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**VB—11—2024**

**FACULTY OF SCIENCE**

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

**NOVEMBER/DECEMBER, 2024**

**(New Pattern)**

**BIOTECHNOLOGY**

**CCBT-2D**

**(Applied and Medical Microbiology)**

**(Friday, 29-11-2024)**

**Time : 2.00 p.m. to 5.00 p.m.**

*Time—3 Hours*

*Maximum Marks—75*

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

(ii) Each question carries equal marks.

(iii) Draw neat and labelled diagram wherever necessary.

1. What is nitrogen fixation ? Describe symbiotic nitrogen fixation in brief.

15

*Or*

(a) Sulphur cycle.

8

(b) Enumeration of microorganisms from air.

7

P.T.O.

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2. Describe in brief MPN and SPC. 15

*Or*

(a) Microbial spoilage of food. 8

(b) Food preservation by high temperature. 7

3. Describe in detail normal flora of human body. 15

*Or*

(a) Reservoirs of infections 8

(b) Nosocomial infections 7

4. Explain in brief morphology, pathogenesis, symptoms, diagnosis and preventive measure for AIDS. 15

*Or*

(a) Typhoid 8

(b) Malaria 7

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

(a) Carbon cycle

(b) IMVIC

(c) Septicemia

(d) Cholera

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**VB—05—2024**

**FACULTY OF SCIENCE**

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

**NOVEMBER/DECEMBER, 2024**

**(New Pattern)**

**BIOTECHNOLOGY**

**Paper—CCBT—1D**

**(Basic Enzymology)**

**(Wednesday, 27-11-2024)**

**Time : 2.00 p.m. to 5.00 p.m.**

*Time—3 Hours*

*Maximum Marks—75*

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

*(ii) All questions carry equal marks.*

*(iii) Draw neat and well diagrams if necessary.*

1. Describe in detail classification of enzymes. 15

*Or*

(a) Write a note on ribozyme. 8

(b) Write a note on metalloenzyme. 7

2. Describe in detail acid-base catalysis. 15

*Or*

(a) Discuss active site of enzymes. 8

(b) Write in detail reversible inhibition. 7

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3. Describe in detail SDS-PAGE. 15

*Or*

(a) Discuss ion exchange chromatography. 8

(b) Give an account on PAGE. 7

4. Describe in detail kinetics of enzyme inhibition. 15

*Or*

(a) Discuss factors affecting enzyme activity. 8

(b) Give an account on  $K_m$  and  $V_{max}$ . 7

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

(a) Metalloenzymes

(b) Induced fit model

(c) Ultrafiltration

(d) Allosteric enzymes

(e) Enzyme activity.

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**VB—25—2024**

**FACULTY OF SCIENCE**

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

**NOVEMBER/DECEMBER, 2024**

**(New Pattern)**

**BIOTECHNOLOGY**

**(Basics of Biostats and Computer)**

**(Wednesday, 4-12-2024)**

**Time : 2.00 p.m. to 5.00 p.m.**

*Time—3 Hours*

*Maximum Marks—75*

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

*(ii) All questions carry equal marks.*

*(iii) Draw neat and well labelled diagram wherever necessary.*

1. Describe in detail diagrammatic representation of Simple bar and Subdivided bar. 15

*Or*

(a) Write a short note on Graphical Representation of Histogram. 8

(b) Write about the central tendency. 7

2. Define Standard Deviation. Explain the coefficient of variation. 15

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*Or*

- (a) Write about the measures of variance. 8
- (b) Write a short note on range with suitable examples. 7
3. Define Computer. Explain in detail about computer system. 15
- Or*
- (a) Write in brief about Hexadecimal number system of computer. 8
- (b) Write about the Windows. 7
4. Explain in detail MS-Word and PowerPoint. 15
- Or*
- (a) Write a short note on Browsers. 8
- (b) Define Internet. Write the functions of Internet. 7
5. Write short notes on (any *three*) : 3×5=15
- (a) Median and Mode
- (b) Coefficient of Variation
- (c) Number system
- (d) Search Engines
- (e) Graphical Representation of Frequency Polygon.

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**VB—17—2024**

**FACULTY OF SCIENCE**

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

**NOVEMBER/DECEMBER, 2024**

**(New Pattern)**

**BIOTECHNOLOGY**

**Paper—CCBT-3D**

**(Immunology and Virology)**

**(Monday, 2-12-2024)**

**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 wherever necessary.

1. Describe in detail cells of immune system. 15

*Or*

(a) Explain structure and function of spleen. 8

(b) Describe Adaptive immunity. 7

2. Define Antibody. Describe in detail biological properties and functions of Immunoglobulins. 15

P.T.O.

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*Or*

- (a) Explain Agglutination reactions. 8
- (b) Write a note on Antigen. 7
3. Define virus. Describe in detail LHT classification of virus. 15
- Or*
- (a) Describe lytic and lysogeny cycle of Bacteriophage. 8
- (b) Explain ultrastructure of virus. 7
4. Describe in detail structure and life cycle of TMV. 15
- Or*
- (a) Describe HIV structure. 8
- (b) Write a note on Corona Virus. 7
5. Write short notes on (any *three*) : 3×5=15
- (a) Innate immunity
- (b) Precipitation
- (c) Symmetry of virus
- (d) Adenovirus
- (e) Ebolavirus.

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**FACULTY OF SCIENCE**

**B.Sc. (Fourth Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

**(New Pattern)**

**BIOTECHNOLOGY**

**Paper—DSEBT—4D II**

**(Plant Tissue Culture)**

**(Wednesday, 4-12-2024)**

**Time : 2.00 p.m. to 5.00 p.m.**

*Time—3 Hours*

*Maximum Marks—75*

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

*(ii) All questions carry equal marks.*

*(iii) Draw neat and well labelled diagram if necessary.*

1. Describe in detail organization of plant tissue culture Laboratory. 15

*Or*

Write notes on :

(a) De-differentiation and Re-differentiation. 8

(b) Components of plant tissue culture media. 7

P.T.O.

2. Define types of plant tissue culture. Add a note on cell suspension culture. 15

*Or*

- (a) Micropropagation. 8  
(b) Anther culture. 7

3. Describe in detail commercial production of secondary metabolites. 15

*Or*

Write notes on :

- (a) Cryopreservation. 8  
(b) Somatic Hybridization. 7

4. Describe preservation methods of plant genetic resources briefly. Add a note on Germplasm conservation. 15

*Or*

Write notes on :

- (a) Horticulture. 8  
(b) Ovule culture. 7

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

- (a) Gametoclonal variation  
(b) Endosperm culture  
(c) Embryo rescue  
(d) Pollen culture  
(e) Protoplast culture.