PRE-BOARD EXAMINATIONS, 2024-25

CLASS X

TIME-2HRS. BIOLOGY. MM-40

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 on the reading of the question paper.

Section A is compulsory. Attempt any 4 questions from section B.

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

SECTION A [40 MARKS]

ATTEMPT ALL QUESTIONS FROM THIS SECTION.

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

1. The hormone secreted by the posterior pituitary gland is:
   A) Growth hormone
   B) Adrenocorticotropic hormone
   C) Antidiuretic hormone
   D) Luteinising hormone
2. Assertion: In a monohybrid cross, F1 generation indicate dominant characters.
   Reason: Dominance occurs only in the heterozygous state.
   A) A is true and R is false.
   B) A is false and RIs true
   C) Both A and R are true.
   D) Both A and R are false.
3. The blood vessels which have narrow lumen and thick wall. It transports blood away from the heart.
   A) Lymph vessel
   B) Veins
   C) Arteries
   D) Capillaries
4. An important plant growth regulator found in newly abscesses or freshly fallen leaves:
   A) Cytokinin
   B) Auxin
   C) Gibberellin
   D) Abscisic acid
5. The disease in which blood passes with the urine:
   A) Gout
   B) Diuresis
   C) Haematuria
   D) Glycosidic
6. The space between arachnoid and the pia matter is filed with a fluid called:
   A) Pericardial fluid
   B) Synovial fluid
   C) Cerebrospinal fluid
   D) Glomerular filtrate
7. It temporarily stores the sperms and serves as a maturation site.
   A) Vas deferens
   B) Uriniferous tubule
   C) Epididymis
   D) Malpighian tubules
8. Agranulocytes are:
   A) Lymphocytes, monocytes
   B) Lymphocytes, basophils
   C) Eosinophils, basophils
   D) Eosinophils, monocytes
9. Raunak was told to buy a red cloth by his craft teacher. He couldn't differentiate red colour from green and hence brought a green cloth to class. Which medical reason could have resulted in this?
   A) Myopia
   B) Cataract
   C) Colour blindness
   D) Hyperopia
10. Electrons released on splitting of water molecules in photosynthesis are used in producing:
    A) NADP
    B) NADPH
    C) ATP
    D) O2

11. A cell of a leaf of an aquatic plant is kept in a 5% salt solution for some time. The phenomenon which will take place is/are:

A) Turgidity
B) Plasmolysis
C) Turgidity and plasmolysis
D) Plasmolysis and flaccidity

12. Deepak played football on a hot summer afternoon. His urine output was much less, though he drank a lot of water. What could be the possible cause?

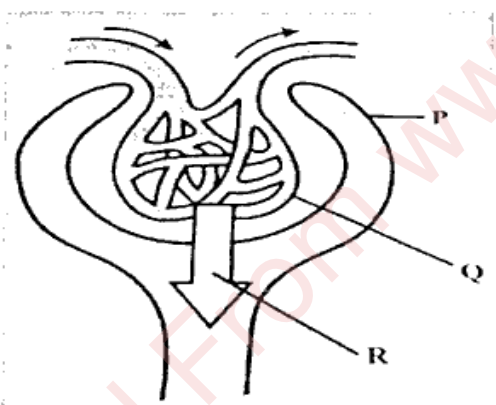
P- kidneys reabsorption a lot of water
Q- sweat glands are active.
R- kidneys absorb less water
S- sweat glands are inactive.

A) R and Q
B) P and Q
C) P and S
D) Rand S

13. Acid rain is caused due to polluted gases like CO2, SO2 and oxides of nitrogen. The pollution which does not take place immediately after acid rain is:

A) Air pollution
B) Water pollution
C) Soil pollution
D) Noise pollution

14. During an exam, the teacher showed the following figure of Malpighian capsule to Rima. She asked her to label the parts marked P, Q and R. Identify the correct labelling for P, Q and R from the options given below.



A) P- Afferent arteriole, Q- efferent arteriole R- bowman's capsule
B) P- Glomerularfiltrate, Q- Bowman's capsule, R- Glomerulus
C) P- Glomerulus, Q- Afferent arteriole, R- Efferent arteriole
D) P- Bowman's capsule, Q- glomerulus, R- Glomerular filtrate

15. Assertion: Transpiration occurs only when stomata are open.
Reason: It occurs through stomata, cuticles and hydathodes.

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.

Q2. A) Name the following:[5]

1. The hydrostatic pressure developed inside the cells on the cell wall due to the endosmosis process.
2. The phenomenon of loss of water through a cut stem or injured part of the plant.
3. The type of tropism in which the pollen tube grows toward ovule.
4. The Veins which return the deoxygenated blood from liver to the posterior venacava.
5. The term for the structures of body of organisms which were functional in ancestors but not in the present generation

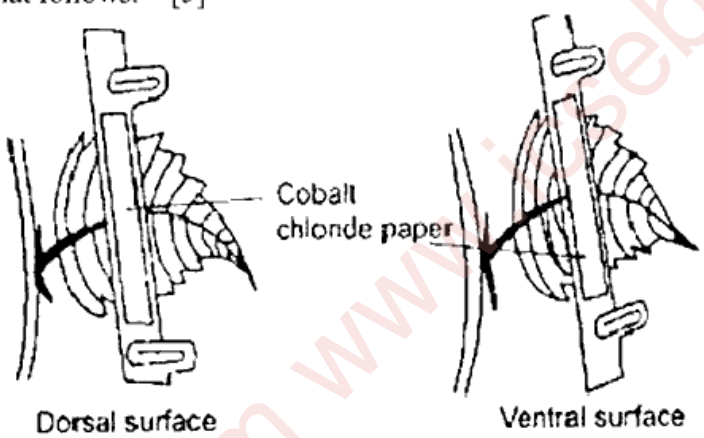
B) Arrange and rewrite the terms in each group in the correct order so as to be in a logical sequence, starting ~~with the underlined term~~. [5]

1. Pericycle, endodermis, root hair, xylem, cortex.
2. Seminiferous tubule, penis, urethra, Epididymis, vas deferens
3. Destarched plant, iodine added, washed in water, leaf boiled in alcohol, placed in sunlight.
4. Ventricular systole Atrial diastole, atrial systole ventricular diastole
5. Tympanic membrane, incus, oval window, stapes, malleus

C) Choose the odd one out and write the category to which the others belong to: [5]

1. ACTH, ADH, TSH and Growth hormone.
2. Oestrogen, testosterone, prolactin, progesterone.
3. Prostate gland, adrenal gland, seminal vesicles, Cowper's gland.
4. Auxin, oxytocin, cytokinin, Gibberellin.
5. Newspapers, vegetable peels, electric bulbs, animal excreta.

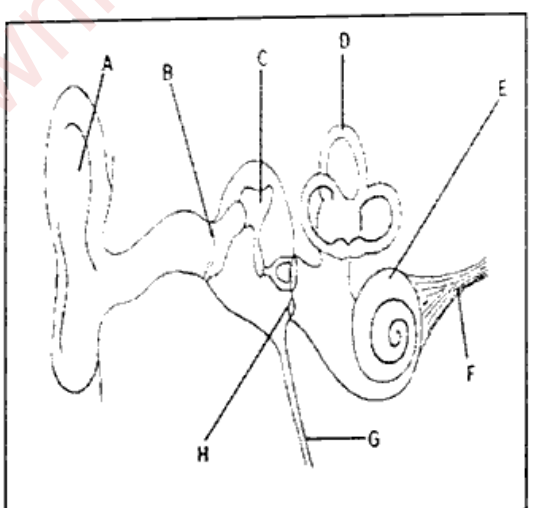
D) Given below is an experimental setup to demonstrate a particular process. Study the same and answer the questions that follows. [5]



1. Name the physiological process being studied.
2. Explain the process mentioned above.
3. What is the aim of the above experiment?
4. What would you observe in the experimental setup after an hour? Give a reason to support your answer.
5. Mention any three adaptations found in plants to overcome the physiological process mentioned in (1) above.

E) Given below is the diagram of human ear. Match the structures marked (a) to (e) with their correct functions: [5]

Human ear



Functions

a) transmits impulses to the brain.
b) helps in hearing
c) equalises air pressure on either of eardrum.
d)collects stimuli from the stimuli.
e) amplification of sound waves.

SECTION B (40 MARKS)
ATTEMPT ANY FOUR QUESTIONS FROM THIS SECTION

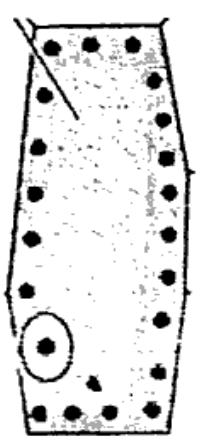
Q3.

1. Explain the term population density.[1]
2. State the functions performed by the following:[2]
   A) Aortic semilunar valve
   B) Hydathodes
3. Differentiate tropic hormones and tropic movement. [2]
4. Expand the following biological abbreviation: [2]
   A) IAA
   B) DNA
5. State the technical terms for the following:[3]
   A) The canal through which the testes descend into the s scrotum just before the birth of a male baby.
   B) The process of uptake of mineral ions against the concentration gradient using energy from the cell.
   C) The repeating components of each DNA strand lengthwise,

Q4.

1. Name the eye defect in which the eye lens losses flexibility resulting in a kind of long sightedness in elderly people. [1]
2. The indoor plants tend to bend towards an open window. Explain. [2]
3. Draw a well labelled diagram for the organelle which is responsible for the process photosynthesis in plants.[2]
4. Give exact locations for:[2]
   a) Stoma
   b) Stroma

5.Given below is the diagram of a normal turgid plant cell. [3]



Draw a diagram of the above cell as it would appear when placed in a hypertonic solution for 10 minutes. Label any two parts in your diagram.

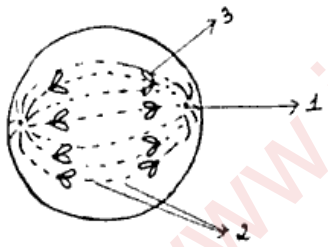
Q5.

1. Write the overall balanced equation for photosynthesis. [1]
2. Differentiate between acromegaly and cretinism, based on the hormone responsible and its symptoms. [2]
3. Explain why carbon monoxide is highly dangerous when inhaled [2]

4. State any four adaptations of leaf for photosynthesis. [2]
5. In Mendel's experiment, the tall plants (T) are dominant overdwarf plants (t): [3]
    a) Give the genotype and phenotype of the F1generation, if a homozygous tall plant is crossed with a homozygous dwarf plant.
    b) Draw a punnet square to show the gametes and offspring when parents are heterozygous for tallness.
    c) What is the phenotypic ratio and genotypic ratio of the above cross in (ii).

Q6.

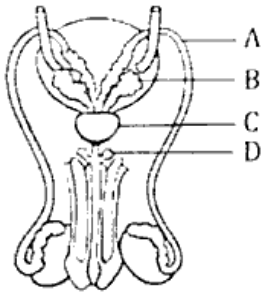
1. State the term for the exchange of chromatid parts between the maternal and the paternal chromatids of a pair of homologous chromosomes during meiosis. [1]
2. Differentiate between Homo habilis and Homo erectus, based on cranial capacity and chin. [2]
3. Acid rain is harmful to the environment. Explain. [2]
4. Explain industrial melanism. [2]
5. The diagram given below represents a certain stage in cell division. Study the same and answer the following questions: [3]



    a) Identify the given cell as plant or animal cell. Give suitable reason for your answer.
    b) State the function of part labelled 2.
    c) Mention the stage that comes before the stage shown above. Draw a well labelled diagram for the stage mentioned.

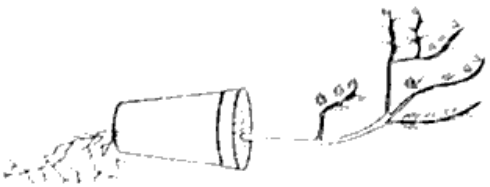
Q7.

1. Define the term gene. [1]
2. Draw a neat diagram of the stomatal apparatus found in the epidermis of leaves. [2]
3. State any two reasons for hyperopia. [2]
4. Give the biological / technical term for the following: [2]
    a) The fluid present in the anterior part in front of the eye lens.
    b) The internal layer of the eye which prevents reflection of light.
5. The diagram below shows the male reproductive system. Study it carefully and answer the following: [3]

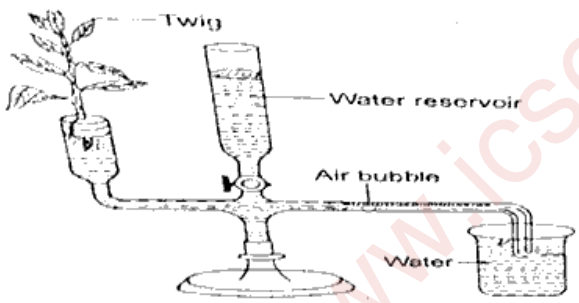


    a) State the function of part marked B.
    b) Identify the part marked A.
    c) Name the gamete formed and also state the number of chromosomes in it.

1. State the technical term for the inflammation of the meninges. [1]
2. Define accommodation. State the shape of the eye lens when viewing near and distant objects. [2]
3. Examine the figure carefully and answer the given questions: [2]



   a) Explain the tropic movement exhibited by the roots.
   b) Name the hormone responsible for the movement caused in the shoot of the plant.
4. Name the hormone responsible: [2]
   a) Regulates the basal metabolism.
   b) Converts glucose to glycogen.
5. Given below is an apparatus set up to demonstrate a particular process. Study the same and answer the questions that follows: [3]



   a) Name the apparatus.
   b) State two limitations of using this apparatus.
   c) Explain the phenomenon mentioned in the above setup.