

**CLASS XI – ANNUAL EXAMINATION  
BIOLOGY**

**PAPER – 1**

**(THEORY)**

*(Maximum Marks: 70)*

*(Time allowed: Three hours)*

(Candidates are allowed additional 15 minutes for only reading the paper.  
They must NOT start writing during this time)

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*This paper comprises TWO PARTS – Part I and Part II.*

*Answer all questions.*

*Part I contains one question of 20 marks having five subparts.*

*Part II consists of Sections A, B and C.*

*Section A contains seven questions of two marks each*

*Section B contains seven questions of three marks each, and*

*Section C contains three questions of five marks each.*

*Internal choices have been provided in two questions in Section A, two questions in Section B and in all three questions of Section C.*

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**PART I (20 Marks)**

*Answer all questions.*

**Question 1**

- (a) Answer the following questions briefly and to the point: [8×1]
- (i) Draw the *molecular structure* of the amino acid serine.
  - (ii) What is a *telocentric chromosome*?
  - (iii) Name the process by which mineral ions move against the concentration gradient.
  - (iv) Which structure maintains the protoplasmic continuity between the adjacent plant cells?
  - (v) What is the use of *auxanometer*?
  - (vi) Name the edible part of *mango*.
  - (vii) What is the function of *neuroglial cells*?
  - (viii) Why do *nerve impulses* travel in one direction only?

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**This Paper consists of 5 printed pages and 1 blank page.**

(b) Each of the following questions has four choices. Choose the correct option in each case: [4×1]

(i) Lactose is an example of:

- (1) Disaccharide.
- (2) Protein.
- (3) Monosaccharide.
- (4) Polysaccharide.

(ii) Curdling of milk in the stomach is due to the action of:

- (1) Pepsin.
- (2) Renin.
- (3) Rennin.
- (4) Casein.

(iii) Synandrous androecium is found in:

- (1) *Hibiscus*.
- (2) *Pisum sativum*.
- (3) *Cucurbita*.
- (4) Sunflower.

(iv) *Adiantum* belongs to the class:

- (1) Psilopsida.
- (2) Lycopsida.
- (3) Sphenopsida.
- (4) Pteropsida.

(c) Give one significant contribution of each of the following scientists: [2×1]

(i) D. I. Ivanowsky.

(ii) Van Neil.

(d) Define the following: [3×1]

- (i) Vernalization.
- (ii) Olfactory reception.
- (iii) Transduction.

(e) Answer the following: [3×1]

- (i) What happens to the water potential of pure water when solutes are added to it?
- (ii) What would happen, if a long day plant is exposed to day-lengths, longer than a certain critical minimum?
- (iii) Define *Systematics*.

## PART II

### SECTION A (14 Marks)

(Answer all questions)

#### Question 2

[2]

(a) Give *any four* properties of enzymes.

OR

(b) Give *any four* functions of Proteins.

#### Question 3

[2]

Name the group of plants which are called the 'amphibians' of the plant kingdom. Give a reason to justify your answer.

#### Question 4

[2]

Give *one* difference between each of the following pairs:

- (i) Dormancy and Quiescence.
- (ii) Absorption spectrum and Action spectrum.

**Question 5**

[2]

Answer the following briefly:

- (i) Name the gaseous plant hormone.
- (ii) Name the monomer of starch.
- (iii) Give one example of a plant showing  $C_4$  cycle.
- (iv) What is the dental formula of an adult human being?

**Question 6**

[2]

Draw a well labelled diagram of an animal cell having 3 pairs of chromosomes in metaphase I of Meiosis.

**Question 7**

[2]

Give *any four* differences between male and female cockroach.

**Question 8**

[2]

(a) Explain *ultrafiltration*.

OR

(b) Explain the mechanism of *clotting of blood*.

**SECTION B (21 Marks)**

*(Answer all questions)*

**Question 9**

[3]

Answer the following:

- (a) State the cell theory.
- (b) What are satellite chromosomes?
- (c) Give the function of Golgi complex in a cell.

**Question 10**

[3]

(a) Give a brief account of *any three* types of archaebacteria with reference to their habitat.

OR

(b) Name the *three* classes of Algae. Mention the major photosynthetic pigments of each class.

**Question 11**

[3×1]

Explain the mechanism of opening and closing of stomata according to  $K^+$  ion transport mechanism.

**Question 12**

[3]

Draw a well labelled diagram of T.S. of monocot stem.

**Question 13**

[3]

(a) Give a brief explanation of facilitated diffusion with reference to symport, antiport and uniport.

**OR**

(b) Discuss the effects of temperature, pH and substrate concentration on the activity of enzymes.

**Question 14**

[3]

What is an inflorescence? What are the two main types of inflorescence? Give the definition and one example of each type.

**Question 15**

[3]

Explain how CO<sub>2</sub> is transported in blood from the tissues to the lungs.

**SECTION C (15 Marks)**

*(Answer all questions)*

**Question 16**

[5]

(a) Draw a neat labelled diagram of L.S. of heart.

**OR**

(b) Draw a neat labelled diagram of the membranous labyrinth.

**Question 17**

[5]

(a) Describe the sliding filament theory of muscle contraction.

**OR**

(b) Describe the role played by pancreas in the digestion of food.

**Question 18**

[5]

(a) Give a graphic representation of Krebs' cycle.

**OR**

(b) Give a graphic representation of C<sub>3</sub> cycle.