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**6 SEM TDC BOTH (CBCS) C 13**

**2 0 2 2**

( June/July )

**BOTANY**

( Core )

Paper : C-13

( **Plant Metabolism** )

Full Marks : 53

Pass Marks : 21

Time : 3 hours

*The figures in the margin indicate full marks  
for the questions*

1. (a) Choose the correct answer : 1×3=3

(i) In photosynthesis, oxygen is liberated due to

- (1) reduction of CO<sub>2</sub>
- (2) photolysis of water
- (3) hydrolysis of carbohydrate
- (4) breakdown of chlorophyll

( 2 )

(ii) In root nodule of legumes, leg hemoglobin is found in

- (1) bacteroids
- (2) cytosol of infected nodule cell
- (3) cytosol of uninfected nodule cell
- (4) All of the above

(iii) The net gain of ATP molecules in glycolysis is

- (1) 0
- (2) 2
- (3) 4
- (4) 8

(b) Fill in the blanks : 1×2=2

(i) All photosynthetic pigments except chlorophyll-a are called \_\_\_\_\_.

(ii) The process of conversion of ammonia into nitrate is called \_\_\_\_\_.

2. Write short notes on the following : 4×3=12

- (a) Covalent modulation
- (b) Photosynthetic pigments
- (c) Factors affecting respiration

3. Write explanatory notes on any *two* of the following : 6×2=12

- (a)  $\beta$ -oxidation of fatty acids
- (b) Chemiosmotic mechanism of ATP synthesis
- (c) Synthesis and degradation of sucrose
- (d) Plant cell signal transduction

4. Describe schematically the pentose phosphate pathway of glucose oxidation. What is its significance? 9+3=12

Or

Differentiate between anabolism and catabolism. Explain the pathways of anabolism and catabolism. How can the pathway be regulated? 2+8+2=12

5. What are the chief sources of nitrogen for higher plants? Describe the mechanism of nitrogen fixation by free living and symbiotic bacteria. Explain the ecological significance of this process. 2+7+3=12

Or

What is 'dark reaction' in photosynthesis? Describe the mechanism of dark reaction in  $C_3$  plants. 2+10=12

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