

Reg. No .....

Name .....

20P3034

**M. Sc DEGREE END SEMESTER EXAMINATION - OCT/NOV 2020: JAN 2021**

**SEMESTER 3 : BOTANY**

**COURSE : 16P3BOTT11 : PLANT PHYSIOLOGY & METABOLISM**

*(For Regular - 2019 Admission and Supplementary - 2016/2017/2018 Admissions)*

Time : Three Hours

Max. Marks: 75

**PART A**

**Answer any 8 (2 marks each)**

1. What do you mean by proton motive force?
2. What are the major complex proteins present in the thylakoid membranes?
3. Give an account on various types of translocation on organic solutes based on direction.
4. Explain the role of turgor pressure in phloem unloading.
5. Name any steroid hormone and state its functions.
6. Define RQ. Explain how RQ varies with variations in respiratory substrate.
7. Give an account on  $F_1-F_0$  particle.
8. Explain (a) Torus and (b) Margo
9. Explain membrane potential.
10. What is meant by Donnan equilibrium?
11. What is meant by heterocyst?
12. Briefly describe the heat shock proteins (HSPs) and its significance.

**(2 x 8 = 16)**

**PART B**

**Answer any 7 (5 marks each)**

13. Explain the structure of any two photosynthetic pigments.
14. How sucrose act as signal molecule in starch formation and degradation?
15. Briefly explain the biosynthesis of Gibberellin. Which gibberellin is called as Gibberellic Acid?
16. Explain the importance of Vernalization in plants.
17. Explain the significance of adsorption and capillarity in soils.
18. What is meant by diffusional resistance in transpiration? Explain its components.
19. Briefly explain the significance of ectotrophic mycorrhiza in plants.
20. Explain  $Na^+/K^+$  pump and its significance.
21. Describe nodule formation in legumes.
22. What are various response mechanisms of plants to salinity in soil?

**(5 x 7 = 35)**

**PART C**

**Answer any 2 (12 marks each)**

23. Describe the mechanism of aerobic respiration in plants. How the reduced acceptors regenerated and how many molecules of ATP are formed from a glucose molecule when completely oxidised.

**OR**

24. Write an essay on role of mycorrhizae in nutrient uptake.
25. Explain and illustrate the process of biological nitrogen fixation and structure of nitrogenase enzyme complex.

**OR**

26. What is assimilates partitioning? Give a brief account of factors that control translocation of assimilates and their partitioning in higher plants.

**(12 x 2 = 24)**