

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086**  
(For candidates admitted during the academic year 2008 – 09 & thereafter)  
**SUBJECT CODE: BT/MC/PP64**

**B. Sc. DEGREE EXAMINATION, APRIL 2012**  
**BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY**  
**SIXTH SEMESTER**

**COURSE : MAJOR – CORE**  
**PAPER : PLANT PHYSIOLOGY**  
**TIME : 3 HOURS**

**MAX. MARKS: 100**

**SECTION A**

**Answer all the questions. (18 MARKS)**

**I. Choose the correct answer: (5 MARKS)**

1. Movement of particles or molecules from a region of higher concentration to a region of lower concentration is called as  
a. Diffusion                      b. Imbibition                      c. Osmosis
2. Cytochrome- pump theory was proposed by  
a. Bennet-Clarke                      b. Calvin                      c. Lundegardh
3. Dark reaction of photosynthesis occurs in  
a. Cytoplasm                      b. Stroma                      c. Thylakoid
4. The net gain of ATP molecules in the complete oxidation of a glucose molecule in aerobic respiration is  
a. 38                                      b. 36                                      c. 34
5. An example for long day plant is  
a. *Beta vulgaris*                      b. *Bryophyllum*                      c. *Nicotiana tobaccum*

**II. Fill in the blanks: (5 MARKS)**

6. ATP driven H<sup>+</sup> and K<sup>+</sup> exchange pump mechanism occurs in \_\_\_\_\_ cells.
7. Die-back of citrus disease is due to the deficiency of \_\_\_\_\_ element.
8. The leaf of C<sub>4</sub> plants has \_\_\_\_\_ anatomy
9. Respiratory quotient for Carbohydrate is \_\_\_\_\_.
10. The volatile hormone is \_\_\_\_\_.

**III. State Whether True or False: (4 MARKS)**

11. The guard cells become flaccid when their osmotic potential and water potential increase relative to the surrounding cells.
12. The pigment leghaemoglobin appears to be a product of Rhizobium-legume complex.
13. Oxygen is produced during Cyclic phosphorylation.
14. Pr is the pigment phytochrome which absorbs far-red light.

**IV. Match the following: (4 MARKS)**

- |                        |   |                                |
|------------------------|---|--------------------------------|
| 15. Glycolysis         | - | opening and closing of stomata |
| 16. Steward            | - | Cytoplasm                      |
| 17. Florigen           | - | CAM plant                      |
| 18. <i>Bryophyllum</i> | - | Floral hormone                 |

**IV. Answer any SIX of the following. Each answer should not exceed 50 words:**

**(6 x 3 = 18)**

19. Water potential
20. Distinguish between active and passive absorption
21. Role of Manganese in Plants.
22. Donnan's equilibrium
23. PS I and PS II System
24. Fermentation
25. RUBISCO
26. Vernalization
27. ABA

**SECTION – B**

**Answer any FOUR of the following. Each not exceeding 200 words. (4 x 6 = 24)**

28. Write notes on the synthesis of organic acid in guard cells.
29. Briefly explain the mechanism of opening and closing of stomata.
30. Explain carrier hypothesis of salt uptake.
31. Describe the process of Photorespiration.
32. Describe Electron Transport Pathway.
33. List out the physiological effects of auxins.

**SECTION – C**

**Answer any TWO of the following. Each answers not exceeding 1000 words.**

**(2 x 20 = 40)**

34. Describe the mechanism of water absorption in Plants.
35. Give an account of biological nitrogen fixation.
36. Write an essay on Photoperiodism.
37. Describe the Krebs's cycle.

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