

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086  
(For candidates admitted during the academic year 2004-05 & thereafter)

SUBJECT CODE: BT/MC/PP64

B. Sc. DEGREE EXAMINATION, APRIL 2009  
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 QUESTIONS

I CHOOSE THE CORRECT ANSWER: (6 marks)

- Absorption of water by dry seeds is by  
a. diffusion b. imbibition c. osmosis d. reverse osmosis
- Which one of the following is not a micronutrient?  
a. Zn b. Mg c. Mo d. Mn
- Chlorophylls absorb \_\_\_\_\_ light maximally  
a. green b. yellow c. red d. blue
- Conversion of  $\text{NO}_3$  to  $\text{NO}_2$  is catalysed by the enzyme  
a. nitrogenase b. nitrite reductase c. nitrate reductase d. catalase
- The growth pattern in plants is  
a. parabolic b. hyperbolic c. sigmoidal d. linear
- Ripening of fruits is controlled by the hormone  
a. Gibberellins b. Auxins c. Cytokinins d. Ethylene

II FILL IN THE BLANKS: (6 marks)

- Shrinking of protoplasts in a hypertonic solution is referred to as \_\_\_\_\_.
- The yellowing of leaves due to mineral deficiency is also referred to as \_\_\_\_\_.
- Kranz anatomy is associated with \_\_\_\_\_ type of photosynthesis.
- During the reduction of  $\text{N}_2$  to  $\text{NH}_3$  \_\_\_\_\_ electrons are utilized.
- Tryptophan is the precursor in the synthesis of the hormone \_\_\_\_\_.
- \_\_\_\_\_ is the hormone that regulates flowering.

III STATE TRUE OR FALSE: (6 marks)

- $\text{K}^+$  ions are involved in regulation of stomatal opening and closure.
- The element seen in leghaemoglobin is Mg.
- The enzyme *Rubisco* is seen only in the case of  $\text{C}_3$  plants.
- The number of ATP generated during oxidation of a glucose molecule is 38.
- Gibberellins are involved in internodal elongation.
- Chrysanthemum* is a short day plant.

**IV ANSWER ANY SIX OF THE FOLLOWING. EACH ANSWER NOT TO EXCEED 50 WORDS: ( 6 x 3 = 18 )**

19. Turgor pressure.
20. Physiological wilt.
21. Companion cells.
22. Accessory Pigments.
23. CAM plant.
24. Glycolysis.
25. *Nif* genes
26. Abscisic acid.
27. Vernalization.

**SECTION – B**

**ANSWER ANY FOUR OF THE FOLLOWING. EACH ANSWER NOT TO EXCEED 200 WORDS: ( 4 x 6 = 24 )**

28. Write notes on the various factors which affect transpiration.
29. Discuss the role of any four micronutrients and their deficiency symptoms.
30. Write notes on mechanisms involved in the translocation through phloem tissue.
31. Explain in detail about C<sub>4</sub> type of photosynthesis.
32. Write short notes on the biochemistry of Nitrogen fixation.
33. Give a brief account of Phytochrome and their role.

**SECTION – C**

**ANSWER ANY TWO OF THE FOLLOWING. EACH ANSWER NOT TO EXCEED 1000 WORDS: (2 x 20 = 40)**

34. Explain about the mechanisms involved in stomatal opening and closure.
35. Discuss in detail about the light reaction of Photosynthesis.
36. Explain the sequence of events in citric acid cycle.
37. Elucidate the role of Cytokinins and Gibberellins in plant growth and development.

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