

B. Sc. DEGREE EXAMINATION, APRIL 2016
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 x 1 = 5)

- Which one of the following is a hypertonic solution?
a. 0.01M b. 0.1M c. 1.0M d. 10M
- Reclamation disease of cereals is caused by the deficiency of the element
a. Cu b. Mo c. Mn d. Zn
- Oxygen evolved during photosynthesis is derived from
a. Glucose b. water c. CO₂ d. Starch
- The net ATP generated from oxidation of one glucose molecule during respiration is
a. 8 b. 30 c. 32 d. 38
- The hormone that helps in seed germination is
a. Auxin b. Cytokinin c. Gibberellins d. ABA

II. Fill in the blanks:

(5 x 1 = 5)

- Water transport through the living components of cells is called -----.
- The element essential in synthesis of chlorophyll pigments is -----.
- Photolysis of water is facilitated by pigment system -----.
- RQ value for carbohydrates is -----.
- The hormone that helps in chlorophyll preservation is -----.

III. State Whether True or False:

(4 x 1 = 4)

- Water potential of pure water is always one.
- Boron is involved in translocation of solutes.
- CAM plant is also a C₄ plant.
- Ethylene is a gaseous hormone.

IV. Match the following:

(4 x 1 = 4)

- | | |
|------------------------|---------------------------|
| 15. Indole Acetic acid | a. Stomata closure |
| 16. Malic acid | b. C ₄ pathway |
| 17. Oxalo acetic acid | c. CAM |
| 18. Abscisic acid | d. Apical dominance |

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

(6 x 3 = 18)

19. Isotonic solute concentration
20. Florigen
21. Nitrate reductase
22. Red drop mechanism
23. Cyanide respiration
24. Sigmoidal curve
25. Pfr and Pr
26. RuBp oxygenase
27. Fixed ions

SECTION – B

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

28. Explain the theory of photosynthesis with reference to stomatal movement.
29. What is DPD? How is it determined?
30. Tabulate the importance and deficiency symptoms of any four macronutrients.
31. Illustrate with labelling the reactions of Non-cyclic photophosphorylation.
32. Write short notes on the reactions of anaerobic respiration.
33. Briefly write about the flowering responses to light stimulus.

SECTION – C

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

(2 x 20 = 40)

34. Tabulate the differences between C₃ and C₄ pathways. Add notes on the factors affecting photosynthesis.
35. Write detailed notes on legume – *Rhizobium* interaction in the process of biological nitrogen fixation.
36. Illustrate and explain the citric acid cycle. State the energy budget for citric acid cycle.
37. Bring out the bioassay, physiological effects and applications of cytokinins.
