



Estd. 1861

BOYS' HIGH SCHOOL AND COLLEGE
PRELIMINARY EXAMINATION (2024-25)
CLASS - X
BIOLOGY (Science Paper – 3)

Maximum Mark :80

Time allowed: Two hours

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

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

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

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

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

[15]

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

- The sex chromosome in a human ovum is:
(a) X-chromosome (c) Y-chromosome
(b) Both X and Y chromosome (d) Either X or Y chromosome
- Light -independent reaction takes place in:
(a) Chlorophyll (c) Stroma
(b) Chloroplast (d) Thylakoids
- The stress hormone in plants which functions during drought is:
(a) Ethylene (c) Cytokinin
(b) Auxin (d) Abscisic acid
- The outermost layer of meninges is:
(a) Grey matter (c) Dura matter
(b) Pia matter (d) Arachnoid
- The pale- yellow color of normal human urine is due to the pigment:
(a) Melanin (c) Anthocyanin
(b) Urochrome (d) Hemoglobin.
- The exudation of plant sap from injured parts is called:
(a) Guttation (c) Transpiration
(b) Bleeding (d) Respiration
- Which of the following is not a conventional source of energy?
(a) Coal (c) Petroleum
(b) Fossil fuels (d) Solar batteries
- Alpha cells of pancreas secrete:
(a) Glycogen (c) Glucagon
(b) Glucose (d) Insulin
- Vitreous humor is present between:
(a) Cornea and Iris (c) Lens and retina
(b) Iris and lens (d) Cornea and lens
- Sterilization in male involves cutting and tying the:
(a) Oviduct (c) Epididymis
(b) Vas deferens (d) Urethra

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11. The factor which does not affect the process of transpiration directly is:
 - (a) Light
 - (b) Temperature
 - (c) Chlorophyll content of leaves
 - (d) Wind speed
12. Organs of Corti is present in:
 - (a) Utriculus
 - (b) Sacculus
 - (c) Cochlea
 - (d) Incus
13. If a pure tall plant is crossed with a pure dwarf plant the offspring will be:
 - (a) All tall
 - (b) 3 tall 1 dwarf
 - (c) All dwarf
 - (d) 50% tall, 50% dwarf
14. Chromosomes are arranged at equatorial plate in:
 - (a) Prophase
 - (b) Metaphase
 - (c) Anaphase
 - (d) Telophase
15. Ganong's Potometer is used to study:
 - (a) Photosynthesis
 - (b) Exosmosis
 - (c) Guttation
 - (d) Rate of uptake of water

Question 2

1. Name the following: [5]
 - (i) A condition caused due to oversecretion of thyroxine.
 - (ii) The nutritive layer of the eye which also prevents reflection of light.
 - (iii) The contraction phase of cardiac cycle.
 - (iv) The category of blood vessels that starts and ends in capillaries.
 - (v) The hormone that regulates carbohydrate metabolism.
2. Choose the odd one out from the following terms and name the category to which the other belongs: [5]
 - (i) Detergents, sewage, x-rays, oil spills
 - (ii) Stomata, hydathodes, stoma, lenticles.
 - (iii) Pituitary gland, adrenal, thyroid, lacrimal.
 - (iv) Ovary, ureter, fallopian tube, uterus
 - (v) Dendrites, medullary sheath, axon, spinal cord
3. Complete the given sentences with suitable words: [5]
 - (i) The middle ear is separated from the external ear by the_____.
 - (ii) _____ secretes hormones as well as enzymes.
 - (iii) The abnormal rise of erythrocytes in the blood is_____.
 - (iv) The command for the heartbeat starts from_____.
 - (v) In _____ of interphase, RNA and proteins are synthesized.
4. State whether the following statements are true or false. Also rewrite the false [5] statements correctly.
 - (i) Ureters bring urine from urinary bladder to outside the body.
 - (ii) Cochlea of the human ear is concerned with the sense of balance.
 - (iii) Adrenal medulla produces adrenaline.
 - (iv) Fertilization occurs in the uterus.
 - (v) Sulphur dioxide is mainly responsible for the formation of acid rain.
5. Match the items given in Column I with the most appropriate one in Column II [5] and rewrite the correct matching pair:

Column I	Column II
a. Myxodema	(i) Vasopressin
b. Diabetes insipidus	(ii) Placenta
c. Progesterone	(iii) Thyroid
d. Testosterone	(iv) Adrenal medulla
e. Cortisone	(v) Islets of Langerhans

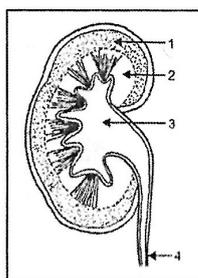
	(vi) Adrenal cortex (vii) Leydig cells
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SECTION B (40 marks)

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

Question 3

- (i) Expand the abbreviations- ACTH and ADH [1]
- (ii) Mention the exact location and functions of lacrimal glands. [2]
- (iii) Distinguish between demography and population density. [2]
- (iv) What is turgidity in plant parts? How does it play an important role in plants? [2]
- (v) The diagram below shows a section of a human kidney. Study the diagram [3] and answer the questions:



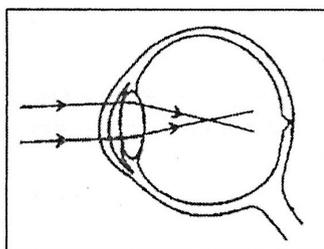
- a. Label the parts 1-3.
- b. Name the fluid and main nitrogenous waste present in part 4.
- c. Draw a neat labelled diagram of a Malpighian capsule.

Question 4

- (i) What are 'fraternal' twins? [1]
- (ii) What are the effects of pollution? How can we control pollution? [2]
- (iii) State the role of the following hormones: [2]
 - a. Oestrogen
 - b. Ethylene
- (iv) Make a Punnett square for the cross between two heterozygous axial flowers. [2] Write the Genotypic and Phenotypic ratio.
- (v) Draw a labelled diagram of the cross section of spinal cord showing a reflex [3] action.

Question 5

- (i) What is a Tropic hormone? [1]
- (ii) Explain the following terms: [2]
 - a. Interphase.
 - b. Bio-medical wastes
- (iii) Describe the main chemical changes which occur during photosynthesis in. [2]
 - light reaction and dark reaction.
- (iv) Distinguish between sympathetic and parasympathetic nervous system. [2]
- (v) Given below is a diagram depicting a defect of the human eye. [3]
 - Study the same and answer the questions:
 - a. Name the defect shown in the diagram.
 - b. What are the two possible reasons for this defect.
 - c. With the help of a diagram show how the defect shown above is rectified using a suitable lens.

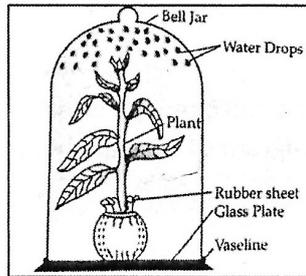


Question 6

- (i) What is Parthenocarpy? [1]
- (ii) Explain Darwin's theory of 'Natural selection'. [2]
- (iii) Give the exact location and function of the following: [2]
 - a) Prostate gland
 - b) Adrenal gland
- (iv) What is the significance of double circulation in humans? [2]
- (v) Draw a neat labelled diagram of an animal cell showing the anaphase stage of mitosis with two pairs of chromosomes. [3]

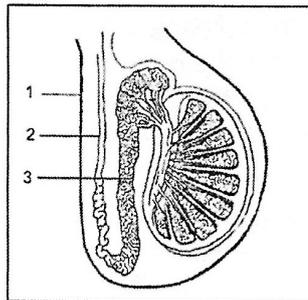
Question 7

- (i) What is Presbyopia? [1]
- (ii) Explain thigmotropism with an example. [2]
- (iii) Mention two characteristic features each for the two stages: Australopithecus and Neanderthal man. [2]
- (iv) What is the difference between criss-cross inheritance and sex linked inheritance? [2]
- (v) Given below is an apparatus which was set up to investigate a physiological process in plants. This setup was placed in bright sunlight. Answer the given questions. [3]
 - a) Name and define the process being studied.
 - b) List two adaptations in plants to reduce the above process.
 - c) Draw a neat labelled diagram of a stomatal apparatus.



Question 8

- (i) Define Ultrafiltration. [1]
- (ii) Write the location and functions of the following: [2]
 - a. Eustachian tube
 - b. Amniotic fluid
- (iii) Differentiate between: [2]
 - a) Diabetes mellitus and diabetes insipidus
 - b) Corpus luteum and corpus callosum
- (iv) Describe the location and functions of rod and cone cells in the eyes. [2]
- (v) The diagram shown below is the longitudinal section of a testis of man. [3] Study and answer the questions that follow:



- a. Label the parts 1-3 in the diagram.
- b. State the functions of the parts labelled 2 and 3.
- c. Draw a neat labelled diagram of human sperm.