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(February)

BOTANY

(Honours)

(Plant Physiology and Biochemistry)

[BOTH–501 (T)]

Marks : 56

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer Question No. **1** which is compulsory and *any* **four** from the rest, selecting **one** from each Section

1. Write notes on the following : 4×4=16

(a) Deficiency symptoms of nitrogen and phosphorous

(b) Effect of high oxygen concentrations on the photosynthetic efficiency of C_3 plants

(c) Hormonal regulation of plant tropism

(d) Entropy and its significance in living cells

SECTION—I

2. Considering that pure water has 0, discuss the role of water potential in regulating movement of water in a living plant. 10

3. *(a)* Discuss the cytochrome pump theory of ion transport. 6

(b) Describe the physiological functions of any two micronutrients. 4

SECTION—II

4. *(a)* Write in detail the process of CO_2 fixation in C_3 plants. 6

(b) Describe in brief the GOGAT system in ammonia assimilation. 4

5. Discuss how aerobic respiration yields 38 molecules of ATP from 1 glucose molecule. 10

SECTION—III

6. Give the name and function of two genes associated with senescence in plants. Describe the physiological events that occur during leaf and fruit senescence. 2+8=10

7. What is seed dormancy? Mention the causes of seed dormancy and describe how dormancy can be regulated in seeds. 1+4+5=10

SECTION—IV

8. What are the different levels of protein structure? Citing a relevant example, discuss how the correct protein structure organization is critical for establishing the proper function of a protein molecule. 2+8=10

9. What is kinetics of enzyme catalysis? Using the Lineweaver-Burk plot, explain how changes in substrate concentration will affect the velocity of enzyme catalyzed reactions in the presence of a competitive inhibitor. 2+8=10

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