LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIFTH SEMESTER – NOVEMBER 2009

PB 5509/PB 5500 - PLANT PHYSIOLOGY

Date & Time: 03/11/2009 / 9:00 - 12:00 Dept. No. | | Max. : 100 Marks

PART - A (20 Marks)

Answer ALL the questions. **(5 x 1 = 5)**

I. Choose the correct answer

1. Pressure developed in the solution due to the presence of dissolved solutes in it is
   a) turgor pressure b) osmotic pressure c) wall pressure d) suction pressure
2. Synthesis of organic acid in the guard cell is
   a) succinic acid b) oxalic acid c) malic acid c) citric acid
3. In photorespiration the glycolate migrates from chloroplast to
   a) mitochondria b) peroxisomes c) spherosomes d) dictyosomes
4. Total net gain of ATP for complete oxidation of a glucose molecule is
   a) 30 ATP b) 36ATP c) 38ATP d) 40ATP
5. Conversion of winter variety plants into spring variety by chilling treatment is called
   a) photoperiodism b) dormancy c) drought plant d) vernalization

II. State whether the following statements are True or False. **(5 x 1 = 5)**

6. Shrinkage of protoplasm due to exosmosis is plasmolysis
7. If there are fixed cations in the cell, the Donnan's equilibrium results in accumulation of anions in the cell.
8. Photolysis of water and evolution of oxygen takes place in cyclic electron transport and phosphorylation in chloroplast.
9. Production of NADPH is not linked to ATP generation in kreb cycle.
10. In short day plants if dark period is interrupted with red light it will flower well.

III. Complete the following. **(5 x 1 = 5)**

11. Oozing of water from uninjured plant parts is known as ---------
12. Hydroponics is otherwise called ---------- growth.
13. Decrease in the quantum yield in the red part of the spectrum is called ----------
14. H-atom from the reduced coenzyme ultimately combine with $1/2O_2$ to produce one molecule of water is called ----------
15. Biologically active form of phytochrome is ----------

IV. Answer the following each within 50 words. **(5 x 1 = 5)**

16. What is Diffusion Pressure Deficit (D.P.D)?
17. What is passive absorption of minerals?
18. Define phosphorescence.
19. What is mitochondrial respiration?
20. What is apical dominance?

PART - B **(5 x 7 = 35)**

Answer the following each not exceeding 350 words.

21. (a). What are the differences between transpiration and guttation.

(OR)

(b). Write short note on Stomatal movements.

22. (a). Write the role and deficiency symptoms of nitrogen and iron

(OR)

(b). Give an account on translocation of solutes by phloem.

23. (a). Bring out the differences between NADP-ME and PEP CK type dark reactions.

(OR)

(b). How are ATP, NADPH and Oxygen produced in non cyclic photophosphorylation?

24. (a). Explain the process of formation of acetyl co-A from pyruvic acid.

(OR)

(b). Give an account on biological nitrogen fixation.

25. (a). Describe (a) Parthenocarpy (b) Dormancy.

(OR)

(b). What are Pr and PFr forms ? Add a note on its interconvertion and it various functions in plants.

PART - C **(3x15=45)**

Answer any three of the following, each not exceeding 1200 words.
Draw diagrams wherever necessary.

26. Describe the structure of root hair and explain the path of water from soil into the plant.
27. Write notes on various theories of active absorption of ions.
28. Photosynthesis is an oxidation reduction process-Discuss.
29. Describe the citric acid cycle in plants and explain how ATP is generated during aerobic respiration.
30. Discuss growth promoting hormones and their role in the life of plants.

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