

[This question paper contains 2 printed pages.]

**Your Roll No.....**

**Sr. No. of Question Paper : 5545**

**J**

Unique Paper Code : 2162013602

Name of the Paper : Plant Biochemistry and Metabolism

Name of the Course : **Botany**

Semester : VI

Duration : 2 Hours

Maximum Marks : 60

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **four** questions in all. Question Number **1** is compulsory. Answer **all** parts of a question together.

1. (a) Fill in the blanks : (5x1=5)

- (i) Chemiosmotic theory for the synthesis of ATP was proposed by \_\_\_\_\_ .
- (ii) The number of ATP produced when a molecule of acetyl-CoA is completely oxidized is equal to \_\_\_\_\_ .
- (iii) Enzyme that catalyzes the cleavage of isocitrate into glyoxylate and succinate in glyoxylate metabolism is \_\_\_\_\_ .
- (iv) Emission of light of higher wavelength light by chlorophyll pigments when exposed to blue light is called \_\_\_\_\_ .
- (v) Glycolysis takes place in \_\_\_\_\_ of the plant cell.

(b) Expand the following : (5x1=5)

- (i) FAD
- (ii) LHC
- (iii) GTP
- (iv) RUBISCO
- (v) ACP

*P.T.O.*

- (c) Define (**Any five**) (5x1=5)
- (i) Reaction centre
  - (ii) Alpha oxidation
  - (iii) Apoenzyme
  - (iv) Absorption Spectrum
  - (v) Michaelis Menten Constant
  - (vi) Fermentation
  - (vii) Saturated fatty acids
2. Differentiate between the following (**Any five**) : (5x3=15)
- (a) Cyclic and non-cyclic photophosphorylation
  - (b) Competitive and allosteric enzyme inhibition
  - (c) Substrate level phosphorylation and oxidative phosphorylation
  - (d) Nitrate reductase and nitrite reductase
  - (e) Light reaction and dark reaction of photosynthesis
  - (f) Synthesis of sucrose and starch
3. Write short notes on the following (**Any three**) : (5x3=15)
- (a) Coupled reaction
  - (b) Ammonia assimilation
  - (c) Photorespiration
  - (d) Emerson enhancement effect
  - (e) Cyanide resistant respiration
4. (a) Explain the carbon fixation process in C<sub>4</sub> plants. How is it different from C<sub>3</sub> plants? (8)
- (b) Describe the Citric acid cycle (with the help of flowchart). (7)
5. (a) Explain oxidative pentose phosphate pathway through a schematic diagram. Give its significance to plants. (8)
- (b) Discuss the process of Beta-oxidation of fatty acids in a plant cell. (7)