A–1212

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MSCBOT-601

M.Sc. Botany (MSCBOT)

Plant Physiology and Biochemistry

Examination February, 2026

Time : 2:00 Hrs. Max. Marks : 70

Note* :–** This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. ***Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

Section–A

Long Answer Type Questions (2×19=38)

***Note* :–** Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

1. What are the raw materials of photosynthesis ? Explain the mechanism of CO_2 fixation and end product of photosynthesis.

2. Describe the mechanism of electron transport during oxidative phosphorylation. How ATP synthesis occurs during oxidative phosphorylation ?

3. Discuss the role of the following :

   (a) Auxin in apical dominance

   (b) Cytokinin in leaf senescence

   (c) Ethylene in fruit ripening

4. Write explanatory notes on any *two* of the following :

   (a) Enzyme inhibition

   (b) Mechanism of salt resistance in plants

   (c) Photosynthetic pigments in plants

5. What do you understand by the term "symbiotic nitrogen fixation" ? Give a detailed account of nodule formation in the roots of leguminous plants infected by Rhizobium.

Section–B

Short Answer Type Questions (4×8=32)

***Note* :–** Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. What do you understand by macro and micro-nutrients ? Describe the physiological role of nitrogen and iron.

2. Give the name and describe the process which is common in the mechanism of both aerobic and anaerobic respiration.

3. Write short notes on any *two* of the following :

   (a) Water potential

   (b) Munch hypothesis

   (c) Plasmolysis

   (d) Phospholipids

4. Differentiate between any *two* of the following :

   (a) Absorption spectrum and action spectrum

   (b) C_3 and C_4 cycle

   (c) Active and passive mineral salt absorption

5. Starch and cellulose are composed of same types of monomers. How do these differ from each other in structure and function ?

6. What is Michaelis-Menten constant ? Explain its significance.

7. What do you understand by Blackman's law of limiting factors related with photosynthesis ?

8. What is photoperiodism ? Explain the physiology of photoperiodism in plants.

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