2]



(iii)A pea plant with genotype RrYy is self-crossed. [3]
a)How many different types of gametes can it produce?Write the types of gametes.
b)Write the phenotype and phenotypic ratio of the above mentioned cross.
c) State the law which explains the dihybrid phenotypic ratio,

(iv) Observe the given diagram and answer the questions that follow: [3]



a)Identify the given phase and state the two events that occur during this phase.
b) Label the parts numbered 1 and 2.
c)What would happen if chromosomes do not reach opposite poles before telophase begins?
d)Why is telophase considered the "reverse of prophase"?

Q6 (i) a) If NADP is not available inside the chloroplast, what immediate effect will it have on the hydrogen ions released during photolysis?Explain how this affects glucose formation in the light-independent phase.

b)A plant kept in red light shows faster starch accumulation than a plant kept in green light.Explain this using the mechanism of chlorophyll absorption and the light-dependent phase.

(a)Right ventricle (b)Right auricle (c)Left auricle (d)Left ventricle

Q2 (i) Choose the odd one out from the following terms and name the category to which the others belong: [5]

(a)Guard cells , Stomata , Root hair , Lenticels
(b)Cretinism, Cushing's syndrome , Acromegaly , Leukemia
(c)Pons , Cerebellum, Cerebrum , Medulla oblongata
(d)Basophil , Monocyte, Neutrophil , Eosinophil
(e)Tears secretion , salivation, Blinking , Knee-jerk

(ii) Arrange and rewrite the items in each group so as to be in a logical sequence beginning with the term that is underlined. [5]

(a)Ovulation,Fertilization, Gestation, Child birth, Implantation
(b) Vas deferens,Testis, Epididymis, Efferent duct, urethra
(c)Pinna, oval window,Tympanum, stapes, malleus, cochlea
(d)Renal vein,Renal artery, afferent arteriole, efferent arteriole, glomerulus.
(e)Water molecule, oxygen, grana, hydrogen and hydroxyl ions,photons

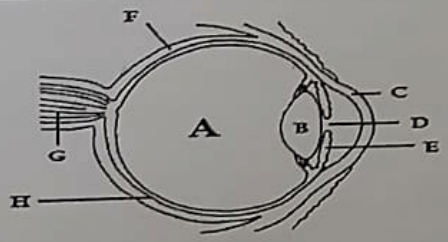
(iii) Complete the following paragraph by filling appropriate words. [5]

When a cell absorbs water by osmosis, it becomes ——-1—— and the cell contents press against the cell wall. This pressure is called ——-2———, while the pressure exerted by the cell wall on the cell contents is known as ———-3——-. If the pressure(mentioned in blank 2) becomes too ———-4—, the cell may burst, which explains why some fruits and vegetables sometimes rupture. When no more water is entering or leaving the cell, it is in a balanced state If a living plant cell loses water, the cell membrane pulls away from the cell wall; this condition is called ———-5———, and the cell becomes flaccid.

iv) Write the exact location and function of the following: **[5]**

(a)Amniotic Fluid (b)Thyroid (c) Ciliary Bodies
(d)Coronary arteries (e) Stomata

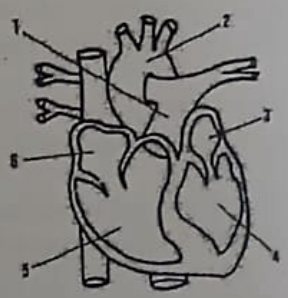
v) The diagram represents the structure of the human eye. Match the Structures marked A to E with their correct functions.Example H- (2) **[5]**

Human Eye	Functions
	(1) Refracts light and keeps the lens moist. (2) Providing nourishment to the eye. (3) Controls the passage of light into the eye. (4)Source of an individual's identification. (5) Protects the retina and its nerve endings. (6) Converges the light rays. (7) Protective membrane covering the entire front part of the eye.

SECTION B (40 Marks)

(Attempt any Four questions from this Section.)

Q.3(i) Given below is a diagram of the external feature of the human heart.Study the same and answer the questions that follow: [6]



a)Label the guidelines shown as 1,2,4 and 5.
b)Name the valve present between the parts labelled 5 and 6, and how many cusps does it have?
c) What critical functional purpose does the Septum present between 4 and 5 serve?
d)State two structural differences between 1 and 2?
e)Name the chamber of the heart which collects the blood from all the body

viii) Aruna went to a theatre to watch a movie on a bright sunny morning. As she came out of the theatre,she felt a dazzling effect and could not open her eyes. After a few minutes her vision became normal.This is due to

(a) Polarisation (b) Accommodation of eye (c)Adaptation of eye (d) Mutation

ix) The diagram given below is that of a Basophil. The function is ————————.

(a) Releasing histamine
(b)Transporting food.
(c) Phagocytosis
(d) Producing antibodies

x)Sonu tried to match hormones with their effect on the human body. She tabulated the pairs as follows:

Hormones	Effect on the body
P	Promotes growth of the whole body.
Q	Uterus contractions.

Identify the correct pair of hormones.

(a) P- Oxytocin Q- LH
(b) P- LH Q- FSH
(c) P- ADH Q-GH
(d)P- GH Q- Oxytocin

xi)A farmer notices that storing ripe mangoes with unripe ones speeds up the ripening process.The Phytohormone primarily responsible for this phenomenon is:

(a) Auxins (b)Ethylene (c)Gibberellins (d)Cytokinins

xii)Aditya who is fond of roller skating.Identify the correct terms which help him to maintain his body balance:

(a)Cerebellum, Semicircular canals, Vestibule (b)Vestibule, Sclera, Cerebrum
(c)Maleus, Semicircular Canals, Utriculus (d)Sacculus, Stapes, Cochlea

xiii)A biology teacher asked her students to give two examples of substances that passes from mother to foetus.

Raj said: Oxygen and glucose
Sonu said: Oxygen and urea
Laksh said: Amino acids and vitamins
Ansh said: Urea and glucose

(a) Ansh and Sonu (b)Sonu and Laksh (c)Raj and Laksh (d)Ansh and Raj

xiv)The following characters can be used to describe a human ancestor.

1. Absolute bipedalism
2. Successor of *Homo erectus*
3. Prominent brow ridges, face with almost no chin
4. Sloping forehead.

Identify the human description, identify the human ancestor.

(a). *Neanderthal man* (b)*Australopithecus*
(c) *Homo habilis* (d)*Homo sapiens sapiens*

xv)Pulmonary semilunar valve is located at this opening:

18·1·2026

Question Paper 10

EuroSchool
Discover Yourself

BIOLOGY
(SCIENCE PAPER - 3)
Preliminary Examination 2, 2025-26

GRADE: X

Maximum Marks: **80**

Time allowed: ***Two hour***

Please check that this question paper contains 7 printed pages.

Answers to this Paper must be written on the paper provided separately.

*You will not be allowed to write during the first **15** minutes.*

This time is to be spent in reading the question paper.

The time given at the head of this paper is the time allowed for writing the answers.

***Section A** is compulsory. Attempt **any four** questions from **Section B**.*
The intended marks for questions or parts of questions are given in brackets [ ].

Instruction for the Supervising Examiner
Kindly read aloud the Instructions given above to all the candidates present in the Examination Hall.

SECTION A (40 Marks)
*(Attempt **all** questions from this Section.)*

Question 1

Choose one correct answer to the questions from the given options. (Do not copy the question, write the correct answers only.) [15]

i. After a mitotic cell division, the human female cell will have:
   a. 22+X chromosomes
   b. 44 +XY chromosomes
   c. 44+XX chromosomes
   d. 22+XX chromosomes

ii. The disease colourblindness is a:
   a. dominant Y-linked disease
   b. recessive X-linked disease
   c. dominant X-linked disease
   d. recessive Y-linked disease

iii. Which of the following is a semi-permeable membrane?
   a. Cell membrane
   b. Cell wall
   c. Rubber sheet
   d. Muslin cloth

iv. Assertion (A): Lenticels allow diffusion of gases for respiration.
Reason (R): Lenticels never close, they remain open all the time
   a. Both A and R are true
   b. Both A and R are false
   c. A is true and R is false
   d. A is false and R is true

v. Which of the following is not applicable to the process of photosynthesis?
   a. Oxygen is evolved
   b. Carbon dioxide is evolved
   c. Carbon dioxide is utilized
   d. Water is utilized

vi. Assertion (A): In tropic movements, plant parts respond directionally to a stimulus.
Reason (R): Stems are negatively geotropic and positively phototropic.
   a. Both A and R are true
   b. Both A and R are false
   c. A is true and R is false
   d. A is false and R is true

vii. Match the items given in Column I with those in Column II and select the correct option given below.

Column I – Cells	Column II – Characteristics
P) _____	i) Oxygen carriers
Q) _____	ii) formation of antibodies

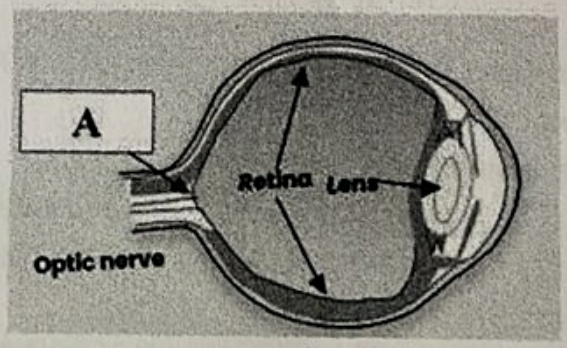
   a. P – WBCs Q – Platelets
   b. P – RBCs Q – WBCs
   c. P – Plasma Q – WBCs
   d. P – RBCs Q – Platelets

viii. A gland which secrets enzymes and hormones both is:
   a. Adrenal
   b. Pancreas
   c. Thyroid
   d. pituitary

ix. Nephrons discharge their urine at the:
   a. urinary bladder
   b. renal medulla
   c. renal pelvis
   d. urethra

x. The insulating sheath covering the axon is called _____.
   a. myelin sheath
   b. nodes of ranvier
   c. dura mater
   d. pia mater

xi. Help Harpreet to identify the area labelled as A in the following image of human eye.



   a. Yellow spot
   b. Blind spot
   c. Black spot
   d. Sensory spot

xii. On which day of the menstrual cycle does ovulation ideally take place?
   a. 5^{th} day
   b. 28^{th} day
   c. 1^{st} day
   d. 14^{th} day

xiii. The theory proposed by Lamarck is:
   a. Autogenesis theory
   b. Theory of inheritance of acquired characters
   c. Germplasm theory
   d. Theory of abiogenesis

iv. Death rate is the number of deaths:
   a. Per 1000 people per year
   b. Per 10 people per year
   c. Per 1000 people per decade
   d. Per 100 people per decade

xv. The type of waste generated in hospitals & pathological laboratories is:
   a. industrial waste
   b. biomedical waste
   c. electronic waste
   d. domestic waste

Question 2

i. Name the following. [5]
   a. Part of the ear which equalizes air pressure on either side of tympanum.
   b. Movement of WBCs out of the capillary walls at the site of injury
   c. The cells of the testes that produce male hormones.
   d. A hormone secreted by corpus luteum.
   e. A systemic study of human population.

ii. Arrange and rewrite the terms in each group in the correct order so as to be in a logical sequence beginning with the term that is underlined. [5]
   a. De-starched plant, Iodine added, Leaf boiled in water, Leaf boiled in alcohol, Placed in the sunlight
   b. Aorta, Arteries, Tissues, Left auricle, Left ventricle
   c. Cell body, Axon, Dendrite, Synapse, Nerves ending
   d. *Australopithecus, Cro-Magnon, Homo sapiens, Homo habilis, Homo erectus*
   e. Leaf surface, Stomata opening, Water vapour, Cooling effect, Transpiration

iii. State true or false. If false, correct the statement & rewrite it. [5]
   a. Chemotropism stands for the phenomenon of movement of plants in response to chemicals.
   b. Guttation occurs through stomata.
   c. Dark reaction of photosynthesis is independent of light energy.
   d. The sign of family planning and welfare is an inverted blue triangle in India
   e. Sources of water pollution include leaking sewer lines, oil spills, and industrial waste.

iv. Choose the odd one out from the following terms and name the category to which the others belong. [5]
   a. Purple pea flower, Green coloured pea seed, Tall pea plant, Inflated pea pod
   b. Thalamus, Cerebrum, Pons, Hypothalamus
   c. Coronary vein, Pulmonary artery, Pulmonary vein, Inferior vena cava
   d. Plastic, Styrofoam, Vegetable, Glass
   e. Glucose, Water, Urea, Sodium

v. Match the parts given in column A with the most appropriate ones in column B and rewrite the matching pairs. [5]

Column A	Column B
1. Mutation	a. 900 cc
2. Sulphur dioxide	b. Greenhouse gas
3. Synaptic cleft	c. Neurotransmitter
4. ADH	d. 800-1125 cm^3
5. Cranial capacity of *Homo erectus*	e. Acid rain
	f. Sudden change in genes
	g. Vasopressin

SECTION B (40 Marks)

*(Attempt **any four** questions.)*

Question 3

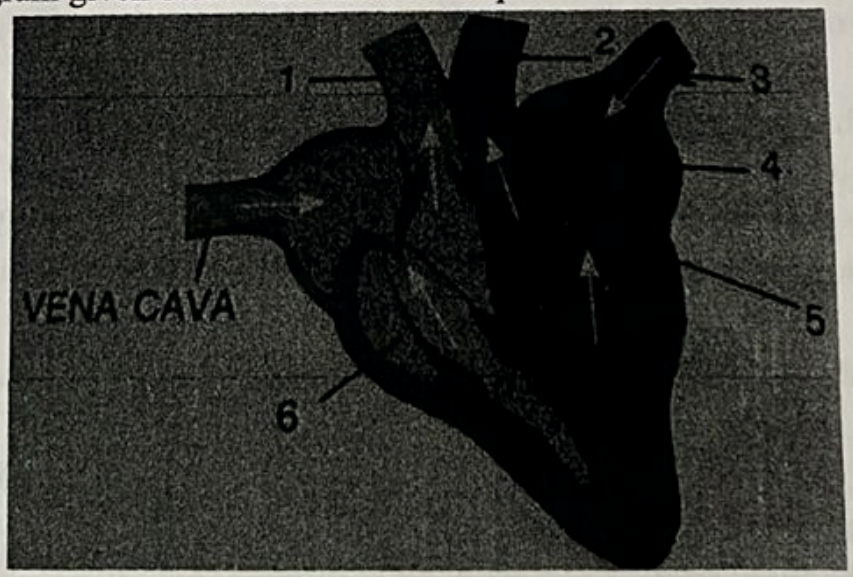
i. What are fraternal twins? [1]

ii. Name the nitrogenous base with which Guanine pairs up in the helical structure of DNA and with how many hydrogen bonds? [2]

iii. Explain why transpiration is an essential evil. [2]

iv. How are cytons and axons placed in the brain and the spinal cord? [2]

v. Study the diagram given below and answer the questions that follow: [3]



a. Which part of the heart is contracting in this phase? Give a reason.

b. What type of blood flows through parts '1' and '2' respectively?

Question 4

i. State the exact location of loop of Henle [1]

ii. Mendel crossed pea plants differing in seed colour (yellow/green) and seed shape (round/wrinkled). [2]

a. Give the dihybrid phenotypic ratio of the F2 generation.

b. Name the law, which explains the dihybrid ratio.

iii. Mention two adaptations in plants to reduce excessive transpiration. [2]

iv. Differentiate between the effect of insulin deficiency and excess insulin on blood sugar levels [2]

v. In an experimental set-up, a piece of wire netting or gauze was taken. It was suspended by means of wires. Moist sawdust was placed on the wire netting and some germinating seeds were embedded in the sawdust. The container was placed in a well-lit area, away from direct sunlight. Growth of roots was observed for the next 5 days. [3]

a. State the expected observations seen in the growth of roots. [1]

b. How is the above tropic movement different from phototropism? [2]

Question 5

i. Define population density. [1]

ii. Answer the following questions. [2]

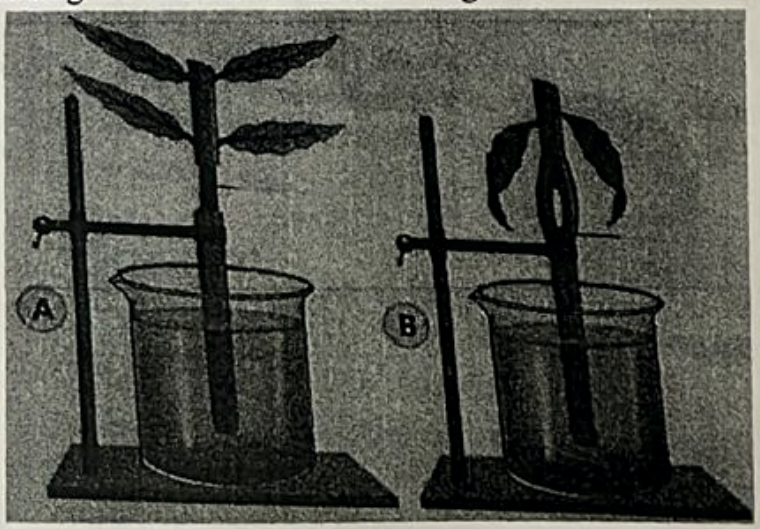
a. Carbon monoxide is dangerous when inhaled.

b. What harmful effect does excessive use of chemical fertilizers have on aquatic life?

iii. Differentiate between sensory neuron and motor neuron based on their function. [2]

iv. What is myocardial infarction? Briefly explain its primary cause. [2]

v. Study the given diagram and answer the following: [3]



a. What is the aim of this experiment? [1]

Explain the reason for the difference in the appearance of twig A and B. [2]

Question 6

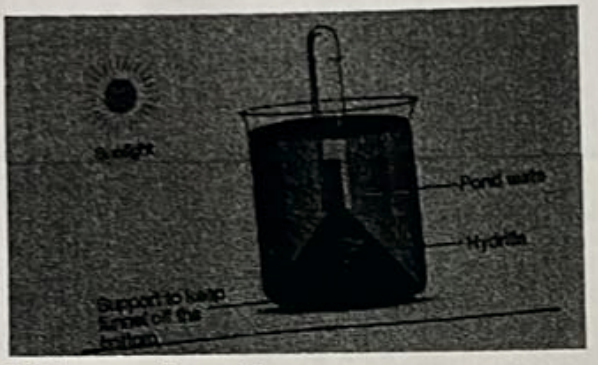
i. What are recessive alleles? [1]

ii. Give any two functions of gibberellins. [2]

iii. Rohit enters a brightly lit room from a dark room. He has trouble in viewing objects, but gradually his vision improves. Explain the role of photoreceptors in this case. [2]

iv. Differentiate between sperm duct and fallopian tube (Function). [2]

v. Given below is an experimental set-up. Study the image and answer the questions that follow. [3]



a. What is the aim of this experiment?

b. What is the role of the test tube inverted in the water?

c. How will you confirm the presence of gas?

Question 7

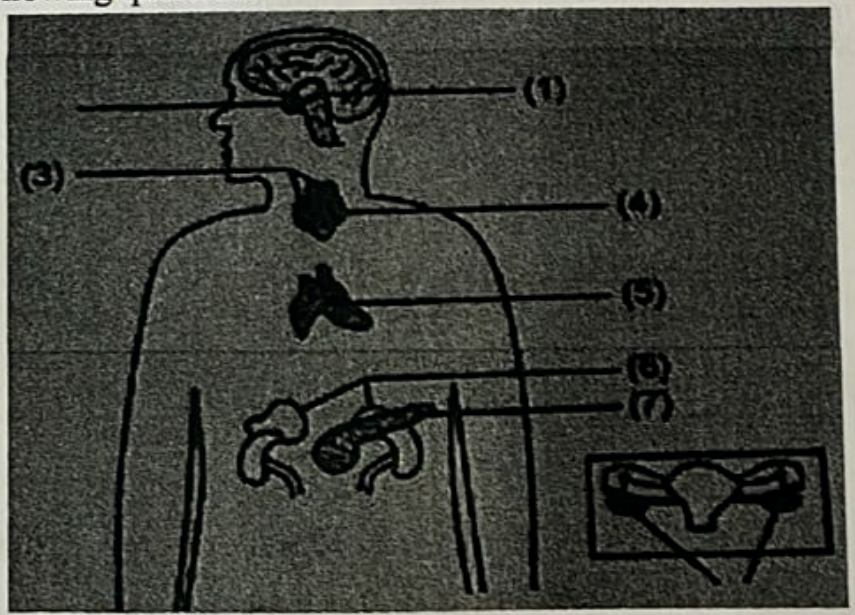
i. State how increased medical facilities contribute to population increase. [1]

ii. Distinguish between dynamic equilibrium and static equilibrium based on the organs involved. [2]

iii. Describe the complications that may arise in successive pregnancies when the mother and foetus have incompatible Rh factors. [2]

iv. Distinguish between afferent arteriole and efferent arteriole based on their role in blood flow in the kidney. [2]

v. Given below is the outline of the human body showing important glands. Answer the following question. [3]



a. Name the gland numbered as 6.

b. Name the disorder caused due to the hypersecretion of the gland numbered 4.

c. The gland labeled as 6 has a part that produces a hormone responsible for regulating the metabolism of carbohydrates, proteins, and fats. Name this hormone.

Question 8

i. Define pollutant. [1]

ii. The evolutionary change in the peppered moth population was documented by scientists. Based on this answer the following: [2]

a. Why did the darker-colored peppered moths become more common after the industrial revolution?

b. Give the scientific name of the peppered moth.

iii. State two functions of the placenta. [2]

iv. Mention any two functions of the hormone ethylene. [2]

v. Draw a neat-labelled diagram of a nerve cell. [3]

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