



Estd. 1861

BOYS' HIGH SCHOOL AND COLLEGE

PRELIMINARY EXAMINATION (2023-24)

CLASS - X

BIOLOGY (SCIENCE PAPER - 3)

Maximum Marks: 80

Time Allowed: Two hours

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)

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) Learning is related to
 - a) Cerebrum
 - b) Cerebellum
 - c) Medulla oblongata
 - d) Hypothalamus
- ii) When the right atrium contracts, blood flows from the right atrium into the
 - a) Aorta
 - b) Left atrium
 - c) Pulmonary artery
 - d) Right ventricle
- iii) Pulse wave is mainly caused by the
 - a) Systole of atria
 - b) Diastole of atria
 - c) Systole of the left ventricle
 - d) Systole of the right ventricle
- iv) The formation of urine in our excretory system is known as
 - a) Haemopoiesis
 - b) Uropoiesis
 - c) Leucopoiesis
 - d) None of these
- v) Maximum amount of water from the glomerular filtrate is reabsorbed in
 - a) PCT
 - b) DCT
 - c) Ascending limb of Henle's loop
 - d) Descending limb of Henle's loop
- vi) The thin membranous sac serving as the reservoir of urine is
 - a) Urinary bladder
 - b) Ureter
 - c) Glomerulus
 - d) Kidney
- vii) A synapse is found between
 - a) Dendrite and dendrite
 - b) Axon terminal and axon terminal
 - c) Dendrite and axon terminal
 - d) All of the above
- viii) The number of spinal nerves in a human being are
 - a) 31 pairs
 - b) 10 pairs
 - c) 21 pairs
 - d) 30 pairs
- ix) From which of these, tears come?
 - a) Eyeball
 - b) Aqueous chamber
 - c) Vitreous chamber
 - d) Lachrymal glands
- x) Identify the part of the human eye where rod cells and cone cells are located.
 - a) Cornea
 - b) Retina
 - c) Choroid
 - d) Sclera
- xi) The aperture of the eye through which light enters is the
 - a) Pupil
 - b) Conjunctiva
 - c) Ciliary muscles
 - d) Choroid
- xii) Pancreas acts as
 - a) Exocrine gland
 - b) Endocrine gland
 - c) Both (a) and (b)
 - d) Holocrine gland
- xiii) Insulin is secreted by
 - a) Beta cells of pancreas
 - b) Alpha cells of pancreas
 - c) Delta cells of pancreas
 - d) None of these
- xiv) The child frightened by the loud noise, runs quickly to his mother. Which substance helps in this response?
 - a) Adrenaline
 - b) Insulin
 - c) Amylase
 - d) Protease
- xv) To maintain the constant steady state of our body, hormonal secretion is regulated by
 - a) Positive feedback
 - b) Negative feedback
 - c) Both (a) and (b)
 - d) Neither (a) nor (b)

Question 2

- i) Name the following:
 - a) The hormone that regulates the basal metabolic rate.
 - b) The part of the internal ear related to the static balance of the body.

(5)

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- c) The soluble protein in blood plasma responsible for blood clotting.
- d) The gaseous plant hormone.
- e) The uptake of mineral ions against the concentration gradient.

- ii) Fill in the blanks with suitable words. (5)
 - a) Grey matter is mainly composed of
 - b) The fluid filled between the meninges is called
 - c) Cochlea is filled with
 - d) The middle ear is separated from the external ear by the
 - e) The three small bones in the middle ear called

- iii) Match the following columns: (5)

Column A	Column B
a) Transpiration	1.Cactus
b) Movement of water	2.Stomata
c) Guttation	3.Maize plant
d) Low rate of transpiration	4.Xylem
e) High rate of transpiration	5.Hydathodes

- iv) Write the full forms of the following : (5)

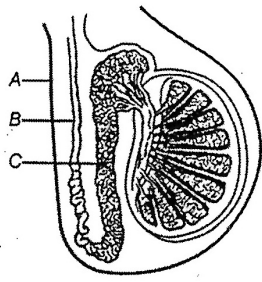
- a) ADH
- b) MTP
- c) ACTH
- d) NADP
- e) TSH

- v) Mention whether the following statements are true or false. Also rewrite the false statement correctly. (5)
 - a) Vas deferens transports the sperms from epididymis to the urethra.
 - b) Oviducts and fallopian tubes are the same thing.
 - c) Head of the sperm contains nucleus.
 - d) Dendrites conduct nerve impulses towards the cell body.
 - e) A nerve is a bundle of nerve fibres.

SECTION – B (40 Marks)

Question 3

- i) Explain the term growth rate of population. (1)
- ii) Can there be DNA replication without cell division? (2)
- iii) Draw a diagram of the different blood cells as seen in a smear of human blood. (2)
- iv) A genetic disease is caused by a recessive allele(r).The mother is a carrier of the disease, while the father has normal alleles. The normal condition is dominant allele (R). Draw the cross showing children of this couple. (2)
- v) The diagram shown is the longitudinal section of a testis of man. Study it carefully and answer the questions that follows (3)



- a) Label the parts labelled A-C in the diagram.
- b) State the functions of the parts labelled A-C in the diagram

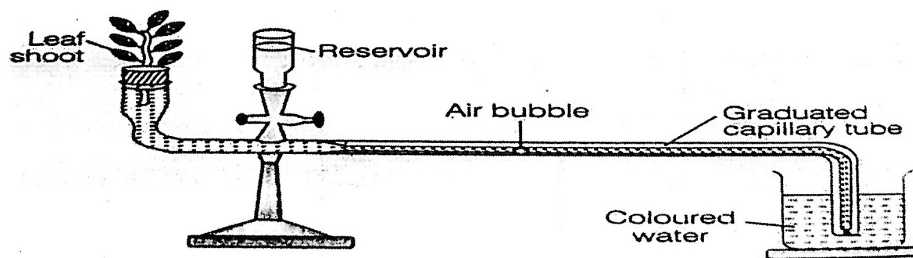
Question 4

- i) State the exact location of corpus callosum. (1)
- ii) Differentiate between the following : (2)
 - a) Embryo and foetus
 - b) Gestation and parturition
- iii) Write two characteristics of erect man (Homo erectus). (2)
- iv) Blood is called river of life. Comment. (2)
- v) Draw a duplicated chromosome and label its parts. (3)

Question 5

- i) What is meant by hyperglycemia? (1)
- ii) Which hormones are secreted by the posterior pituitary gland? What function does each serve? (2)
- iii) Cytokinesis in plant cell is different from that in animal cell. Explain with the help of suitable diagrams. (2)

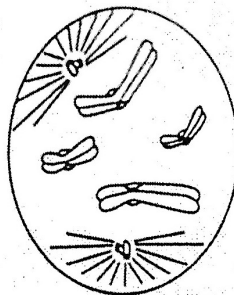
- iv) The diagram of an apparatus given below demonstrates a particular process in plants. Study the same and answer the questions that follows (2)



- Name the apparatus.
- Which phenomenon is demonstrated by this apparatus?
- Draw a diagram of the human eye as seen in a vertical section and label the part which suits the following functions/description. (3)
 - The structure that alters the focal length of the lens.
 - The region of distinct vision.
 - The part which transmits the impulse to the brain.

Question 6

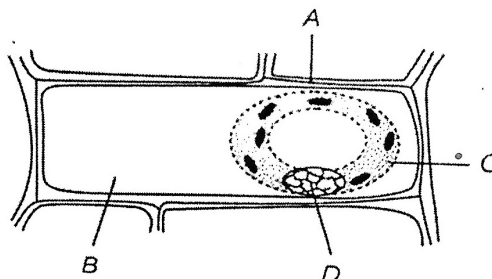
- Name the vestigial organs (any two) present in humans. (1)
- Explain puberty. When is it attained? (2)
- Differentiate between reflex action and voluntary action. (2)
- The given diagram shows a stage during mitotic division in an animal cell. (2)



- Identify the stage. Give a reason to support your answer.
- Draw a neat labelled diagram of the cell as it would appear in the next stage. Name the stage.
- List any three advantages of small family. (3)

Question 7

- Define the term 'hormones'. (1)
- Draw a neat diagram of a single Malpighian capsule (body) and label the following parts. Glomerulus and Bowman's capsule. (2)
- Name two structures which are present in all eukaryotic cells, but are absent in RBC's. (2)
- What are the different types of neurons? Explain. (2)
- The diagram given below represents a plant cell after being placed in a strong sugar solution. Study the diagram and answer the questions that follows: (3)



- What is the state of the cell shown in the diagram?
- Label the parts labelled A-D in the diagram.

Question 8

- State the main function of corpus luteum. (1)
- Differentiate between diabetes mellitus and diabetes insipidus. (2)
- Mention two reasons for the high birth rate in India. (2)
- Draw a neat, labelled diagram of a sperm. (2)
- In a certain species of animals, black fur (B) is dominant over brown fur (b). Predict a genotype and phenotype of the offspring when both parents are Bb or have heterozygous black fur. (3)
