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NH—02—2023

FACULTY OF SCIENCE

B.Sc. (Sixth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(New Pattern)

BIOINFORMATICS

(Concept of Genomics)

(Wednesday, 29-11-2023) **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 diagrams wherever necessary.

1. Write in detail about DNA sequencing technologies. 15

Or

(*a*) Write about illumina sequencing in detail. 8

(*b*) Give an account on ion torrent sequencing. 7

2. Describe about viruses and bacteriophage genomics in detail. 15

Or

(*a*) Write in detail about structural Genomics. 8

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

3. Write about high-throughput sequencing in detail. 15

Or

(*a*) Describe about application of genomics in biomarker discovery and agriculture. 8

(*b*) Write in brief about genomic medicine. 7

P.T.O.

4. What is genomics ? Describe various applications of its. 15

Or

(*a*) Give an account on HGP. 8

(*b*) Describe about Manam-Gilbert sequencing in detail. 7

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

(*a*) "Omics" revolution

(*b*) Human genomics

(*c*) UCSC Genome browser

(*d*) Metagenomics

(*e*) Epigenetics.

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NH—07—2023

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2023

(New Pattern)

BIOINFORMATICS

(Concept of Proteomics)

(Friday, 1-12-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

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

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

1. What is Proteomics ? Explain in detail different applications of proteomics. 15

Or

(*a*) Explain the methods of determination of three-dimensional structure of proteins. 8

(*b*) Describe protein structure database. 7

2. Describe in detail post-translational modifications of proteins. 15

Or

(*a*) Describe protein modification by proteolytic cleavage and formation of disulfide bonds. 8

(*b*) Explain the role of molecular chaperons in protein modification. 7

P.T.O.

3. Describe in detail protein extraction methods from biological samples. 15

Or

(*a*) Explain separation of proteins by SDS-PAGE. 8

(*b*) Describe HPLC and write its applications. 7

4. Describe in detail protein-protein interactions. 15

Or

(*a*) Write a note on protein array. 8

(*b*) Explain protein structure prediction tools. 7

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

(*i*) Expasy

(*ii*) MALDI-TOF

(*iii*) Overview of translation

(*iv*) Different functions of proteins

(*v*) Hierarchy of protein structure.

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

NH—13—2023

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2023

(New Course)

BIOINFORMATICS

Paper-CCBI-3F

(Metabolomics)

(Monday, 4-12-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

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

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

1. Describe in detail applications of metabolomics in medical diagnosis, biomarker discovery, agriculture, toxicology and nutrigenomics. 15

Or

(*a*) Define metabolomics and explain the concept of metabolome and metabolism. 8

(*b*) Explain the concept of metabonomics. 7

2. Explain in detail major metabolic pathway by which synthesis of glucose takes place. 15

Or

(*a*) Explain steps of pentose phosphate pathway. 8

(*b*) Describe enzymatic steps of glycogenesis. 7

P.T.O.

3. Explain in detail principle and applications of NMR spectroscopy. 15

Or

(*a*) Explain XCMS statistical method and write its applications. 8

(*b*) Explain MZ mine statistical method and write its applications. 7

4. Describe in detail organism specific metabolic pathways. 15

Or

(*a*) Explain full genome annotation through knowledge of metabolic pathways. 8

(*b*) Describe visual comparison of metabolic pathways. 7

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

(*i*) MetAlign

(*ii*) MALDI-TOF

(*iii*) Purine biosynthesis

(*iv*) Glycogenolysis

(*v*) Catabolism of amino acid.

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NH—19—2023

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2023

(New Course)

BIOINFORMATICS

Paper-DSEBI-4F

(Programming with PHP)

(Wednesday, 06-12-2023) **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 diagrams wherever necessary.

1. Explain the types of PHP operators. 15

Or

(*a*) Define variables in PHP with example. 8

(*b*) What is string ? Explain searching and replacing string 7

2. Explain the basic web concepts. 15

Or

(*a*) What is PHP login ? Give and explain various PHP login examples. 8

(*b*) How to display random images in PHP ? 7

P.T.O.

3. Explain creation and accessing of array in PHP. 15

Or

(*a*) What is the difference between call by value and call by reference in PHP ? 8

(*b*) Explain decision-making in PHP. 7

4. What is function ? Explain its types. 15

Or

(*a*) Explain GET and POST methods with example. 8

(*b*) Explain HTML form in PHP. 7

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

(*i*) PHP environmental setup

(*ii*) Loop types

(*iii*) Constant in PHP

(*iv*) Multidimensional array

(*v*) PHP and MySQL (difference).