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(CBCS)

(3rd Semester)

BOTANY

THIRD PAPER

(Plant Physiology, Biochemistry and Ecology)

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. Osmotic pressure is higher in

- (a) isotonic solution ()
- (b) hypertonic solution ()
- (c) hypotonic solution ()
- (d) None of the above ()

2. The rate of photosynthesis is highest in

- (a) red light ()
- (b) blue light ()
- (c) polychromatic light ()
- (d) green light ()

3. The net gain of ATP molecules in oxidation of one molecule of glucose in glycolysis is

- (a) 1 ()
- (b) 2 ()
- (c) 3 ()
- (d) 4 ()

4. The protein part of the enzyme is called as
- (a) apoenzyme ()
 (b) holoenzyme ()
 (c) prosthetic group ()
 (d) None of the above ()
5. The primary physiological effect of auxin in plants is
- (a) cell division ()
 (b) elongation of internodes ()
 (c) elongation of cells in shoot ()
 (d) None of the above ()
6. Dark period is critical in
- (a) short-day plants ()
 (b) long-day plants ()
 (c) day-neutral plants ()
 (d) All of the above ()
7. Which of the following is a sulphur-containing amino acid?
- (a) Glycine () (b) Methionine ()
 (c) Threonine () (d) All of the above ()
8. Which of the following is not a reducing sugar?
- (a) Glucose () (b) Sucrose ()
 (c) Maltose () (d) Ribose ()
9. Which of the following pyramids is always upright?
- (a) Pyramid of energy ()
 (b) Pyramid of biomass only ()
 (c) Pyramid of numbers only ()
 (d) Pyramid of numbers and biomass ()
10. In xerosere, the pioneer community is
- (a) forest stage ()
 (b) shrub stage ()
 (c) foliose lichen stage ()
 (d) crustose lichen stage ()

(SECTION : B—SHORT ANSWERS)

(Marks : 15)

3×5=15

Write short notes on the following :

UNIT—I

1. Diffusion pressure deficit

OR

2. Active transport of solutes

UNIT—II

3. TCA cycle

OR

4. Denitrification

UNIT—III

5. Effect of gibberellins

OR

6. Causes of senescence

UNIT—IV

7. Translation

OR

8. Classification of amino acids

UNIT—V

9. Energy flow in ecosystem

OR

10. Raunkiaer's life forms

(SECTION : C—DESCRIPTIVE)

(Marks : 50)

Answer the following questions :

10×5=50

UNIT—I

1. What is transpiration? Describe the mechanism of stomatal transpiration.

2+8=10

OR

2. Write short notes on any *two* of the following :

5×2=10

(a) Photorespiration

(b) Plasmolysis

(c) C₄ and CAM pathways of carbon fixation

UNIT—II

3. What are enzymes? Describe the mechanism of enzymes action.

2+8=10

OR

4. Write notes on any *two* of the following :

5×2=10

(a) Oxidative phosphorylation

(b) Enzyme nomenclature

(c) Assimilation of nitrates and ammonia

UNIT—III

5. What is photoperiodism? Describe the phenomenon of photoperiodism in higher plants.

2+8=10

OR

6. Write notes on any *two* of the following :

5×2=10

(a) Seed dormancy

(b) Function of phytochrome

(c) Physiological role of abscissic acid

UNIT—IV

7. What are proteins? Describe the mechanism of protein synthesis in plant cell. 2+8=10

OR

8. Write on any *two* of the following : 5×2=10
- (a) General structure of lipids
 - (b) Classification of carbohydrates
 - (c) Semiconservative replication of DNA

UNIT—V

9. Define environmental pollution. Describe the causes and control of air pollution. 2+8=10

OR

10. Write notes on any *two* of the following : 5×2=10
- (a) Food chain
 - (b) Types of ecological successions
 - (c) Biogeochemical cycle of carbon
