

[This question paper contains 3 printed pages.]

1307

Your Roll No. ....

B.Sc. (Hons.)/III

A

BOTANY – Paper XII

(Plant Metabolism)

(Admissions of 2004 & onwards)

Time : 3 Hours

Maximum Marks : 38

*(Write your Roll No. on the top immediately  
on receipt of this question paper.)*

*Answer Five questions in all,  
including Q. No. 1 which is compulsory.*

1. Fill in the blank spaces with appropriate words in the following statements :

- (i) PEP carboxylase has higher affinity for  $\text{CO}_2$  than \_\_\_\_\_.
- (ii) Bacteroids are surrounded by \_\_\_\_\_ membrane in nodules.
- (iii) \_\_\_\_\_ enzyme is not proteinaceous in nature.
- (iv) \_\_\_\_\_ net ATP molecules are produced during glycolysis (glucose  $\rightarrow$  2 molecules of pyruvate).

P.T.O.

- (v)  $\beta$ -oxidation of 16 carbon fatty acid molecule will provide \_\_\_\_\_ number of acetyl CoA molecule.
- (vi) \_\_\_\_\_ reactions do not obey second law of thermodynamics. (1×6=6)
2. (i) Describe the process of nodulation in legumes with the help of suitable diagrams. (4)
- (ii) Give an account of  $\beta$ -oxidation of fatty acids. (4)
3. (i) Explain chemiosmotic mechanism of ATP synthesis in mitochondria. (4)
- (ii) Describe briefly pentose phosphate pathway. (4)
4. Comment and elaborate **any two** of the followings :
- (i) Enzymes are biological catalysts .
- (ii) Respiratory Quotient of the succulent plants is always high
- (iii) ATP is called as energy currency of the cell (4×2=8)
5. Differentiate between **any four** of the followings :
- (i) Active sites and allosteric sites
- (ii) Photo phosphorylation and oxidative phosphorylation

- (iii)  $C_4$  and CAM pathway
- (iv) Cofactor and coenzyme
- (v) PSI and PSII
- (vi) Nitrate reductase and nitrite reductase  
(2×4=8)

6. Write short notes on **any four** of the following :

- (i) Isozymes
- (ii) Cyanide-resistant respiration
- (iii) Transamination
- (iv) Red drop effect
- (v) Leg-haemoglobin
- (vi) Glyoxylate pathway  
(2×4=8)

7. Explain **any four** of the followings :

- (i) Z-scheme of the light reactions
- (ii) Activation energy
- (iii) Michaelis-Menten equation
- (iv) Compensation point
- (v) Role of Acetyl CoA carboxylase in synthesis of fatty acids
- (vi) Role of RUBISCO  
(2×4=8)