2022

(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 (—NH_2) of amino acid to carbonyl group of amino acid is called

(a) transamination ( )

(b) reductive amination ( )

(c) amonification ( )

(d) nitrate assimilation ( )

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

(a) DNA polymerase ( )

(b) RNA polymerase ( )

(c) primasome ( )

(d) helicase ( )

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

(a) endoenzymes ( )

(b) exoenzymes ( )

(c) coenzymes ( )

(d) allosteric enzymes ( )

5. The main pathway of gibberellic acid synthesis has been worked out in

(a) *Cannabis sativa* ( )

(b) *Phoenix dactylifera* ( )

(c) *Gibberella fujikuroi* ( )

(d) *Gibberella caudatus* ( )

6. The key enzyme which catalyzes the conversion of SAM and MTA in regulating ethylene biosynthesis is

(a) polygalacturonase ( )

(b) chlorophyllase ( )

(c) ACC synthase ( )

(d) adenosylmethionase ( )

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

(a) thylakoid ( )

(b) granum ( )

(c) cytosol ( )

(d) stroma ( )

8. Chlorophyll b is almost identical to chlorophyll a except it has a formyl group in place of

(a) amino group ( )

(b) methyl group ( )

(c) keto group ( )

(d) phosphate group ( )

9. The sum of potential energy and kinetic energy present in the system is called

(a) Gibbs energy ( )

(b) entropy ( )

(c) free energy ( )

(d) internal energy ( )

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—SHORT NOTE)

(*Marks* : 15)

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

UNIT—I

1. Synthesis of starch

OR

2. DNA polymerase

UNIT—II

3. Proteins

OR

4. Allosteric enzymes

UNIT—III

5. Phytohormones

OR

6. Biosynthesis of gibberellins

UNIT—IV

7. Cyclic electron transport

OR

8. Light harvesting complex

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. What is nitrogen metabolism? Give an account on nitrogen metabolism. 2+8=10

OR

2. Write an account on each of the following : 5×2=10

(a) Synthesis of cellulose

(b) Biosynthesis of pyrimidines

UNIT—II

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

OR

4. Write an account on each of the following : 5×2=10

(a) Secondary structure of proteins

(b) Initiation of protein synthesis

UNIT—III

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

OR

6. Write short notes on the following : 5×2=10

(a) Biosynthesis of ethylene

(b) Mode of action of auxins

UNIT—IV

7. Describe the mechanism of pentose phosphate pathway. 10

OR

8. Write short notes on the following : 5×2=10

(a) Reaction centers

(b) Chemiosmosis

UNIT—V

9. Describe the three laws of thermodynamics. 10

OR

10. Write an account on each of the following : 5×2=10

(a) Internal energy

(b) Entropy change

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