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VB—27—2024

FACULTY OF SCIENCE AND TECHNOLOGY

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(New Pattern)

BIOTECHNOLOGY

Paper–DSEBT–4E I

(Advanced Bioinformatics)

(Thursday, 5-12-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

(*iii*) Illustrate your answers with suitable diagram, scheme etc.

1. What is bioinformatics ? Describe in detail the applications in bioinformatics. 15

Or

Write notes on :

(*a*) HTML. 8

(*b*) URLs. 7

P.T.O.

2. Describe in detail the Local alignment and Global alignment. 15

Or

Write notes on :

(*a*) Cn3D. 8

(*b*) PyMol. 7

3. Describe in brief Primary databases. 15

Or

Write notes on :

(*a*) PDB. 8

(*b*) PubChem. 7

4. Describe Protein secondary structure prediction methods. 15

Or

Write notes on :

(*a*) Homology modeling. 8

(*b*) Domain. 7

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

(*i*) Role of internet

(*ii*) Rasmol

(*iii*) Pubmed

(*iv*) Motif.

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VB—24—2024

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(New Pattern)

BIOTECHNOLOGY

Paper–CCBT-3E

(Bioprocess Technology)

(Wednesday, 4-12-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

(*iii*) Draw a well labelled diagram wherever necessary.

1. Define fermenter. Explain in detail construction, design and operation of fermenter. 15

Or

(*a*) Define Bioprocess Engineering. Explain in detail materials of construction of fermenter. 8

(*b*) Explain in detail specification of the fermenter. 7

2. Define media. Explain in detail Design of media and their optimization. 15

P.T.O.

Or

(*a*) Explain in detail principles, mechanism of capture of particles in air. 8

(*b*) Give difference between Depth and Screen filters. 7

3. Explain in detail effect of pH and temperature on cell growth. 15

Or

(*a*) Explain in detail fed-batch culture kinetics with application. 8

(*b*) Define Bioproduct. Describe in detail classification of bioproducts. 7

4. Describe in detail scale up in bioprocess fermentations and factors used in scale up. 15

Or

(*a*) Give an account on standard operating procedures and GMP. 8

(*b*) Explain computer control fermentations in detail. 7

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

(*a*) Aeration and agitation

(*b*) Media sterilization

(*c*) Measurement of O_2/CO_2

(*d*) OUR

(*e*) Viscosity and its control.

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VB—16—2024

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(New Pattern)

BIOTECHNOLOGY

Paper–CCBT-2E

(Developmental Biology)

(Monday, 2-12-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

(*iii*) Draw a well labelled diagram wherever necessary.

1. Explain types and patterns of cleavage in detail. 15

Or

(*a*) Describe developmental stages in chick in detail. 8

(*b*) Give an account on Gametogenesis and Fertilization. 7

2. Explain in detail concept of stem cells and stem cell technology with applications. 15

P.T.O.

Or

(*a*) Give an account on ageing and apoptosis. 8

(*b*) Explain in detail abnormal development. 7

3. Describe in detail development in Arabidopsis. 15

Or

(*a*) Describe in detail photomorphogenesis. 8

(*b*) Explain meristem structure and its activity. 7

4. Explain in detail transgenic technology and its applications in plants and animals. 15

Or

(*a*) Describe cloning of mammals in detail. 8

(*b*) Describe embryo culture and preservation. 7

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

(*a*) Commitment

(*b*) Concept of test tube baby

(*c*) GMOs

(*d*) Differentiations

(*e*) Competence.

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VB—28—2024

FACULTY OF SCIENCE & TECHNOLOGY

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(New Course))

BIOTECHNOLOGY

(Medical Biotechnology)

(Thursday, 05-12-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

1. Describe in detail protein based vaccines. 15

Or

(*a*) Write a brief note on plant based vaccines. 8

(*b*) Prepare a draft on stem cell therapy. 7

2. Explain in detail the production of monoclonal antibodies. 15

Or

(*a*) Give the role of ELISA in the diagnosis of bacterial disease. 8

(*b*) Write a note on western blot technique. 7

P.T.O.

3. Define stem cell. Explain in detail properties and potency of stem cells. 15

Or

(*a*) Elaborate the concept of tissue engineering. 8

(*b*) Give the clinical applications of embryonic stem cells. 7

4. What are oncogenes ? Describe in detail the cell cycle with respect to cancer. 15

Or

(*a*) Describe the defects in complement system. 8

(*b*) Write a brief not on secondary immunodeficiency with an example. 7

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

(*a*) Role of scaffolds

(*b*) Cell based vaccine

(*c*) Tumor supressor genes

(*d*) SCID

(*e*) Conjugate vaccine

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VB—10—2024

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(New Course)

BIOTECHNOLOGY

(*r*-DNA Technology)

(Friday, 29-11-2024) **Time : 10.00 p.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

(*iii*) Draw labelled diagrams wherever necessary.

1. What is gene cloning ? Explain in brief various gene cloning strategies used in *r*-DNA technology. 15

Or

(*a*) Explain various reporter genes used in gene cloning. 8

(*b*) Explain construction of M13 vector and add a note on its applications. 7

2. Describe in detail the technique of DNA micro array and explain its applications. 15

Or

(*a*) Explain in detail Maxam and Gilbert's technique of DNA sequencing. 8

(*b*) Explain in detail Northern blotting. 7

P.T.O.

3. Describe in detail the steps involved in construction of *c*-DNA library. 15

Or

(*a*) Explain in detail chemical synthesis of DNA. 8

(*b*) Describe the technique of Autoradiography of DNA. 7

4. What is protein Engineering ? Explain various strategies to improve properties of proteins and enzymes. 15

Or

(*a*) Explain the concept of Gene therapy. 8

(*b*) Describe in detail production of recombinant insulin. 7

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

(*a*) Restriction enzymes

(*b*) Agarose gel electrophoresis

(*c*) Nucleic acid probe

(*d*) Bt cotton.