

**2020****BOTANY  
[HONOURS]****Paper : IX**

Full Marks : 75

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****(Plant Physiology)****(Marks: 40)**

1. Answer any **five** from the following questions:  
2×5=10
- What is vernalization?
  - Define guttation.
  - Differentiate between apoplast and symplast.
  - What is Richmond-Long effect?
  - What is long day plant (LDP)? Give example.

- Why does removal of apical meristem produce a bushy plant?
- Distinguish between Transpiration and Guttation.
- What do you mean by Radioimmunoassay (RIA)?

2. Answer any **two** from the following questions:  
5×2=10
- From which source gibberellin was first isolated? What are biosynthetic enzymes of gibberellin. Mention two roles of gibberellin.  
1+2+2
  - Describe in brief the mechanism of phloem loading and unloading in plants. 5
  - What is hydroponic farming? Discuss the roles of Mg and Fe in plants. 1+4
3. Answer any **two** from the following questions:  
10×2=20
- Explain the pressure flow model in phloem translocation. Discuss the factors affecting the rate of transpiration. 5+5

*[Turn Over]*

- b) Name a natural and a synthetic cytokinin. Schematically represent the different steps of IAA biosynthesis from tryptophan. 2+8
- c) What is Photoperiodism? Classify the flowering plants on the basis of their photoperiodic responses with example. Discuss the role of phytochrome in role of flowering. 1+5+4

### GROUP-B

#### (Plant Metabolism and Biochemistry)

(Marks: 35)

4. Answer any **two** from the following questions:  
 $2\frac{1}{2} \times 2 = 5$
- a) What is substrate level phosphorylation? Where does it occur? 2+ $\frac{1}{2}$
- b) What is chemiosmosis? What are the components of ETC? 1+1 $\frac{1}{2}$
- c) Distinguish between oxidative and photosynthetic phosphorylation. 2 $\frac{1}{2}$

5. Answer any **two** from the following questions:  
 $5 \times 2 = 10$
- a) Describe schematically the regeneration of RuBP in dark phase of Photosynthesis. 5
- b) Why Hatch and Slack cycle is called C<sub>4</sub> cycle? Briefly illustrate the C<sub>4</sub> cycle. 1+4
- c) Classify enzymes according to IUB system (1961). What is ribozyme? 1+4
6. Answer any **two** from the following questions:  
 $10 \times 2 = 20$
- a) Why Krebs cycle is called TCA cycle? Briefly describe the different steps of Krebs cycle with a schematic diagram. 1+9
- b) What is CAM? Name two CAM plants. Describe briefly different steps of glycolysis. 1+2+7
- c) What do you mean by biological nitrogen fixation? Discuss the biochemistry of nitrogen fixation with special reference to the role of nitrogenase. 2+8