2025

(CBCS)

(6th Semester)

BOTANY

ELEVENTH PAPER

(Plant Metabolism, Biochemistry and Thermodynamics)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(SECTION : A—OBJECTIVE)

(*Marks* : 10)

Tick (✓) the correct answer in the brackets provided : 1×10=10

1. On the leading strand, RNA primer is synthesized by

(a) RNA polymerase ( )

(b) primosome ( )

(c) DNA polymerase ( )

(d) helicase ( )

2. Purine or pyrimidine bases, together with pentose sugar form

(a) nucleosides ( )

(b) deoxyribose sugars ( )

(c) nucleotides ( )

(d) ribose sugars ( )

3. The chemical bond involved in primary structure of protein is

(a) hydrophobic bond ( )

(b) hydrogen bond ( )

(c) peptide bond ( )

(d) ionic bond ( )

4. Lock and key hypothesis was proposed by

(a) Emil Fischer ( )

(b) Koshland ( )

(c) Michaelis ( )

(d) All of them ( )

5. Which of the following is involved in fruit ripening?

(a) Auxin ( )

(b) Gibberellin ( )

(c) Ethylene ( )

(d) Cytokinin ( )

6. IAA is synthesized from

(a) indole acetaldehyde ( )

(b) amine oxidase ( )

(c) indole acetic acid ( )

(d) aromatic amino acid tryptophan ( )

7. Internally the chloroplast is filled with hydrophilic matrix called as

(a) thylakoid ( )

(b) stroma ( )

(c) cytosol ( )

(d) granum ( )

8. The cyclic electron transport takes place in

(a) pigment system I (PS I) ( )

(b) pigment system II (PS II) ( )

(c) Both of the above ( )

(d) None of the above ( )

9. The measurement of the disorder of the system is

(a) enthalpy ( )

(b) free energy ( )

(c) entropy ( )

(d) internal energy ( )

10. Enthalpy change refers to

(a) heat transfer at constant pressure ( )

(b) heat transfer at constant temperature ( )

(c) randomness of a system ( )

(d) heat transfer at high pressure ( )

(SECTION : B—SHORT ANSWERS)

(*Marks* : 15)

Write short notes on the following : 3×5=15

UNIT—I

1. Synthesis of cellulose

OR

2. DNA replication

UNIT—II

3. Isoenzymes

OR

4. Allosteric enzymes

UNIT—III

5. Biosynthesis of gibberellin

OR

6. Mode of action of ethylene

UNIT—IV

7. Light-harvesting complex

OR

8. Pentose phosphate pathway

UNIT—V

9. Internal energy

OR

10. Free energy

(SECTION : C—DESCRIPTIVE)

(*Marks* : 50)

Answer the following : 10×5=50

UNIT—I

1. Write an account on each of the following : 5+5=10

(a) Biological nitrogen fixation

(b) Synthesis of starch

OR

2. Write notes on the following : 5+5=10

(a) Biosynthesis of pyrimidines

(b) Nitrogen metabolism

UNIT—II

3. What are enzymes? Give an account on the mechanism of enzyme action. 2+8=10

OR

4. Write notes on the following : 10

(a) Secondary structure of protein

(b) Coenzyme

UNIT—III

5. Describe on the biosynthesis and mode of action of auxin. 10

OR

6. Write an account on each of the following : 5+5=10

(a) Mode of action of cytokinin

(b) Biosynthesis of abscisic acid

UNIT—IV

7. Describe an illustrated mechanism of C_2 cycle. 10

OR

8. Write notes on the following : 5+5=10

(a) Cyclic electron transport system

(b) ATPase chemiosmotic theory of ATP synthesis

UNIT—V

9. Describe the following : 5+5=10

(a) Entropy change

(b) First law of thermodynamics

OR

10. Describe the following : 5+5=10

(a) Enthalpy

(b) Second law of thermodynamics

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