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(CBCS)

(6th Semester)

BOTANY

ELEVENTH PAPER

(Plant Metabolism, Biochemistry, Thermodynamics)

Full Marks : 75

Time : 3 hours

(PART : A—OBJECTIVE)

(*Marks : 25*)

The figures in the margin indicate full marks for the questions

SECTION—A

(*Marks : 10*)

Tick (✓) the correct answer in the brackets provided :

1×10=10

1. Purine/Pyrimidine bases, together with pentose sugar form

- (a) nucleotides ()
- (b) nucleosides ()
- (c) ribose sugars ()
- (d) deoxyribose sugars ()

2. The replication of lagging strand generates small polynucleotide fragments called

- (a) replication bubbles ()
- (b) leading strand ()
- (c) Okazaki fragments ()
- (d) replication fork ()

3. The genetic information in the DNA is transferred to a complementary sequence of RNA and the process is called
- (a) transcription ()
 - (b) translation ()
 - (c) replication ()
 - (d) termination ()
4. Different variants of the same enzyme having identical functions are called
- (a) isozymes ()
 - (b) coenzymes ()
 - (c) allosteric enzymes ()
 - (d) apoenzymes ()
5. Which of the following is involved in fruit ripening?
- (a) Auxin ()
 - (b) Gibberellin ()
 - (c) Ethylene ()
 - (d) Cytokinin ()
6. The primary precursor of IAA in plants is generally held to be
- (a) indole pyruvic acid (IpyA) ()
 - (b) indole acetaldoxime (IAOx) ()
 - (c) tryptophan ()
 - (d) glutamine ()
7. Synthesis of ATP via electron-transport system is called
- (a) oxidative decarboxylation ()
 - (b) non-cyclic photophosphorylation ()
 - (c) cyclic electron transport ()
 - (d) oxidative phosphorylation ()
8. Internally the chloroplast is filled with hydrophilic matrix called as
- (a) thylakoid ()
 - (b) granum ()
 - (c) cytosol ()
 - (d) stroma ()
9. 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 ()

10. If a reaction is being carried out at constant temperature and pressure, the change in quantity is called

- (a) entropy ()
- (b) enthalpy ()
- (c) free energy ()
- (d) internal energy ()

SECTION—B

(Marks : 15)

Write short notes on the following :

3×5=15

1. Associative N-fixation

OR

Synthesis of cellulose

2. Tertiary structure of proteins

OR

Michaelis-Menten equation

3. Plant growth hormones

OR

Mode of action of ethylene

4. Harvestation of light energy

OR

Photorespiration

5. Thermodynamics

OR

Concept of entropy change

(PART : B—DESCRIPTIVE)

(Marks : 50)

The figures in the margin indicate full marks for the questions

1. What is DNA replication? Elucidate the mechanism of DNA replication.

2+8=10

OR

Write accounts on any *two* of the following :

5×2=10

(a) Synthesis of starch

- (b) Synthesis of amino acids
- (c) Biological nitrogen fixation

2. Write a comprehensive account on protein synthesis. 10

OR

Write accounts on any *two* of the following : 5×2=10

- (a) Enzyme kinetics
- (b) Lock and key model of enzyme action
- (c) Allosteric enzymes

3. What are auxins? Give an account on its biosynthesis and mode of action. 2+8=10

OR

Write short notes on any *two* of the following : 5×2=10

- (a) Biosynthesis of gibberellins
- (b) Biosynthesis of cytokinins
- (c) Mode of action of abscisic acids

4. Describe the mechanism of pentose-phosphate pathway. 10

OR

Write short notes on any *two* of the following : 5×2=10

- (a) Photosynthetic apparatus
- (b) Reaction centers
- (c) Structure of ATPase

5. Describe the laws of thermodynamics. 10

OR

Write accounts on any *two* of the following : 5×2=10

- (a) Internal energy
- (b) Free energy
- (c) Enthalpy
