

B.Sc. (Honours) Examination, 2019
Semester-VI
Botany
Paper: BBC-63
(Plant Physiology & Biochemistry)

Time: 3 Hours

Full Marks: 40

Questions are of value as indicated in the margin

1. Answer **any eight** of the following: 1×8=8
- i) What are the symptoms for deficiency of nitrogen in plants?
 - ii) How will you prove that photosynthates are translocated through phloem?
 - iii) What is vernalization?
 - iv) What are the major physiological roles of ethylene in plants?
 - v) Why is bulk flow important for water transport in plants?
 - vi) Why is transpiration rate low in still air?
 - vii) What is heterotropic allosteric enzyme inhibition?
 - viii) What is ubiquitination?
 - ix) What is protein phosphatase?
 - x) Why monosaccharides are called reducing sugar?
 - xi) What is furan ring?
 - xii) What is van der Waals radius?

Group-A

(Plant Physiology)

Answer **any two** questions

2. What experimental evidence does prove the simultaneous operation of two photosystems in photosynthesis? Describe how these photosystems drive the electron transport from water to NADP in chloroplasts. What advantages do C₄ plants have over C₃ plants? 2+4+2=8
3. How can you prove that the leaves perceive light signal for photoperiodic induction? Why is the short day plants called long night plants? Discuss the mechanism of photoperiodic induction and the role of phytochrome in flowering. 2+2+4=8
4. Name the precursor of IAA and discuss how IAA is synthesized from this precursor in plants. Discuss the major physiological roles of auxin and GA in plants. 3+5=8

Group-B

(Biochemistry)

Answer **any two** questions

5. What is standard free energy change ($\Delta G'^0$)? How does it differ from actual free energy change (ΔG)? What is the mathematical relationship between standard free energy change ($\Delta G'^0$) and actual free energy change (ΔG)? What are the biological significances of ATP? 2+3+1+2=8
6. How are peptide bonds formed in proteins? What are the characteristics of α -helix and β -pleated sheet? What is Ramachandran plot? 2+4+2=8
7. What is non-protein enzyme? How do enzymes enhance the rate of a chemical reaction? Deduce Michaelis–Menten equation. 2+2+4=8
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