

**B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, MARCH 2015****Sixth Semester****Core Course—PLANT PHYSIOLOGY AND BIOCHEMISTRY**

[Common for B.Sc. Botany Model – I, Model – II and B.Sc. Botany and  
Biotechnology (Double Core)]

Time : Three Hours

Maximum Weight : 25

**Part A (Objective Type Questions)***Answer all questions.**Each bunch of four questions carries a weight of 1.*

I. 1 "Physical basis of life" stands for :

- (a) Cytoplasm. (b) Protoplasm.  
(c) Nucleoplasm. (d) Vacuoles.

2 Who  $OP = TP$ , the DPD will be :

- (a) Zero. (b) Infinite.  
(c) Equal. (d) Double.

3 Existence of two photochemical systems in photosynthesis was proved by :

- (a) Emerson. (b) Hill.  
(c) Arnon. (d) Blackman.

4 Which is responsible for guttation ?

- (a) Osmosis. (b) Root pressure.  
(c) Transpiration. (d) Photosynthesis.

II. 5 Function of light in photosynthesis :

- (a) Photolysis of water. (b) Assimilation of  $CO_2$ .  
(c) Production of starch. (d) Activation of enzymes.

6 The enzyme which catalyses the photosynthetic  $C_4$  cycle is :

- (a) RUDP carboxylase. (b) PEP carboxylase.  
(c) Carbonic anhydrase. (d) Pyruvate.

**Turn over**

- 7 The hormone associated with ripening of fruits :
- (a) Auxin. (b) Gibberillin.  
(c) Ethylene. (d) Cytokinin.
- 8 In photosynthesis PGAL is formed from PGA by a process of :
- (a) Oxidation. (b) Reduction.  
(c) Photolysis. (d) Excitation.

III. Fill in the blanks :

- 9 Complete oxidation of a glucose molecule yields \_\_\_\_\_ ATP molecule.  
10 Leaf fall starts when the amount of \_\_\_\_\_ hormone decreases.  
11 The hormone responsible for vernalization is \_\_\_\_\_.  
12 The metal ion involved in the stomatal regulation is \_\_\_\_\_.

IV. State True or False :

- 13 Photosynthesis is maximum in green light.  
14 Selectively permeable membrane allows the passage of solvent only.  
15 Capillary water is absorbed from soil by plants.  
16 RuBP is the carbon acceptor in  $C_3$  plants.

(4 × 1 = 4)

**Part B (Short Answer Questions)**

*Answer any five of the following.  
Each question carries a weight of 1.*

- 17 What is Donnan equilibrium ?  
18 What is the role of allelo chemicals in plants ?  
19 What is Vernalization ?  
20 What is plasmolysis ?  
21 What is hormonal effect of gibberlin on plants ?  
22 What is beta oxidation ?  
23 What are anti-transpirants ?  
24 What are the common sugars seen in plants ?

(5 × 1 = 5)

**Part C (Short Essay/Problem Solving Type Questions)**

*Answer any four of the following.  
Each question carries a weight of 2.*

- 25 Discuss the significance of transpiration.
- 26 Describe the root pressure theory of ascent of sap.
- 27 Explain starch-sugar hypothesis of transpiration.
- 28 Explain the mechanism of enzyme action.
- 29 Differentiate active and passive absorption of water.
- 30 Describe Phloem loading and unloading.

(4 × 2 = 8)

**Part D (Essay Type Questions)**

*Answer any two of the following.  
Each question carries a weight of 4.*

- 31 What is meant by limiting factors ? How do they affect the rate of photosynthesis ?
- 32 What are essential elements ? Mention their importance.
- 33 Explain the factors affecting enzyme action.

(2 × 4 = 8)