

2019

Part – II

BOTANY

(Honours)

Paper – IV

Full Marks – 90

Time : 4 Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

Group – A

1. Answer any **ten** of the following : 2×10=20
- a) What are Pr and Pfr?
 - b) What is RQ?
 - c) What is 'Z' Scheme?
 - d) What is edge effect?
 - e) What is biomass?
 - f) What does it mean by social forestry?
 - g) What is Hill reaction?

P.T.O.

- h) What do you mean by Green House Effect?
- i) Why C_4 plants are photosynthetically more efficient than C_3 plants?
- j) What are the full forms of PUFA and MUFA?
- k) Define water potential.
- l) What do you mean by Gibb's free energy?
- m) What is SPAC?
- n) What is α -oxidation?
- o) What are domains and motifs?

Group-B

2. Answer any **five** of the following : 8×5=40
- a) What is the importance of K^+ in opening and closing of stomata? Write the significance of transpiration in a plant life. 5+3
 - b) Distinguish between (any **four**) : 2×4
 - i) Salt respiration and photorespiration.
 - ii) Mass flow and pressure flow hypothesis.
 - iii) CAM and SAM.
 - iv) 'nif' gene and 'nod' gene.
 - v) Competitive and noncompetitive enzyme inhibition.
 - vi) Halophytes and heliophytes.

- c) Give an outline classification of the types of seed dormancy. Explain the different methods of breaking seed dormancy. 5+3
- d) Write a note on the chemical nature and role of phytochrome in flowering. What is florigen? 6+2
- e) What does it mean by stress and stress physiology? Give an account of salt stress and water stress in relation to plant metabolism. 1+1+6
- f) Write outline mechanism and significance of photorespiration. What are LSDP and SLDP – give example. 6+2
- g) What are fats? How these are synthesized in plants? Differentiate saturated fatty acids from common fatty acids. 2+3+3
- h) Define auxins. Name two growth promoting and two growth retarding plant hormones. Write the physiological role of IAA and GA in plants. 2+2+4

Group – C

3. Answer any **two** of the following : 15×2=30
- a) What does it mean by hydrogen bonding? How it help to explain many of the unique physical and chemical properties of water? What is dipole moment of water? What is buffer? Name *two buffer solutions*. 2+6(3+3)+3+2+2

b) Explain the structural features of PSI and PSII. Differentiate between cyclic and non-cyclic photo-phosphorylation. Explain the carbon assimilation process present in C_4 plants.

4+4+7

c) Explain the role of any three macro elements and any three trace elements required for plant nutrition and show how their deficiency affect plant growth. What are the significance of osmosis and water potential in plant life.

6+6+3

d) Name the 6-carbon, 5-carbon and 4-carbon compounds that are produced during Kreb's Acid Cycle. Name the steps of oxidation in that cycle. Is it possible to produce 4ATP molecules by utilizing only 2ATP molecules during glycolysis? How? Describe briefly the steps of Acetyl COA formation from one molecule of pyruvic acid.

6+1+3+5
