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(6th Semester)

BOTANY

ELEVENTH PAPER

(Plant Metabolism, Biochemistry and Thermodynamics)

Full Marks : 55

Time : 2½ hours

(PART : A—OBJECTIVE)

(*Marks* : 20)

The figures in the margin indicate full marks for the questions

SECTION—A

(*Marks* : 5)

Tick (✓) the correct answer in the brackets provided : 1×5=5

1. During DNA replication, helicase

(a) adds new nucleotides to the lagging strand ( )

(b) adds new nucleotide to the leading strand ( )

(c) removes supercoiling ahead of the replication fork ( )

(d) unwinds the DNA strand ( )

2. Which of the following enzyme is not a requirement of protein synthesis?

(a) Amino acyl-tRNA synthetase ( )

(b) Translocase ( )

(c) Topoisomerase ( )

(d) Peptidyl transferase ( )

3. Which of the following is naturally occurring gaseous hormone?

(a) Auxin ( )

(b) Gibberellin ( )

(c) Cytokinin ( )

(d) Ethylene ( )

4. Photosynthetic pigments are located in the

(a) stroma ( )

(b) thylakoid ( )

(c) lamella ( )

(d) cytosol ( )

5. The entropy of an isolated system can never

(a) decrease ( )

(b) increase ( )

(c) be zero ( )

(d) None of the above ( )

SECTION—B

(*Marks* : 15)

Write notes on the following : 3×5=15

1. DNA polymerase

2. Isoenzymes

3. Abscisic acid

4. Significance of pentose phosphate pathway

5. Concept of internal energy

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

The figures in the margin indicate full marks for the questions

1. What is nitrogen metabolism? Give an account on biological nitrogen fixation. 7

OR

Write short notes on the following : 3½+3½=7

(a) Biosynthesis of pyrimidines

(b) Synthesis of starch

2. Write an explanatory note on the mechanism of enzyme action. 7

OR

Briefly describe the following : 3½+3½=7

(a) Secondary structure of proteins

(b) Coenzymes

3. Describe the mode of action of auxins. 7

OR

Write short notes on the biosynthesis : 3½+3½=7

(a) Cytokinin

(b) Ethylene

4. Explain the ATPase chemiosmotic theory of ATP synthesis. 7

OR

Write short notes on the following : 3½+3½=7

(a) Photosystem

(b) C_2 cycle

5. Describe the law of thermodynamics. 7

OR

Write short notes on the following : 3½+3½=7

(a) Free energy

(b) Enthalpy change

★ ★ ★