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(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. The transfer of amino group (-NH₂) of amino acid to carbonyl group of amino acid is called

- (a) transamination ()
- (b) reductive amination ()
- (c) amination ()
- (d) nitrate assimilation ()

2. The environment provided by the wet leaf surface for growth of microorganisms is called

(a) lithosphere ()

(b) rhizosphere ()

(c) phyllosphere ()

(d) hydrosphere ()

3. Certain enzymes, in addition to their protein structure, have a non-protein group attached to them, are called

(a) coenzymes ()

(b) apoenzymes ()

(c) allosteric enzymes ()

(d) isoenzymes ()

4. Those enzymes which act away from the site of synthesis are known as

(a) endoenzymes ()

(b) exoenzymes ()

(c) coenzymes ()

(d) allosteric enzymes ()

5. Two known antagonists that inhibit ethylene action are CO_2 and

(a) Ca^{2+} ()

(b) Ag^{2+} ()

(c) Mn^{2+} ()

(d) Mg^{2+} ()

6. Synthesis of ABA involves the cleavage of a C₄₀ precursor, a
- (a) xanthophyll carotenoid ()
 - (b) farnesyl pyrophosphate ()
 - (c) violaxanthin ()
 - (d) xanthoxin ()
7. The process of photorespiration is accomplished in three different cell organelles, viz., chloroplasts, peroxisomes and
- (a) bundle sheath cells ()
 - (b) mitochondria ()
 - (c) cytoplasm ()
 - (d) Golgi apparatus ()
8. In the thylakoid membrane, chlorophyll molecules are organized into clusters (with other pigments and proteins), are called
- (a) antenna ()
 - (b) reaction centres ()
 - (c) photosystems ()
 - (d) light-harvesting complex ()
9. The sum of potential energy and kinetic energy present in a system is called
- (a) Gibbs energy ()
 - (b) entropy ()
 - (c) free energy ()
 - (d) internal energy ()

10. A process where the pressure of the system remains constant, both the volume and temperature change, is called

(a) isobaric ()

(b) isothermal ()

(c) adiabatic ()

(d) isochoric ()

(SECTION : B—SHORT ANSWERS)

(Marks : 15)

Write short notes on the following :

3×5=15

UNIT—I

1. Synthesis of nucleic acids

OR

2. Nitrogen metabolism

UNIT—II

3. Basic aspects of protein conformation

OR

4. Enzyme kinetics

UNIT—III

5. Phytohormones

OR

6. Indole pyruvic acid (IPyA) pathway of auxin biosynthesis

UNIT—IV

7. Non-cyclic electron transport

OR

8. Photosynthetic apparatus

UNIT—V

9. Concept of free energy

OR

10. Isolated system

(SECTION : C—DESCRIPTIVE)

(Marks : 50)

Answer the following questions :

10×5=50

UNIT—I

1. Elucidate the mechanism of DNA replication.

10

OR

2. Write accounts on the following :

5+5=10

(a) Synthesis of cellulose

(b) Biosynthesis of purines

UNIT—II

3. What are proteins? Give an explanatory note on protein synthesis.

2+8=10

OR

4. Write accounts on the following :

5+5=10

(a) Lock and key mechanism

(b) Allosteric enzymes

UNIT—III

5. Give an account on biosynthesis and mode of action of gibberellins. 10

OR

6. Write short notes on the following :

5+5=10

- (a) Biosynthesis of ethylene
(b) Mode of action of abscisic acid

UNIT—IV

7. Describe the mechanism of pentose phosphate pathway.

10

OR

8. Write short notes on the following :

5+5=10

- (a) Harvestation of lights
(b) Chemiosmosis

UNIT—V

9. What do you mean by thermodynamics? Describe the three laws of thermodynamics.

2+8=10

OR

10. Write accounts on the following :

5+5=10

- (a) Internal energy
(b) Enthalpy
