

MARTHOMA RESIDENTIAL SCHOOL, THIRUVALLA  
SECOND TERM EXAMINATION 2019-20

STD XI

BIOLOGY

Time: 3 hours

Paper – 1

(Theory)

(Maximum marks: 70)

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

*This paper comprises of TWO PARTS – PART I and PART II*

*Answer all the questions*

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

*Part 2 consist of section A, B and C.*

*Section A contains seven questions of two marks each*

*Section B contains seven questions of three marks each.*

*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*

**PART I (20 Marks)**

*Answer all questions*

**Question 1**

(a) Answer the following briefly and to the point

[8x1]

- (i) State the law of limiting factor?
- (ii) Differentiate between stroma and stoma.
- (iii) What happens if auxin is sprayed on unpollinated flower?
- (iv) Why are some plants called indeterminate plants?
- (v) How does a bacterial cell wall differ from a plant cell wall?
- (vi) What is Go phase of cell cycle?
- (vii) Name the chemical substances that activate (i) Pepsinogen (ii) Trypsinogen
- (viii) What is residual volume?

(b) Each of the following questions has four choices. Choose the correct option in each case: [4x1]

(i) Which of the following stimulate the nodule formation in legumes?

- (1) Auxin from bacterial cells and cytokinin from plant cells.
- (2) Auxin from plant cells and cytokinin from bacterial cells
- (3) Gibberellins from plant cell and auxin from bacterial cell
- (4) Gibberellins from bacterial cell and auxin from plant cell

(ii) Select the correct match from the given set of pigments and their formulae.

- |     |                        |                |
|-----|------------------------|----------------|
| (1) | $C_{55}H_{72}O_8N_4Mg$ | -Chlorophyll a |
| (2) | $C_{55}H_{70}O_6N_4Mg$ | -Chlorophyll b |
| (3) | $C_{40}H_{50}$         | -Carotene      |
| (4) | $C_{40}H_{50}O_2$      | -Xanthophyll   |

(iii) A person with blood group A has

- (1) Antigen A and Antibody b
- (2) Antigen B and Antibody a
- (3) Both Antibodies
- (4) Both Antigens

(iv) Pyloric sphincter is present between

- (1) Stomach and Duodenum
- (2) Duodenum and Jejunum
- (3) Oesophagus and Stomach
- (4) Ileum and Caecum

(c) Give one significant contribution of each of the following scientists: [2x1]

- (i) F.W. Went
- (ii) Engelmann

(d) Define the following: [3x1]

- (i) Redifferentiation
- (ii) Apical dominance
- (iii) Synapsis

(e) Answer the following: [3x1]

- (i) Why does a green plant start evolving carbon dioxide instead of oxygen on a hot summer day?
- (ii) What is a holoenzyme?
- (iii) Mitosis is called equational division. Why?

**PART II**

**SECTION A (14 Marks)**  
(Answer all questions)

**Question 2**

- (a) Give any one function and one deficiency symptom of each of the following. [2]
- (i) Nitrogen
  - (ii) Phosphorus

**OR**

- (b) Give a summary diagram of stomatal mechanism based on starch-sugar inter conversion hypothesis.

**Question 3**

Name the hormones that are associated with the following in plants [2]

- (i) A gaseous plant regulator
- (ii) Growth inhibitor
- (iii) Helps leaves to retain green colour for longer time
- (iv) Prolong dormancy in potato tuber.

**Question 4**

If short day plants (eg. Tobacco) are kept under short day conditions during summer season when daylight is for much more than 12 hrs, what would be the effect on the flowering of such plants? Give a reason for your answer. [2]

**Question 5**

Bile juice contains no digestive enzymes yet it is important for digestion. Why? [2]

**Question 6**

- (a) Briefly explain the mechanism of clotting of blood [2]

**OR**

- (b) Name any two occupational respiratory disorders. What are the symptoms of it. Suggest any two ways to cure it.

**Question 7**

Sino-Atrial node is the pacemaker of heart. Explain [2]

**Question 8**

Expand the following abbreviations. [2]

- (i) IRV
- (ii) PGA
- (iii) RQ
- (iv) RUBISCO

**SECTION B (21 Marks)**

*(Answer all questions)*

**Question 9**

Explain the path of ascent of sap due to transpiration pull. [3]

**Question 10**

- (a) [3]
- (i) Name a device to measure the growth in length in plants. Give an account of growth curve in plants.
  - (ii) Give two significant differences between leghaemoglobin and haemoglobin.

**OR**

- (b)
- (i) What is seed dormancy? How can it be broken down artificially?
  - (ii) Explain how RuBP carboxylase acts as RuBP oxygenase.

**Question 11**

- (a) [3]
- (i) Give three significant differences between the following.
    - (i) Photoperiodism and Vernalization
    - (ii)  $C_3$  cycle and  $C_4$  cycle

**Question 12**

Describe mass flow hypothesis for translocation of organic solutes in plants. Write the major criticism against this hypothesis? [3]

**Question 13**

Draw a transverse section of human gut and explain it. [3]

**Question 14**

- (a) [3]
- Explain how carbon dioxide gets transported in the body.
- OR**
- Explain the changes in heart during one cardiac cycle.

**Question 15**

- (a) [3]
- Represent the following amino acids structurally.
    - (i) Glycine
    - (ii) Alanine
    - (iii) Serine

**SECTION C (15 Marks)**  
**(Answer all questions)**

**Question 16**

[5]

- (a)
- (i) Give a graphic outline of  $C_4$  pathway
  - (ii) Mention any four features of kranz anatomy

**OR**

- (a)
- (i) Give a schematic representation of light reaction in plants involving both the photosystems.
  - (ii) Write an experiment to demonstrate root pressure.

**Question 17**

[5]

- (a) Explain chemi osmotic hypothesis

**OR**

- (b)
- (i) Explain 9 + 2 arrangement of micro tubules. Where is it found?
  - (ii) Explain the different types of chromosomes on the basis of position centromere.

**Question 18**

[5]

- (a) Explain various changes in Prophase 1 of Meiosis with the help of suitable diagram  
Write down any two significant differences between mitosis and meiosis.

**OR**

- (b) Briefly describe the different steps of digestion of food in stomach and small intestine