2024

(NEP–2020)

(2nd Semester)

BOTANY (MAJOR)

(Biochemistry and Cell Biology)

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. Which of the following amino acids is not a chiral molecule?

(a) Cysteine ( ) *(b)* Glycine ( )
(c) Lysine ( ) *(d)* Valine ( )

2. Which class of carbohydrates cannot be hydrolysed further?

(a) Monosaccharide ( )

(b) Disaccharide ( )

(c) Polysaccharide ( )

(d) Proteoglycan ( )

3. Which one of the following carbohydrates does not have any essential nutritional value?

(a) Cellulose ( )

(b) Sucrose ( )

(c) Glycogen ( )

(d) Dextrin ( )

4. ATP is made up of

(a) adenine ( )

(b) ribose ( )

(c) phosphate group ( )

(d) All of the above ( )

5. Which nitrogen base is not found in DNA?

(a) Thymine ( )

(b) Uracil ( )

(c) Guanine ( )

(d) Cytosine ( )

6. Nuclear DNA replicates in the _____ phase.

(a) G_2 ( ) (b) M ( )

(c) S ( ) (d) G_1 ( )

7. Plasma membrane is made up of which organic molecules?

(a) Carbohydrate ( )

(b) Vitamin ( )

(c) Roughage ( )

(d) Lipid and protein ( )

8. _____ begins when the two sister chromatids undergo parting to opposite sides.

(a) Prophase ( )

(b) Anaphase ( )

(c) Telophase ( )

(d) Metaphase ( )

9. Ribosomes are sites for

(a) fat synthesis ( )

(b) photosynthesis ( )

(c) protein synthesis ( )

(d) respiration ( )

10. The site of cellular respiration in a cell is

(a) mitochondria ( )

(b) nucleolus ( )

(c) chloroplast ( )

(d) vacuole ( )

(SECTION : B—SHORT ANSWERS)

(*Marks* : 15)

Write short notes on *five* of the following, taking at least *one* from each unit : 3×5=15

UNIT—I

1. Monosaccharides

2. Essential and non-essential amino acids

UNIT—II

3. Enzyme nomenclature

4. General composition of nucleic acids

UNIT—III

5. Basic components of cell theory

6. Intrinsic and extrinsic membrane protein

UNIT—IV

7. Powerhouse of the cell

8. Function of plastids

(SECTION : C—DESCRIPTIVE)

(*Marks* : 50)

Answer *five* of the following questions, taking at least *one* from each unit : 10×5=50

UNIT—I

1. Write a detailed account on the classification of proteins with examples. 10

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

   (a) Oligosaccharides

   (b) Polysaccharides

UNIT—II

3. Explain the structure and function of different types of nucleic acids. 10

4. Write short notes on the following : 5+5=10

(a) Classification of enzyme

(b) Structure of ATP

UNIT—III

5. Give an account on the structure and functions of the cell membrane. 10

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

(a) Structural component of the nucleus

(b) Origin of the cell theory

UNIT—IV

7. Describe the structure and function of the cytoskeleton in a plant cell. 10

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

(a) Endoplasmic reticulum

(b) Golgi apparatus

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