

2025

(NEP—2020)

(3rd Semester)

FUNDAMENTALS OF BIOLOGY

(Regular & Repeater)

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 basic concepts of the germ theory of disease was first proposed by

- (a) Galen ()
- (b) Aristotle ()
- (c) Girolamo Fracastoro ()
- (d) William Harvey ()

2. The founder of modern human anatomy is

- (a) Avicenna ()
- (b) Andreas Vesalius ()
- (c) Michael Servetus ()
- (d) William Harvey ()

3. In 1530, Fracastoro published a classic study of the venereal disease known to Italians as the

- (a) French disease ()
- (b) Plaque ()
- (c) Italian disease ()
- (d) German disease ()

4. In 1835, in a ship named H. M. S. Beagle, Darwin visited
- (a) Andaman Island ()
 - (b) The Galapagos Islands ()
 - (c) Easter Island ()
 - (d) The North Sentinel ()
5. Who called the single-celled organisms observed in pond scum as 'animalcules'?
- (a) Antonie van Leeuwenhoek ()
 - (b) Robert Hooke ()
 - (c) Matthias Schleiden ()
 - (d) Louis Pasteur ()
6. In the development of cell theory, who concluded that cells must arise from preexisting cells?
- (a) Theodor Schwann ()
 - (b) Antonie van Leeuwenhoek ()
 - (c) Rudolf Virchow ()
 - (d) Robert Hooke ()
7. In Mendel's experiments, which generation is known as the 'F1-generation'?
- (a) The original parent generation ()
 - (b) The first generation of offspring ()
 - (c) The second generation of offspring ()
 - (d) The third generation of offspring ()
8. Salvarsan is known for its use in treating which disease?
- (a) Tuberculosis ()
 - (b) Typhoid ()
 - (c) Syphilis ()
 - (d) Malaria ()

9. In a DNA double helix, the two strands are oriented as
- (a) complementary ()
 - (b) antiparallel ()
 - (c) duplex ()
 - (d) symmetrical ()
10. Tuberculosis is caused by
- (a) *Cyanobacterium tuberculosis* ()
 - (b) *Mycobacterium tuberculosis* ()
 - (c) *Diplococcus tuberculosis* ()
 - (d) *Streptococcus tuberculosis* ()

(SECTION : B—SHORT ANSWERS)

(Marks : 25)

Answer/Write short notes on *five* of the following, taking at least *one* from each Unit :

5×5=25

UNIT—I

1. What is Mendel's law of independent assortment?
2. Give a brief account on miasma theory.
3. Darwinism

UNIT—II

4. Impact of microscopy in cell biology
5. Importance of cell theory
6. Rudolf Virchow's contributions in the development of cell theory

UNIT—III

7. Explain the law of dominance with an example.
8. Discovery of Salvarsan
9. Explain the role of SCNT in the cloning of Dolly the sheep.

(SECTION : C—DESCRIPTIVE)

(Marks : 40)

Answer *four* questions, taking at least *one* from each Unit :

10×4=40

UNIT—I

1. Write an essay on the contributions of Aristotle in biology.
2. Write a detailed account on the germ theory of disease.
3. Describe the discovery of blood circulation and its significance.

UNIT—II

4. Describe in detail the events and major milestones in the discovery of cells.
5. Elaborate on how cell theory was formulated and its significance in biology.
6. Discuss the beginnings of genetics with reference to Mendel's experiments and discoveries.

UNIT—III

7. Give an account of the discovery and development of penicillin.
8. Describe in detail the discovery of streptomycin and the associated scientific controversies.
9. Explain the process of Dolly's cloning and discuss the ethical concerns it raised in science and society.
