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

PB—17—2024

FACULTY OF SCIENCE

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

APRIL/MAY, 2024

(New Course)

BIOTECHNOLOGY

(CBCS/New Pattern)

(Immunology and Virology) (CCBT–3D)

(Monday, 08-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

Note *:—* (*i*) *All* questions are compulsory.

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

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

1. Define immunity. Describe in detail factors affecting on Innate immunity. 15

Or

(*a*) Explain structure and function of lymph node. 8

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

2. Define antigen. Describe factors affecting on antigen. 15

Or

(*a*) Describe structure of Antibody. 8

(*b*) Explain Agglutination reactions. 7

P.T.O.

3. Define Virus ? Describe in detail ICTV (ICNV) classification of viruses. 15

Or

(*a*) Describe symmetry of virus. 8

(*b*) Write a note on Lysogeny cycle. 7

4. Describe structure, pathogenesis and treatment of HIV. 15

Or

(*a*) Describe TMV. 8

(*b*) Describe λ phage. 7

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

(*i*) Adaptive immunity

(*ii*) IgA

(*iii*) LHT Classification

(*iv*) Ebola virus

(*v*) Vaccines.

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

PB—11—2024

FACULTY OF SCIENCE

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

APRIL/MAY, 2024

(New Pattern)

BIOTECHNOLOGY

(Applied and Medical Microbiology)

(Friday, 05-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

Note *:—* (*i*) *All* questions are compulsory.

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

1. Describe in detail enumeration and significance of microorganisms in air. 15

Or

(*a*) Explain symbiotic and non-symbiotic type of nitrogen fixation. 8

(*b*) What are the main parts and functions of phosphorus cycle ? 7

2. Describe in detail presumptive, confirmative and complete test for coliforms. 15

Or

(*a*) Explain IMViC test and comment on its significance. 8

(*b*) Describe standard plate count technique. 7

3. What is epidemiology ? Describe in detail sporadic, endemic and pandemic diseases. 15

Or

(*a*) Describe types and symptoms of nosocomial infections. 8

(*b*) Explain types, symptoms and causes of waterborne infections. 7

4. Describe in detail morphology, symptoms, diagnosis, preventive measures and chemotherapy for swine flu. 15

Or

(*a*) Write about symptoms and preventive measures of malaria. 8

(*b*) Write about symptoms and preventive measures of AIDS. 7

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

(*i*) Typhoid

(*ii*) Carbon cycle

(*iii*) Microbial spoilage of food

(*iv*) Types of water

(*v*) Membrane filter technique.

This question paper contains **3** printed pages]

PB—25—2024

FACULTY OF SCIENCE

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

APRIL/MAY, 2024

(New Pattern)

BIOTECHNOLOGY

Paper–DSE BT-4D

(Basics of Computer)

(Friday, 12-4-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

1. Write basic rules for construction of histogram and construct histogram for the data given below : 15

Class	***f***
5 – 10	8
10 – 15	10
15 – 20	20
20 – 25	15

P.T.O.

Or

(*a*) How to calculate median for grouped and ungrouped frequency distribution data. 8

(*b*) Describe methods for graphical representation of data with suitable examples. 7

2. Write steps for calculation of standard deviation for individual series, discrete frequency distribution and continuous frequency distribution data. 15

Or

(*a*) Write definition, formula and examples of coefficient of variation. 8

(*b*) Write definition, formula and examples of range. 7

3. Explain in detail different features and applications of Linux operating system. 15

Or

(*a*) Explain the concept of binary, decimal, octal and hexadecimal number system. 8

(*b*) Describe basic design and architecture of a computer. 7

4. Write functions of different menus in MS-Word and add a note on applications of MS-Word. 15

Or

(*a*) Explain the concept of http and URL. 8

(*b*) Write applications of MS PowerPoint. 7

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

(*i*) Internet

(*ii*) Formulae in MS Excel

(*iii*) Definition and scope of biostatistics

(*iv*) Computation of mode

(*v*) Search engines.

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

PB—05—2024

FACULTY OF SCIENCE

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

APRIL/MAY, 2024

(New Course)

BIOTECHNOLOGY

(Basics of Enzymology)

(Wednesday, 03-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

Note *:—* (*i*) *All* questions are compulsory.

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

1. Describe in detail nomenclature and classification of enzyme. 15

Or

(*a*) Explain ribozymes and metal activated enzymes. 8

(*b*) Discuss general characteristics of enzyme. 7

2. Define enzyme inhibition. Discuss reversible and irreversible inhibition. 15

Or

(*a*) Describe mechanism of acid-base enzyme catalysis. 8

(*b*) Discuss enzyme active site and types of specificity. 7

3. Describe in detail immobilization of enzyme and its applications. 15

Or

(*a*) Discuss molecular weight determination of enzyme using SDS-PAGE 8

(*b*) Explain purification of enzyme using salt precipitation method. 7

4. Describe in detail Michealis-Menten equation. 15

Or

(*a*) Define Allosteric enzymes. Discuss Kinetics of Allosteric enzymes 8

(*b*) Discuss the significance of K_m and V_{max} 7

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

(*a*) Dialysis

(*b*) LB plot

(*c*) Lock and key model of enzyme

(*d*) Coenzymes and cofactor

(*e*) Enzyme activity.

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

PB—26—2024

FACULTY OF SCIENCE

B.Sc. (Fourth Semester) EXAMINATION

APRIL/MAY, 2024

(New Pattern)

BIOTECHNOLOGY

(Plant Tissue Culture)

(Friday, 12-4-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— *All* questions are compulsory.

1. Explain the concept of Plant tissue culture. Describe in detail organization of a plant tissue culture Laboratory. 15

Or

(*a*) Describe in detail various components of a plant tissue culture media. 8

(*b*) Explain various techniques of Sterilization used in P.T.C. 7

2. Describe in detail technique of Haploid production. 15

P.T.O.

Or

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

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

3. Explain in detail techniques of cell suspension culture for production of secondary metabolites. 15

Or

(*a*) Explain the technique of gametoclonal 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 the technique of Somatic hybridization. 8

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

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

(*a*) Somatic embryogenesis

(*b*) Somaclonal variation

(*c*) Synthetic Seed

(*d*) Cybrids.