

2024

(CBCS)

(5th Semester)

BIOCHEMISTRY

SIXTH PAPER

(Microbiology and Immunology)

(Revised)

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. *Micrographia*, the first drawing of a microorganism was published by

- (a) Robert Hooke ()
- (b) Antonie von Leeuwenhoek ()
- (c) Louis Pasteur ()
- (d) Spallanzani ()

2. An experiment that proves maggots did not arise spontaneously from decaying meat was performed by

- (a) John Needham ()
- (b) Spallanzani ()
- (c) Francesco Redi ()
- (d) Louis Pasteur ()

3. Which microorganism among the following perform photosynthesis by utilizing light?
- (a) Amoeba () (b) Viruses ()
(c) Cyanobacteria () (d) Fungi ()
4. Influenza virus is an example of
- (a) helical virus () (b) envelope virus ()
(c) polyhedral virus () (d) complex virus ()
5. Blood agar is an example of which of the following media?
- (a) Complex media () (b) Selective media ()
(c) Differential media () (d) Synthetic media ()
6. Aerobic microbes could be cultured using
- (a) pour plate method () (b) streak plate method ()
(c) spread plate method () (d) All of the above ()
7. The type of immunity where the organism receives external antibodies that help to protect them is called
- (a) active immunity () (b) hypersensitivity ()
(c) passive immunity () (d) adaptive immunity ()
8. The T cells that display CD4 glycoprotein on their surface membrane function are
- (a) T helper cells () (b) T cytotoxic cells ()
(c) T regulatory cells () (d) T inhibitor cells ()
9. ____ refers to how strongly an antigen binds to a certain antigen-binding site on an antibody.
- (a) Avidity () (b) Affinity ()
(c) Aggludity () (d) Specificity ()
10. Antibodies are produced by
- (a) T cytotoxic cells () (b) Macrophages ()
(c) Plasma cells () (d) Effector cells ()

(SECTION : B—SHORT ANSWERS)

(Marks : 15)

Write short notes on the following :

3×5=15

UNIT—I

1. Contributions of Joseph Lister

OR

2. Difference between Biogenesis and Abiogenesis

UNIT—II

3. Prions

OR

4. Binary fission

UNIT—III

5. Complex media

OR

6. Moist heat sterilization

UNIT—IV

7. Components of the innate immune system

OR

8. Eosinophils

UNIT—V

9. Activation of B cells

OR

10. Agglutination reactions

(SECTION : C—DESCRIPTIVE)

(Marks : 50)

Answer the following :

10×5=50

UNIT—I

1. State the four postulates of Robert Koch. How did these postulates set the gold standard for infectious diseases? 2+8=10

OR

2. Write short notes on : 5+5=10
(a) Germ theory of diseases
(b) Discovery of antibiotics

UNIT—II

3. Explain in detail the process of viral multiplication. 10

OR

4. Describe the various morphologies of fungi. Elaborate on its economic importance. 3+7=10

UNIT—III

5. Explain in detail the process of pure culture techniques. 10

OR

6. Give a brief account on the different phases of microbial growth. 10

UNIT—IV

7. Write a detailed note on the different classes of immunoglobulins giving suitable diagrams. 10

OR

8. Write short notes on : 5+5=10
(a) Properties of antigens
(b) Principle of autoimmunity

UNIT—V

9. Explain the different types of hypersensitivity. 10

OR

10. What are the different types of vaccines? Explain their principles. 10

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