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

SUBJECT CODE: BT/MC/PP64

B. Sc. DEGREE EXAMINATION, APRIL 2007
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)

1. Interveinal chlorosis of younger leaves is due to the deficiency of
   a) Nitrogen b) Phosphorous c) Zinc d) Iron

2. The ultimate donor of electron in photosynthesis is
   a) Water b) CO_2 c) O_2 d) Glucose

3. The net gain of ATP in Glycolysis is
   a) 24 b) 10 c) 2 d) 6

4. The plant hormone that induces cell division is
   a) Ethylene b) Cytokinin c) Abscisic acid d) Gibberellin

5. An example for vernalization requiring plant is
   a) *Hyoscyamus niger* b) *Lactuca sativa* c) *Atropa belladonna* d) *Zea mays*

6. The enzyme involved in reductive amination is
   a) Glutamate dehydrogenase b) Glutamate synthetase c) Transaminase
   d) Protease.

II FILL IN THE BLANKS: (6 marks)

7. TCA cycle is also known as _____.
8. The loss of liquid water through hydathode is known as _____.
9. _____ is an accessory pigment.
10. _____ develops due to hydrostatic pressure in the root.
11. The synthesis of ATP during glycolysis is known as_____.
12. The reaction centre molecule in PS I is _____.

III STATE TRUE OR FALSE: (6 marks)

13. "Florigen" is the flowering hormone extracted from the short day plants.
14. Water potential of pure water is zero.
15. The end product of light reaction is CO_2, ATP and $NADH_2$.

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16. Young leaves perceive the photoperiodic stimulus.
17. Oxidative phosphorylation takes place in the mitochondria.
18. Ethylene delays senescence.

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

19. Mass flow hypothesis
20. Climacteric rise
21. N P K
22. CAM plants
23. Bioassay
24. Emerson enhancement effect
25. Aphids
26. Imbibition
27. Leg haemoglobin

SECTION – B

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

28. Schematically represent the Glyoxylate cycle.
29. Explain how a molecule of glucose is oxidized anaerobically.
30. Write notes on phytochrome.
31. Describe any one theory that will explain the active uptake of mineral ions.
32. Explain photorespiration and its significance.
33. Describe any one bioassay of cytokinin.

SECTION – C

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

34. Explain carbon fixation in C_3 plants and give a comparison of C_3 and C_4 plants.
35. Explain the biochemistry of nitrogen fixation.
36. Discuss the various theories that explain the stomatal movement.
37. Explain the physiological roles of auxin and gibberellin and write about their horticultural applications.

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