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NB—27—2023

FACULTY OF SCIENCE AND TECHNOLOGY

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

NOVEMBER/DECEMBER, 2023

(New Course)

BIOTECHNOLOGY

Paper-[DSEBT-4E]

(Advanced Bioinformatics)

(Friday, 8-12-2023) **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 challenges and opportunities in bioinformatics. 15

Or

Write notes on :

(*a*) HTML 8

(*b*) WWW. 7

2. Describe pairwise sequence alignment. 15

Or

Write notes on :

(*a*) Cn3D 7

(*b*) PyMol. 8

P.T.O.

3. Describe in brief structural databases. 15

Or

Write notes on :

(*a*) DDBJ 8

(*b*) EMBL. 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*) : 3×5=15

(*a*) Role of internet

(*b*) Rasmol

(*c*) Pubmed

(*d*) Motif.

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NB—24—2023

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2023

(New Pattern)

BIOTECHNOLOGY

(Bioprocess Technology)

(Thursday, 7-12-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

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

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

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

1. Define fermenter. Describe design, operation and components of fermenter. 15

Or

Write notes on :

(*i*) Surface treatment 8

(*ii*) Welding. 7

P.T.O.

2. Describe in detail batch and continuous sterilization : 15

Or

Write notes on :

(*i*) Air sterilization 8

(*ii*) Composition of fermentation media. 7

3. Describe microbial growth kinetics in continuous culture. 15

Or

(*i*) Describe strategies of fermentation control. 8

(*ii*) Describe measurement of cell growth. 7

4. Describe GMP. 15

Or

(*i*) Describe SOP. 8

(*ii*) Describe foam and its control. 7

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

(*i*) QC

(*ii*) Scale-up

(*iii*) Fed-batch

(*iv*) Depth filters

(*v*) Oxygen uptake rate.

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NB—16—2023

FACULTY OF SCIENCE AND TECHNOLOGY

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

NOVEMBER/DECEMBER, 2023

(New Course)

BIOTECHNOLOGY

Paper-CCBT–2E

(Developmental Biology)

(Tuesday, 05-12-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

(*ii*) Each question carries equal marks.

1. What is development ? Describe in detail neurulation process in frog. 15

Or

(*a*) Explain in detail gastrulation. 8

(*b*) Write in brief about redifferentiation, transdifferentiation with an example. 7

2. Describe in detail abnormal development and teratogenesis in plants and animals. 15

P.T.O.

Or

(*a*) Explain in detail cancer biology. 8

(*b*) What is progenitor cells ? Explain cell lineages in plant. 7

3. Describe in detail meristem structure and activity. 15

Or

(*a*) Write a note on photomorphogenesis. 8

(*b*) Explain in brief seedling development. 7

4. Describe in detail embryo culture and preservation 15

Or

(*a*) Describe in detail developmental plasticity in animal. 8

(*b*) What is cloning in mammals ? Explain "dolly". 7

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

(*i*) Fertilization

(*ii*) Ageing

(*iii*) Floral Patterning in Arabidopsis

(*iv*) Hybrids

(*v*) Test Tube Baby.

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NB—28—2023

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2023

(New Pattern)

BIOTECHNOLOGY

Paper-[DSEBT-4E-II]

(Medical Biotechnology)

(Friday, 8-12-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

1. Explain in detail production and applications of plant based vaccines. 15

Or

(*a*) Explain the concept of cell based vaccines and give examples. 8

(*b*) Explain the concept of reverse vaccinology. 7

2. Describe in detail production of monoclonal antibodies with potential for diagnosis. 15

Or

(*a*) Write about diagnosis of diseases by using ELISA. 8

(*b*) What is western blot and how does it work ? 7

P.T.O.

3. Write definition, types and properties of stem cells. 15

Or

(*a*) How do scaffolding protein's function in cellular communication. 8

(*b*) Explain the concept and advantages of tissue engineering. 7

4. How do some viruses cause cancer ? Explain with examples. 15

Or

(*a*) Define metastasis and explain steps of metastasis. 8

(*b*) Write symptoms and treatment of AIDS. 7

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

(*a*) Apoptosis

(*b*) Oncogenes

(*c*) Transfusion of immuno-competent cells

(*d*) Symptoms of SCID in a child

(*e*) Defects in complement system.

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NB—10—2023

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2023

(New Pattern)

BIOTECHNOLOGY

(*r*-DNA Technology)

(Saturday, 02-12-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

(*ii*) Each question carries equal marks.

1. What are reporter genes ? Explain types of reporter genes and add a note on reporter assay in gene cloning. 15

Or

(*a*) Explain various vectorless gene transfer methods. 8

(*b*) Explain pBR322 as a vector. 7

2. Describe in detail principle and mechanism of PCR. Add a note on its types and applications. 15

P.T.O.

Or

(*a*) Describe in detail DNA microarray. 8

(*b*) Explain in detail southern blotting 7

3. Describe in detail construction of genomic DNA library and cDNA library. 15

Or

(*a*) Explain in detail Sanger's method of DNA sequencing. 8

(*b*) Describe and explain Autoradiography of DNA. 7

4. What is gene therapy ? Describe its types and approaches of gene therapy. 15

Or

(*a*) Describe production technology of recombinant human growth hormone. 8

(*b*) Describe in detail golden rice. 7

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

(*a*) BACS

(*b*) Automated DNA Sequencing

(*c*) Molecular Probes.

(*d*) Recombinant insulin

(*e*) Bt-cotton