



BOYS' HIGH SCHOOL AND COLLEGE
FIRST TERM EXAMINATION (2025-26)
CLASS - X
BIOLOGY

TIME: 2 Hours

MM: 80

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

SECTION A (40 marks)

(Attempt all questions from this Section)

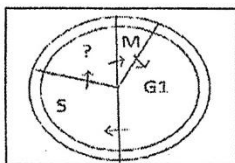
Question 1.

Choose the correct answers from the given options.

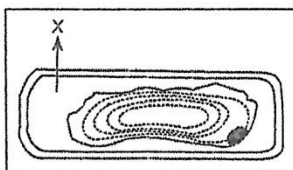
[15]

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

- The type of cell division by which gametes are formed is:
 a) Mitosis
 b) Meiosis
 c) Amitosis
 d) Fission
- Which of the following is responsible for bleeding in plants?
 a) Osmotic pressure
 b) Suction pressure
 c) Root pressure
 d) Capillarity
- Nutrients like nitrates, sulphates, potassium and zinc enter the roots by:
 a) Osmosis
 b) Diffusion
 c) Imbibition
 d) Active transport
- The given figure shows the phases of cell cycle. Identify the phase.

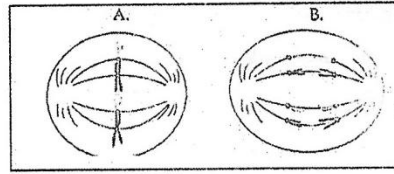


- Prophase
 - Interphase
 - G0
 - G2
- The process of conversion of ADP to ATP during photosynthesis is called:
 a) Photolysis
 b) Translocation
 c) Photophosphorylation
 d) Polymerisation
 - A plasmolysed cell is shown below. What is 'X'?

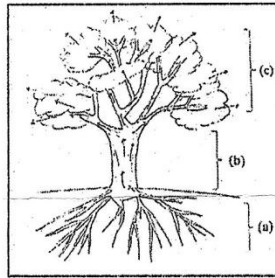


- Water
 - Vacuole
 - Protoplasm
 - Hypertonic solution
- An individual who has identical alleles for a particular gene is said to be:
 a) Heterozygous
 b) Genotype
 c) Homozygous
 d) Phenotype
 - The growth of pollen tube towards the ovule is an example of:
 a) Chemotropism
 b) Hydrotropism
 c) Geotropism
 d) Thigmotropism
 - Assertion: Photochemical phase is also called light dependent phase.
 Reason: Light reaction is carried out in the stroma of the chloroplast.
 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
 - In the guard cells, if water content falls short, ____ occurs which makes the cells ____.
 a) Endosmosis, turgid
 b) Exosmosis, turgid
 c) Endosmosis, flaccid
 d) Exosmosis, flaccid

11. Assertion (A): Parthenocarpic fruits contain a large number of seeds.
Reason (R): The process of development of fruits without fertilization is called parthenocarpy.
- 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
12. The given figures A and B show ____ and ____ stages of cell division.



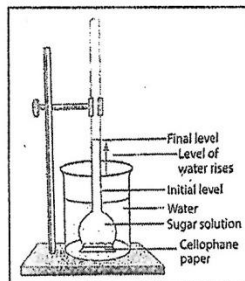
- a) Prophase, metaphase
b) Telophase, anaphase
c) Metaphase, anaphase
d) Anaphase, telophase
13. Which of the following is a growth inhibitor in plants?
a) Absciscic acid
b) Gibberellin.
c) Cytokinin
d) Auxin
14. The plant part not involved in the process of transpiration are the:
a) Stomata
b) Cuticle
c) Lenticle
d) Hydathode
15. Identify the phenomena indicated by the direction of arrows in a, b and c in an outline sketch of a tree given below:



- a) (a) -endosmosis, (b) – ascent of sap, (c)- transpiration
b) (a)- ascent of sap, (b)- transpiration, (c)- endosmosis
c) (a)- transpiration, (b)- endosmosis, (c)- ascent of sap
d) (a)- transpiration, (b) -ascent of sap (c)- endosmosis

Question 2

- i) Given below is an experimental set up. Read the information given below the diagram and complete the sentences. [5]



Concentrated sugar solution is taken in the thistle funnel. The mouth of the thistle funnel is covered with cellophane paper. The thistle funnel is inverted in a beaker containing water.

The above experiment demonstrates _____ (1). After a few hours, the level of the sugar solution _____ (2) in the thistle funnel. It allows only _____ (3) molecules to pass through it freely. It prevents the passage of _____ (4) molecules. A control experiment can be set up by taking plain _____ (5) in the thistle funnel and placing in another beaker containing water.

- ii) **Name the following:** [5]
- a) A blood disease caused due to gene mutation.
 - b) The phenomenon of the suppression of growth of lateral buds by the apical buds.
 - c) The protein found in the chromatin threads.

- d) The process of absorption of water by plant cells by surface attraction.
e) The hormone synthesized mainly in the roots of the plant.
- iii) Arrange and rewrite the terms in each group in correct order so as to be in a logical sequence beginning with the term that is underlined. [5]
- a) Photons, water molecules, grana, oxygen, hydrogen and hydroxyl ions.
b) G1-phase, G2phase, karyokinesis, S phase, cytokinesis.
c) Xylem vessels, stoma, mesophyll, sub- stomatal space, intercellular space
d) Green leaves, snake, hawk, grasshopper, frog
e) Soil water, cortex, xylem, root hair, endodermis
- iv) Match the Column I with the most appropriate ones in Column II and rewrite the correct matching pairs. [5]

Column I	Column II
A. Fruit ripening	1. Coleus
B. Stomatal closure	2. Gibberellin
C. Variegated leaf	3. Abscissic acid
D. Sunken stomata	4. Hydathode
E. Internodal elongation	5. Nerium
	6. Ethylene
	7. Opuntia

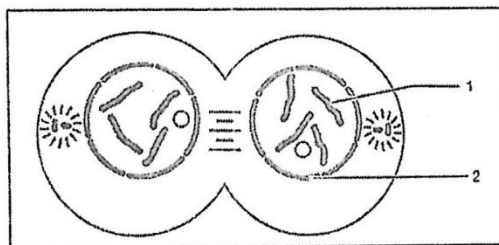
- v) Read the explanation given below and name the structure. [5]
- a) A pair of identical chromosomes, present in somatic cells, each inherited from the two parents.
b) The site where dark reaction takes place in chloroplast.
c) The point of attachment of two chromatids of a chromosome.
d) The waxy layer present outer to the epidermis of the leaves and young stems.
e) The organelle that forms aster during cell division.

SECTION B (40 Marks)

(Attempt any four questions from this section)

Question 3

- a) Define Crossing over. [1]
b) Distinguish between transpiration and guttation. [2]
c) Explain the role of potassium ions in the opening of the stomata. [2]
d) What are phytohormones? Why is ABA called a stress hormone? [2]
e) Study the diagram below and answer the questions that follow. [3]



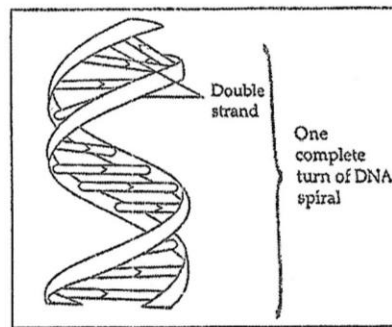
- i) Identify the stage giving suitable reasons.
ii) Name the parts 1 and 2. What is the technical term for the division of the nucleus?
iii) Mention the name and draw a neat labelled diagram of the stage that comes before the stage shown in the diagram.

Question 4

- a) Expand the following abbreviations: [1]
i) RuBp ii) IAA
b) Mention any four adaptations in plants to reduce transpiration. [2]
c) What is a hypertonic solution? What will happen if human red blood cells are placed in hypertonic sugar solution? [2]
d) What are Tropic movements? Briefly explain Thigmotropism. [2]

e) Study the given diagram of the DNA and answer the questions:

[3]



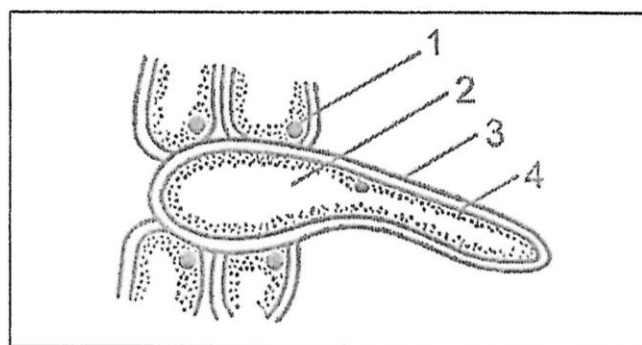
- i) Expand the term DNA. Who gave the double helical model to explain the structure of DNA?
- ii) What are the four nitrogenous bases which form a DNA molecule? How are they paired with each other?
- iii) What is the backbone of the double strand DNA made of?

Question 5

- a) What is Thermal Pollution? [1]
- b) Mention four identifying feature of prophase stage of mitosis. [2]
- c) What is a Ganong's Potometer used for? Write any two limitations of this apparatus. [2]
- d) Draw a neat diagram of a chloroplast and label its parts. [2]
- e) A pure tall plant (TT) is crossed with a pure dwarf plant (tt). [3]
 - i) Draw a Punnett square to show the gametes and offspring when both the plants have heterozygous tall seeds (Tt).
 - ii) What is the phenotype and genotype ratio of the offsprings in F₂ generation.
 - iii) State Mendel's Law of Dominance.

Question 6

- a) What is X- linked inheritance? [1]
- b) Explain the main events of the light reaction of photosynthesis. [2]
- c) What is acid rain? Why is acid rain considered an invisible threat? [2]
- d) List the significant changes that occur in a cell during interphase. [2]
- e) The diagram given represents a layer of epidermal cells showing a fully grown root hair. Study the diagram and answer the questions: [3]

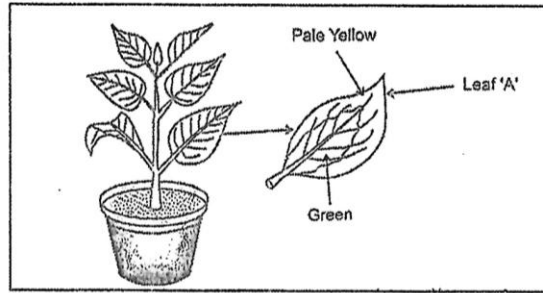


- i) Name the parts labelled 1-4.
- ii) What would happen if this cell is first placed in strong sugar solution of cane sugar and then in water.
- iii) Mention two characteristics of root that make them suitable to absorb water from the soil?

Question 7

- a) Explain the term- Transpiration pull? [1]
- b) Discuss the significance of Mitosis and Meiosis. [2]
- c) What is the function of auxin and cytokinin in plants? [2]
- d) Make a neat and labelled diagram of the stomatal apparatus during day time. [2]

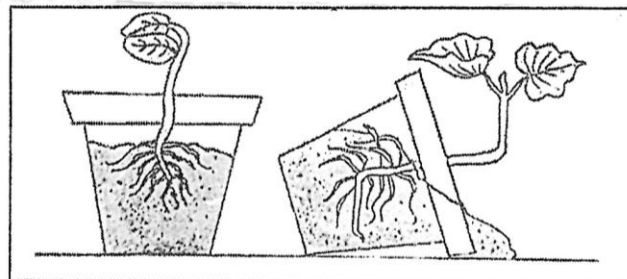
- e) A potted plant with variegated leaves was taken in order to prove a factor necessary for photosynthesis. The pot was kept in dark for 24 hours and then placed in bright sunlight for hours. Observe the diagram and answer the questions: [3]



- What aspect of photosynthesis is being tested in the diagram? Why was the plant kept in the dark for 24 hours.
- What will be the result of the test performed on leaf 'A'. Give reasons to support your answer.
- Represent the process of photosynthesis in form of a balanced equation.

Question 8

- What is Plasmolysis? [1]
- How do light intensity and carbon dioxide concentration affect photosynthesis? [2]
- What are the differences between Autosomes and Sex chromosomes [2]
- Global warming is a result of green- house effect. Explain. [2]
- Study the figure given below and answer the questions: [3]



- What is depicted in the figure? Explain the process.
- Name an instrument that is used to study the effect of this process. What can be observed if the plant is kept in it for a few days?
- Distinguish between chemotropism and hydrotropism.
