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GD—33—2023

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

Paper–DSEBT–4E

(Advanced Bioinformatics)

(Friday, 28-4-2023) **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 ? Give a detailed account advanced field of bioinformatics. 15

Or

Write notes on :

(*a*) URLs 8

(*b*) Role of internet. 7

2. Describe the local alignment and Global alignment. 15

Or

Write notes on :

(*a*) Rasmol 8

(*b*) Cn3D. 7

3. Describe in brief Protein sequence database. 15

Or

Write notes on :

(*a*) GenBank. 8

(*b*) DDBJ. 7

4. Describe secondary structure classification of protein. 15

Or

Write notes on :

(*a*) Motif 8

(*b*) Domain. 7

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

(*i*) HTML

(*ii*) PyMol

(*iii*) Pubmed

(*iv*) Homology modelling.

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

GD—20—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

(Bioprocess Technology)

(Wednesday, 26-4-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

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

1. Describe design and construction of fermenter. 15

Or

(*i*) Describe parts of fermenter 8

(*ii*) Describe welding. 7

2. Describe in detail media sterilization. 15

Or

(*i*) Describe air sterilization. 8

(*ii*) Describe screen filters. 7

3. Describe microbial growth kinetics in fed-batch culture. 15

Or

(*i*) Describe measurement and control of pH. 8

(*ii*) Describe continuous culture. 7

4. Describe SOP. 15

Or

(*i*) Describe computer controlled fermentation. 8

(*ii*) Describe oxygen uptake rate. 7

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

(*i*) QA

(*ii*) GMP

(*iii*) Batch culture

(*iv*) Surface treatment

(*v*) Media optimization.

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GD—13—2023

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

Paper CCBT–2E

(Developmental Biology)

(Monday, 24-4-2023) **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 types and pattern of cleavage. 15

Or

(*a*) Explain in detail neurulation process in frog. 8

(*b*) What is competence and determination ? Explain with an example. 7

2. Describe in detail ageing and apoptosis. 15

Or

(*a*) What is the stem cell ? Describe in detail different types of stem cell. 8

(*b*) What is Progenitor cells ? Explain cell lineages in animal. 7

3. What is organ development in plant ? Describe in detail shoot and root patterning in arabidopsis. 15

Or

(*a*) Write a note on seedling development. 8

(*b*) Describe in detail photomorphogenesis. 7

4. What is cloning in mammals ? Explain "Dolly" and other mammals with *one* example. 15

Or

(*a*) Explain embryo culture and preservation. 8

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

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

(*a*) In-vitro fertilization

(*b*) Application of transgenic plant

(*c*) Transdifferentiation

(*d*) Teratogenesis of animal

(*e*) Cancer biology.

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1001—2023

FACULTY OF ALL FACULTIES

B.A./B.Com./B.Sc. (Third Year) (Fifth Semester) EXAMINATION

APRIL/MAY, 2023

(CBCS/New Pattern)

ENVIRONMENTAL STUDIES (Compulsory)

पर्यावरण अभ्यास (अनिवार्य)

(Wednesday, 19-4-2023) **Time : 10.00 a.m. to 12.00 noon.**

Time—Two Hours *Maximum Marks*—40

N.B. :— (*i*) Attempt all questions.

(*ii*) Illustrate your answer with suitable labelled diagram wherever necessary.

(*i*) **सर्व** प्रश्न सोडवा.

(*ii*) आवश्यक असेल तेथे आकृती काढून नावे द्या.

1. Describe the overutilization of surface and ground water. 15

भुपृष्ठावरील व भुगर्भातील जलाचा अमर्याद वापर वर सविस्तर माहिती लिहा.

Or

(किंवा)

(*a*) Explain concept of an ecosystem. 8

परिसंस्थेची संकल्पना स्पष्ट करा.

(*b*) Need of public awareness. 7

पर्यावरण जनजागृतीची आवश्यकता.

P.T.O.

2. Write in detail the Grassland Ecosystem. 15

गवताळ परिसंस्थेवर सविस्तर माहिती लिहा.

Or

(किंवा)

(*a*) Effect of modern agriculture. 8

आधुनिक शेतीचे परिणाम.

(*b*) Describe conservation of biodiversity. 7

जैवविविधतेचे संवर्धन विशद करा.

3. Write short notes on any *two* : 10

(*a*) Importance of environment

(*b*) Effect of mining

(*c*) Nuclear hazards

(*d*) Growing energy needs.

थोडक्यात टीपा लिहा (कोणतेही **दोन**वर)

(अ) पर्यावरणाचे महत्त्व

(ब) खनिजामुळे होणारे परिणाम

(क) आण्विक संकटे

(ड) वाढत्या उर्जेची गरज

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GD—34—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

Paper–DSEBT–4E-II

(Medical Biotechnology)

(Friday, 28-4-2023) **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. Describe in detail live, killed, attenuated any subunit vaccines with examples. 15

Or

(*a*) Explain principle and applications of recombinant DNA and protein based vaccines. 8

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

2. Explain in detail production and applications of monoclonal antibodies. 15

Or

(*a*) Explain principle and applications of ELISA. 8

(*b*) How to diagnose bacterial and viral diseases by using western blot ? 7

3. Explain in detail different types, properties and applications of stem cells. 15

Or

(*a*) Describe role of adult and embryonic stem cells. 8

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

4. What is Apoptosis ? Explain in detail apoptosis pathways. 15

Or

(*a*) Write about secondary immunodeficiency diseases. 8

(*b*) Write about symptoms and causes of X-linked agammaglobulinemia. 7

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

(*i*) Defects in complement system

(*ii*) Role of scaffolds

(*iii*) Plant based vaccines

(*iv*) Interaction of cancer cells with normal cells

(*v*) Metastasis.

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GD—06—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

(r-DNA Technology)

(Thursday, 20-4-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

1. Explain in detail various methods of vector based and vectorless gene transfer used in gene cloning. 15

Or

(*a*) What are restriction endonucleases ? Explain their types in detail. 8

(*b*) Describe in detail selectable barker gene in reporter assay. 7

2. What is sequencing ? Explain in detail various techniques of DNA sequencing. 15

Or

(*a*) Describe in detail technique of DNA micro-array. 8

(*b*) Describe the technique of southern of blotting. 7

3. What are Probes ? Explain types of brobes and explain screening of library using probe based direct and indirect methods. 15

Or

(*a*) Describe technique of chemical synthesis of DNA. 8

(*b*) Describe construction of genomic DNA library. 7

4. Describe in detail various approaches of protein engineering to improve properties of proteins and enzymes. 15

Or

(*a*) Describe the production technology of recombinant vaccine. 8

(*b*) Explain the concept of gene therapy. 7

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

(*a*) Bacteriophase

(*b*) DNA ligase

(*c*) PCR

(*d*) Golden rice

(*e*) Recombinant human growth hormone.