This question paper contains **2** printed pages]

NB—11—2023

FACULTY OF SCIENCE

B.Sc. (Second Year) (Fourth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(New Pattern)

BIOTECHNOLOGY

(Applied and Medical Microbiology)

(Saturday, 02-12-2023) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.L. :— (*i*) *All* questions are compulsory.

(*ii*) Draw neat and well labelled diagrams if necessary.

1. Describe in detail different types and importance of microorganisms present in soil. 15

Or

(*a*) Describe procedure and applications of MPN test. 8

(*b*) Explain IMViC test and comment on its significance. 7

2. Explain in detail symbiotic and non-symbiotic nitrogen fixation. 15

P.T.O.

Or

(*a*) What are the main parts and functions of phosphorus cycle ? 8

(*b*) What are the *five* main processes of the carbon cycle ? 7

3. Define epidemiology and describe in detail sporadic, endemic and pandemic diseases. 15

Or

(*a*) What are the characteristics of opportunistic pathogens ? 8

(*b*) Describe types and symptoms of nosocomial infections. 7

4. Describe in detail pathogenesis, symptoms, diagnosis, preventive measures and chemotherapy for Tuberculosis. 15

Or

(*a*) Write symptoms and chemotherapy for Typhoid. 8

(*b*) Write pathogenesis and preventive measures of Malaria. 7

5. Write short notes on (any *three*) : 15

(*i*) Diagnosis and chemotherapy for cholera

(*ii*) Virulence factors

(*iii*) Food preservation techniques

(*iv*) Sulphur cycle

(*v*) Swine flu : Causes and symptoms.

This question paper contains **2** printed pages]

NB—05—2023

FACULTY OF SCIENCE

B.Sc. (Second Year) (Fourth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(New Pattern)

BIOTECHNOLOGY

(Basics of Enzymology)

(Thursday, 30-11-2023) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) *All* questions carry equal marks.

1. Discuss general characteristics and classification of enzyme with examples. 15

Or

(*a*) Explain metal activated enzymes with example. 8

(*b*) Discuss coenzymes and cofactor. 7

2. Define enzyme inhibition. Discuss various types of enzyme inhibition. 15

P.T.O.

Or

(*a*) Describe in detail mechanism of enzyme active site. 8

(*b*) Discuss mechanism of enzyme catalysis 7

3. Describe in detail immobilization of enzyme and its application in medicine. 15

Or

(*a*) Discuss purification of enzyme using ion exchange chromatography. 8

(*b*) Discuss in detail isolation of enzymes. 7

4. Describe in detail various factors affecting the enzyme activity. 15

Or

(*a*) Discuss Michealis-Menten-equation. 8

(*b*) Explain significance of Km and Vmax and LB plot. 7

5. Write short notes on (any *three*) 5×3=15

(*a*) Ultrafiltration

(*b*) Allosteric enzymes

(*c*) Transition State Hypotheses

(*d*) Enzyme unit

(*e*) Holoenzyme.

This question paper contains **2** printed pages]

NB—17—2023

FACULTY OF SCIENCE

B.Sc. (Second Year) (Fourth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(New Pattern)

BIOTECHNOLOGY

(Immunology and Virology)

(Tuesday, 05-12-2023) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. *:—* (*i*) Attempt *all* questions

(*ii*) All questions carry equal marks.

(*iii*) Represent your answers with well labelled diagrams.

1. Define Immunity. Describe in detail factors affecting on innate immune response. 15

Or

(*a*) Describe structure and functions of Lymph node. 8

(*b*) Write a note on Lymphocytes. 7

2. Describe in detail different classes of immunoglobulins. 15

P.T.O.

Or

(*a*) Write a note on Agglutination reactions. 8

(*b*) Write a note on Adjuvants. 7

3. Describe in detail ICTV-Classification of Viruses. 15

Or

(*a*) Write a note on cultivation of Viruses. 8

(*b*) Explain ultra-structure of Viruses. 7

4. Describe in detail life cycle of Lambda Phage. 15

Or

(*a*) Explain structure of Corona Virus. 8

(*b*) Write a note on vaccines 7

5. Write short notes on (any *three*) : 3×5=15

(*i*) Thymus

(*ii*) Antigen

(*iii*) Prions

(*iv*) TMV

(*v*) Ebola virus.

This question paper contains **2** printed pages]

NB—26—2023

FACULTY OF SCIENCE AND TECHNOLOGY

B.Sc. (Second Year) (Fourth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(New Pattern)

BIOTECHNOLOGY

(Plant Tissue Culture)

(Thursday, 7-12-2023) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *all* questions.

(*ii*) Figures to the right indicate full marks.

1. Define plant tissue culture. Explain in detail various media components and their role in plant tissue culture. 15

Or

(*a*) Explain various sterilization techniques used in plant tissue culture laboratory. 8

(*b*) Explain the concept of Totipotency. 7

P.T.O.

2. Describe in detail steps involved in Micropropagation. 15

Or

(*a*) Describe in detail various types of cultures. 8

(*b*) Explain in detail the technique of Pollen culture. 7

3. Explain in detail technique of Somatic hybridization and add a note on its applications. 15

Or

(*a*) Explain the technique of Somaclonal variation. 8

(*b*) Explain the technique of Embryo culture. 7

4. Explain the concept of Germplasm conservation. Explain in detail Cryopreservation. 15

Or

(*a*) Explain production of Plant secondary metabolites by Suspension culture. 8

(*b*) Explain the technique of Endosperm culture. 7

5. Write short notes on any *three* of the following : 15

(*a*) De-Differentiation

(*b*) Cybrids

(*c*) Synthetic Seed

(*d*) Metabolic Engineering.