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AR-2019

B.Sc (Ag.) 1<sup>ST</sup> SEMESTER EXAMINATIONS (REGULAR),NOV/DEC 2019

**PP-111**

**FUNDAMENTALS OF CROP PHYSIOLOGY**

Time : 2 Hours

Maximum : 50 Marks

(Answer **all** questions of Section – A)

**SECTION – A**

**Q.1.** Fill up the blanks with suitable and meaningful word. (0.5 x 10 = 5)

- i. \_\_\_\_\_ element has not been proved to be essential in plants.
- ii. The electrons that are added to CO<sub>2</sub> in photosynthesis are provided by the oxidation of what element? \_\_\_\_\_
- iii. \_\_\_\_\_ the most abundant biomolecules on the earth are produced by some bacteria, algae and green plants.
- iv. Photorespiration, usually occurs in \_\_\_\_\_ cell organelles.
- v. A phytohormone which induces triple response is \_\_\_\_\_.
- vi. \_\_\_\_\_ discovered photophosphorylation?
- vii. Growth regulators, which control plant growth and development are called \_\_\_\_\_.
- viii. Enzyme cofactors that bind covalently at the active site of an enzyme are referred to as \_\_\_\_\_.
- ix. For every one molecule of sugar glucose which is oxidized \_\_\_\_\_ molecule of pyruvic acid are produced.
- x. \_\_\_\_\_ initiate rooting.

**Q. 2.** Match the following (0.5 x 10 = 5)

- | A                                     | B  |
|---------------------------------------|--|
| I Boron                               | I Splitting of H <sub>2</sub> O to liberate O <sub>2</sub> during photosynthesis |
| II Magnesium                          | II Needed for synthesis of auxin   |
| III Molybdenum                        | III Component of nitrogenase   |
| IV Zinc                               | IV Pollen germination  |
| V Iron                                | V Component of ferredoxin  |
| VI organisms that make their own food | VI chloroplast   |
| VII organelle of photosynthesis       | VII ATP  |
| VIII Chemiosmosis                     | VIII Autotroph   |
| IX Ethylene                           | IX inhibits longitudinal growth  |
| X auxin                               | X inhibits embryo growth   |



**Q. 3.** Write **True** or **False** against the following statements. (0.5 x 10 = 5)

- I.  $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$  is the chemical reaction of photosynthesis.
- II. Photosynthesis provides almost all of the energy used by living things on Earth.
- III. The transport by which a substance indirectly drives the active transport of several other solutes is called hydroactive transport.
- IV. The equilibrium of ions between root cells and soil solution in the presence of fixed ions in the root cells is called Donnan equilibrium..
- V. The lateral roots originate from meristematic tissue in the **pericycle**.
- VI. The process of secondary growth is controlled by the lateral meristems.
- VII. The periderm substitutes for the epidermis in mature plants.
- VIII. Growth regulators, which control plant growth and development are called phytohormones.
- IX. Kinetin is the first artificially occurring cytokines.
- X. Auxin inhibit internode elongation and may promote flowering?

**Q.4.** Define or explain the following in one or two sentences (1 x 5 = 5)

- a) Growth promoter
- b) Strigolactones
- c) action spectra
- d) Gluconeogenesis
- e) Glyoxysome

**SECTION-B: Short Answer Questions)**

(Attempt any **five** questions. Each question carries equal marks) (5 x 6 = 30)

5. A plant become bushy, when its apical bud is removed. Why?
6. Name two growth inhibitors and mention one physiological effect of each.
7. Plants whose guard cells have enhanced sensitivity to ABA show a reduced sensitivity to drought, but guard cells with extreme hypersensitivity to ABA are detrimental to the plant. Why?
8. Describe how tension is develops in the xylem sap and explain the mechanism of passive water absorption.
9. During transpiration, more the water absorbed by the roots, will the leaves will droop or wilt at the same rate? Explain.
10. What is water potential? State the significance of water potential and discuss the inter relationship between different components of water potential.