



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**B.Sc. DEGREE EXAMINATION – PLANT BIOLOGY & PLANT BIO-TECH.**

FIFTH SEMESTER – NOVEMBER 2011

**PB 5515/PB 5509/PB 5500 - PLANT PHYSIOLOGY**

Date : 31-10-2011  
Time : 9:00 - 12:00

Dept. No.

Max. : 100 Marks

**PART A**

**ANSWER ALL THE QUESTIONS**

I. *Choose the correct answer*

(5 x 1 =5)

1. The intercellular spaces are part of

- a. symplast    b. apoplast    c. plastids    d. apoplast and symplast.

2. The mineral element that is involved in the biosynthesis of IAA is

- a. Nitrogen    b. Calcium    c. Zinc    d. Iron.

3. The plants that close the stomata during day time are

- a. C<sub>3</sub> plants    b. CAM plants    d. C<sub>4</sub> plants    d. Legumes

4. \_\_\_\_\_ is an example for inducible enzyme.

- a. Nitrogenase    b. Denitrogenase    c. Nitrite reductase    d. Nitrate reductase.

5. The hormone that is associated with water stress is

- a. Abscisic acid    b. Gibberellins    c. Ethylene    d. Cytokinins.

II. *State whether the following statements are True or False:*

(5x1=5)

6. Cells are plasmolysed when placed in hypotonic solution.

7. Silica is a macronutrient.

8. C<sub>3</sub> plants have high CO<sub>2</sub> compensation point.

9. Plants cannot absorb inorganic nitrogen.

10. The cold treatment that is given to prepare the plants for flowering is vernalization.

III. *Complete the following:*

(5x1=5)

11. The attraction between the water molecules is \_\_\_\_\_ force.

12. The mineral element that is part of nitrogenous bases is \_\_\_\_\_.

13. The ultimate donor of electron in photosynthesis is \_\_\_\_\_.

14. The enzyme that is involved in transamination reaction is \_\_\_\_\_.

15. The plant growth regulator that is used as a selective weedicide is \_\_\_\_\_.

IV. Answer all, each in about 50 words.

(5x1=5)

16. What are antitranspirants? Give an example and explain their importance.

17. Define Donnan equilibrium.

18. What are quantosomes?

19. What is chemiosmotic hypothesis?

20. What is a bioassay? Mention the important criteria for a bioassay.

### PART B

Answer the following, each within 500 words, draw diagrams wherever necessary. (5x7=35)

21. a. Describe the laws of thermodynamics.

(Or)

b. Write notes on guttation.

22. a. Mention any three micronutrients, their importance and deficiency symptoms.

(Or)

b. Explain any one passive method of mineral ion absorption.

23. a. Explain any one subtype of C<sub>4</sub> photosynthesis.

(Or)

b. Explain the glycolate pathway and mention its importance.

24. a. Explain the mechanism of nitrogen fixation.

(Or)

b. Explain the ATP production through Oxidative electron transport chain.

25. a. Discuss the physiological roles of gibberellins.

(Or)

b. Explain the various causes of seed dormancy and the advantages of seed dormancy.

### PART C

Answer any Three of the following, each within 1500 words only. Draw diagrams and flowcharts wherever necessary. (3x15=45)

26. Explain the physiology of stomatal opening and closing and the various hypothesis.

27. Explain the various concepts for the active uptake of mineral ions.

28. Explain the cyclic and non-cyclic photophosphorylation.

29. Describe citric acid cycle.

30. What is photoperiodism? Explain the importance of photoperiodism in flowering.

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