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

GJ—34—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New Course)

BIOINFORMATICS

Paper–DSEBI-4E

(Biodiversity, Agriculture, Ecosystem and Environment)

(Friday, 28-04-2023) **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 functions and applications of biodiversity application softwares. 15

Or

(*a*) Explain about current loss of biodiversity. 8

(*b*) Describe uses of biodiversity. 7

2. Describe in detail ecosystem structure and function. 15

Or

(*a*) Explain nitrogen cycling. 8

(*b*) Describe structure and functions of some Indian ecosystem. 7

3. Explain in detail about Indian case studies on conservation/management strategy. 15

162D8B18F8180EC69916298F8B1D8505

Or

(*a*) Explain the concept of metagenomics. 8

(*b*) Explain principles of conservation biology. 7

4. Describe in detail alternative energy sources and fuel cell. 15

Or

(*a*) Explain the reality of bioweapons. 8

(*b*) Explain forensic analysis of microbes. 7

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

(*i*) Waste clean up

(*ii*) Phosphorus cycling

(*iii*) Comparative genomes of plant and model plants

(*iv*) Metadatabases

(*v*) Biodiversity change.

162D8B18F8180EC69916298F8B1D8505

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

GJ—13—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New Course)

BIOINFORMATICS

Paper–CCBI-2E

(Computational Structural Biology)

(Monday, 24-04-2023) **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.

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

1. What is prediction ? Explain in detail prediction of protein structures with suitable database. 15

Or

(*a*) Describe in detail explaining the database and searches on PDB. 8

(*b*) Explain how to analyze structural data. 7

2. What is quaternary structure of protein and add a note on topologies of protein. 15

Or

(*a*) Explain in detail protein structure visualization software with example. 8

(*b*) Write about architectures of protein. 7

P.T.O.

3. Describe how to compare various classes of protein using different methods. 15

Or

(*a*) How to analyze secondary structure of protein ? 8

(*b*) Describe which tools are useful for interpretation of protein structures. 7

4. How to predict tertiary structure of protein ? Write about three steps with examples. 15

Or

(*a*) Describe in detail any *two* fold recognition methods with example. 8

(*b*) Enlist homology modeling softwares and explain Insight II software. 7

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

(*a*) SWISS MODEL

(*b*) Structure analysis

(*c*) CSD

(*d*) TOPITS

(*e*) PDB.

CC2FB443E2593CDE07E01D6280C1AA1F

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

GJ—06—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New Course)

BIOINFORMATICS

(Genetic Engineering)

(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.

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

1. Write in detail about methods of gene transfer. 15

Or

(*a*) Describe in detail about λ phage. 8

(*b*) Give an account on artificial chromosome. 7

2. Write in detail about PCR, its types and applications. 15

Or

(*a*) Describe in detail about complexity of DNA. 8

(*b*) Write about western blotting with its applications. 7

3. Describe in detail about genomic libraries. 15

Or

(*a*) Write about probe based direct screening method. 8

(*b*) Give an account on cDNA. 7

4. Write in detail about gene therapy. 15

Or

(*a*) Give applications of genetic engineering. 8

(*b*) Add a note on automated DNA sequencing. 7

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

(*a*) Tm value

(*b*) Ti-plasmid

(*c*) Southern blotting

(*d*) BT cotton

(*e*) Cosmid.

CE8315CD5408BCC531A220B509D884BF

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

GJ—33—2023

FACULTY OF SCIENCE

B.Sc. (Fifth Semester) EXAMINATION

APRIL/MAY, 2023

(New Course)

BIOINFORMATICS

(Programming in Java)

(Friday, 28-4-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (1) *All* questions are compulsory.

(2) *All* questions carry equal marks.

(3) Write programs wherever necessary.

1. Write about history of Java and its features. 15

Or

(*a*) Write about arrays in Java. 8

(*b*) What are variables and constants in Java ? 7

2. Describe in detail about class and objects in Java. 15

Or

(*a*) What is method overriding in Java ? 8

(*b*) What are interfaces in Java ? 7

3. Describe in detail about exception handling in Java. 15

Or

(*a*) Describe access specifiers in Java. 8

(*b*) What are string classes and string buffer classes ? 7

P.T.O.

4. Describe applet life cycle in detail. 15

Or

(*a*) Describe about buttons and labels in Java. 8

(*b*) Give an account on repaint( ) method 7

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

(*a*) List and combo box

(*b*) Finally block

(*c*) Final keyword

(*d*) Packages

(*e*) Simple Java Programs.

82AFD9962C61B706BCCD76D2E64FAB05