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PH—28—2024

FACULTY OF SCIENCE

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

APRIL/MAY, 2024

(New Pattern)

BIOINFORMATICS

Paper DSEBI-4E

(Biodiversity, Agriculture, Ecosystem & Environment)

(Saturday, 13-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

1. Describe in detail functions and advantages of biodiversity application softwares. 15

Or

(*a*) Describe types of biodiversity. 8

(*b*) Explain virtual libraries of biodiversity. 7

2. Describe in detail the strategy for growing drought resistant plants in poorer soils. 15

P.T.O.

Or

(*a*) Explain energy flow in ecosystem. 8

(*b*) Write about biodiversity of Indian medicinal plants. 7

3. Describe in detail project tiger. 15

Or

(*a*) Write about biosphere reserves of India. 8

(*b*) Describe methods and strategies of biodiversity conservation. 7

4. Describe in detail the concept of fuel cell and add a note on alternative energy sources. 15

Or

(*c*) Write causes and types of antibiotic resistance. 8

(*d*) Write about *three* most commonly associated superbugs with health care sectors. 7

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

(*i*) Bioweapons

(*ii*) Metagenomics

(*iii*) Structure and function of ecosystem

(*iv*) Metadatabases

(*v*) Loss of biodiversity.

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PH—24—2024

FACULTY OF SCIENCE

B.Sc. (Fifth Semester) EXAMINATION

MARCH/APRIL, 2024

(New Pattern)

BIOINFORMATICS

Paper CCBI-3E

(Chemoinformatics)

(Friday, 12-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

Note :— (*i*) *All* questions are compulsory.

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

1. Write in detail about history and scope of chemoinformatics. 15

Or

(*a*) Why to use chemoinformatics methods in Chemistry ? 8

(*b*) Write application of Chemoinformatics. 7

2. How many database are used to predict chemical structure of any compound ? Explain with example. 15

P.T.O.

Or

(*a*) Describe graph representation. 8

(*b*) Describe in detail experimental 3D database. 7

3. What is lead compound ? Describe in detail natural resources of lead compounds. 15

Or

(*a*) What is drug target ? Describe with examples. 8

(*b*) What is drug ? Explain compound filters and rule of fire. 7

4. How to calculate descriptors from 2D structure ? 15

Or

(*a*) Describe similarity searching. 8

(*b*) How to predict physicochemical properties of chemical compound ?7

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

(*a*) Toxicity prediction

(*b*) 2D database

(*c*) QSAR

(*d*) Virtual screening

(*e*) Reaction database.

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PH—10—2024

FACULTY OF SCIENCE

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

APRIL/MAY, 2024

(New Pattern)

BIOINFORMATICS

Paper CCBI-2E

(Computational Structural Biology)

(Friday, 05-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three 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. How to predict protein properties of titin ? Explain with its structure with example. 15

Or

(*a*) How to visualize protein structure by using PDB ? 8

(*b*) Explain the role and functions of WHAT IF. 7

P.T.O.

2. What is visualization ? Explain in detail visualization of DNA using visualization software. 15

Or

(*a*) Describe in detail PyMOL and Cn3D visualization tool. 8

(*b*) Describe in detail protein structure levels with example. 7

3. Write about any *two* methods of comparison of various classes of protein. 15

Or

(*a*) Describe in detail different methods of analysis of protein structures. 8

(*b*) What is interpretation ? Write about any interpretation database. 7

4. What is fold recognition ? Explain any *two* methods of fold recognition with example. 15

Or

(*a*) How to predict tertiary structure of protein ? Write about there steps with example. 8

(*b*) Explain in detail SWISS-PDB viewer. 7

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

(*a*) Secondary structure

(*b*) Rasmol tool

(*c*) CSD database

(*d*) Discovery studio

(*e*) TOPITS.

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PH—16—2024

FACULTY OF SCIENCE

B.Sc. (Fifth Semester) EXAMINATION

MARCH/APRIL, 2024

(New Course)

BIOINFORMATICS

Paper CCBI-1E

(Genetic Engineering)

(Monday, 08-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

Note :— (*i*) *All* questions are compulsory.

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

1. Write a note on Endonucleases : types and properties. 15

Or

(*a*) Explain in detail methods of gene transfer. 8

(*b*) Write a note on pBR322 plasmid. 7

2. Describe in detail PCR : mechanism, types and applications. 15

Or

(*a*) Describe in detail Sanger's DNA sequencing. 8

(*b*) Write a note on Western Blotting. 7

P.T.O.

3. Describe in detail genomic library construction and applications. 15

Or

(*a*) Write a note on screening of library. 8

(*b*) Explain in detail autoradiography of DNA. 7

4. Describe in detail agricultural applications in *r*-DNA technology. 15

Or

(*a*) Write a note on concept of gene therapy. 8

(*b*) Explain in detail protein engineering : improvement in properties of proteins and enzymes. 7

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

(*a*) Artificial chromosomes

(*b*) Erythropoietin

(*c*) Denaturation and renaturation of DNA

(*d*) Nucleic Acid probe

(*e*) Recombinant hormones.

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PH—27—2024

FACULTY OF SCIENCE

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

MARCH/APRIL, 2024

(New Pattern)

BIOINFORMATICS

Paper DSEBI-4E

(Programming in JAVA)

(Saturday, 13-04-2024) **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 well labelled diagram wherever necessary.

1. Explain control statements used in Java with examples. 15

Or

(*a*) Explain in detail history and features of Java. 8

(*b*) Explain comparison of Java with C & C++ language. 7

2. What is class ? Explain classes, methods and objects with examples. 15

Or

(*a*) What is constructor ? Explain types of constructor. 8

(*b*) What is access specifiers ? Explain with its methods. 7

P.T.O.

3. Explain in detail method overriding with examples. 15

Or

(*a*) Describe super keyword with an example. 8

(*b*) Describe interface variables and interface methods. 7

4. What is error ? Explain in detail exception handling with try and catch block. 15

Or

(*c*) Describe dealing with errors. 8

(*d*) Explain types of exception handling. 7

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

(*a*) Garbage collection

(*b*) Inheritance

(*c*) Applet life cycle

(*d*) Creation of files

(*e*) Abstract class.