



Roll No.

Total No. of Pages : 02

Total No. of Questions : 11

M.Sc. (BT) (Sem.-1)
COMPUTER APPLICATIONS
Subject Code: MBT-105
M.Code : 75663
Date of Examination : 25-05-2023

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SEVEN questions carrying SIX marks each and students have to attempt any FIVE questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Explain the following :

- a) RAM
- b) Application Software
- c) $345_{10} = ?_2$
- d) Variable
- e) Operator ++
- f) String
- g) While Loop
- h) Record
- i) Class and Object
- j) Superscript.

SECTION-B

2. Describe the block structure of a computer in detail.
3. Write a program to check whether a number is prime or not.
4. Write a note on arrays with example.
5. Differentiate between class and object. How much memory is used by them?
6. Differentiate between call by value and call by reference.
7. Write a note how to insert a table and graphs in word processing?
8. Explain any 5 arithmetic formulas with help of example.

SECTION-C

9. Define constructors. Explain its types with help of example.
10. Write a program to overload 'operator'.
11. Define database. Discuss the advantages of database over file system.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.



(538) 1117

2 | M 75663

(578) 1117

1 | M 7 3

July-2023

--	--	--	--	--	--	--	--	--	--

Total No. of Pages : 02

Roll No. _____
Total No. of Questions : 11

**M.Sc (BT) (Sem.-1)
ENVIRONMENT BIOTECHNOLOGY**

Subject Code : MBT-111

M.Code : 75664

Date of Examination : 18-05-2023

Max. Marks : 70

Time : 3 Hrs.

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SEVEN questions carrying SIX marks each and students have to attempt any FIVE questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Describe briefly :
 - a) What are aerated lagoons?
 - b) How pathogenic microorganisms are detected in water?
 - c) Distinguish between clarification and coagulation.
 - d) Define trickling filters.
 - e) What is meant by microbial leaching?
 - f) Define the role of organic farming in environment.
 - g) What is the nature of waste of dairy industry?
 - h) Name different sources of pollution of agricultural practices.
 - i) What is the role of oxidation ponds in waste water treatment?
 - j) How COD of waste water can be reduced?

SECTION-B

2. Describe methods of bio-hydrogen production.
3. Write a brief note on phycoremediation.
4. Discuss briefly biodegradation of lignocelluloses.
5. Write a note on vermicomposting.
6. Discuss how distillery waste is treated before its discharge into the environment?
7. Write a note on wastewater treatment efficiency assessment.
8. What changes do occur during secondary and tertiary treatment of wastewater?

SECTION-C

9. Describe culture based approach for bioremediation. Discuss it vis-a-vis metagenomic approach.
10. Discuss municipal techniques for the prevention and treatment of biomedical wastes.
11. Discuss in detail about the feedstock(s) and mechanism of biodiesel production. What are the recent targets set by Government of India for biodiesel production and what are the limitations to achieve these targets?



July-2023

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No.

Total No. of Questions : 11

Total No. of Pages : 02

**M.Sc. (BT) (Sem.-1)
BIOMOLECULES AND METABOLISM**

Subject Code : MBT-101

M.Code : 75659

Date of Examination : 20-05-2023

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SEVEN questions carrying SIX marks each and students have to attempt any FIVE questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Attempt all parts :

- a) How t-RNA is different from m-RNA?
- b) Distinguish anomers and epimers.
- c) What is the fate of pyruvate formed through glycolysis?
- d) Name the intermediates of citric acid cycle which are converted into amino acids.
- e) What is enzyme code?
- f) What is meant by enzyme turn over?
- g) Write the structure of N-acetylglucosamine.
- h) Name any two unsaturated fatty acids.
- i) Write the structure of sucrose.
- j) What are sterols?

SECTION-B

2. Write a note on pyruvate dehydrogenase complex.
3. Write a brief note on pentose phosphate pathway.
4. Describe the structure of eukaryotic ribosomes.
5. Write a brief note on sphingolipids.
6. Write a brief note on storage polysaccharides.
7. Discuss briefly glycoproteins.
8. Write a note on mitochondrial electron transport chain.

SECTION-C

9. Discuss in detail how enzyme activity is regulated?
10. Describe oxidation of unsaturated fatty acids.
11. Describe how metabolism is coordinated and regulated.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student



1 | Page

2 | MBT-5659

03381103

July-2023

--	--	--	--	--	--	--	--	--	--

Total No. of Pages : 02

Roll No. _____
Total No. of Questions : 11

M.Sc. (BT) (Sem.-1)
COMPUTER APPLICATIONS
Subject Code : MBT-105
M.Code : 75663
Date of Examination : 17-01-2023

Time : 3 Hrs. Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains SEVEN questions carrying SIX marks each and students have to attempt any FIVE questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

- Answer briefly :
 - What is Data?
 - What do you mean by Binary representation of numbers?
 - What is Byte?
 - What is ASCII code?
 - What is Object Oriented Programming?
 - What are Spreadsheets?
 - What is function overloading?
 - How do you represent fraction of data?
 - What do you mean by Arrays?
 - What are string data types? Explain by citing examples.

SECTION-B

- Discuss the various business applications of computers in present competitive world.
- What is the importance of programming language 'C++' in today's scenario? Explain by citing suitable examples.
- What is the advantage of binary representation of data? Discuss by citing examples.
- Discuss various applications of spreadsheets in business organizations
- Discuss in detail about various concepts used in database. Explain by citing examples.
- Explain the following terms with reference to Object Oriented Programming :
 - Classes
 - Functions.
- Write a program to read two numbers from keyboard and display the larger value on screen.

SECTION-C

- How computers are used in solving complex problems in present scenario. Explain in detail by citing suitable examples.
- Explain in detail the benefits of using Object Oriented Programming.
- Answer the following in detail :
 - Word processing.
 - Explain the use of spreadsheets.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.



2022

Roll No.

Total No. of Pages: 02

Total No. of Questions: 11

Master of Science (Bio Technology)(Sem. - 1)

BIOMOLECULES AND METABOLISM

Subject Code: MBT-101

M Code: 75659

Date of Examination : 10-01-2023

Time: 3 Hrs.

Max. Marks: 70

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SEVEN questions carrying FIVE marks each and students have to attempt any SIX questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Explain the following in brief:
 - a) Functions of ribosomes.
 - b) Role of physiological proteins.
 - c) Michaelis- Menten equation.
 - d) Enzyme inhibition.
 - e) Structures of RNA.
 - f) Functions of lipids.
 - g) Basic concepts of metabolism.
 - h) Role of haemoglobin.
 - i) Structure of collagen.
 - j) Secondary metabolites.

SECTION-C

9. Explain properties of biomolecules. What are the criteria used for protein classification? Discuss different levels of protein structures.
10. What is glycolysis? Give diagrammatic sketch of all the intermediates and enzymes involved in the process.
11. Describe using suitable examples the classification, structure and functions of carbohydrates.

SECTION-B

2. Explain physiological and structural features of myoglobin.
3. Describe mechanism of enzyme action using suitable diagrams. Explain the importance of biocatalysts in industrial procedures.
4. Discuss various techniques used for protein characterization.
5. Draw a labeled diagram showing components of a typical biological membrane.
6. Give outline of various DNA sequencing techniques. Explain any one in detail.
7. What do you understand by nucleotide metabolism? Explain metabolism of purines.
8. Discuss the importance of TCA cycle. Draw well labeled diagram also.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.



M-75659

S-2210

S-2210

DCC-2023

Roll No.

Total No. of Pages: 02

Total No. of Questions: 11

Master of Science (Bio Technology)(Sem. – 1)

ENVIRONMENT BIOTECHNOLOGY

Subject Code: MBT-111

M Code: 75664

Date of Examination : 19-01-23

Time: 3 Hrs.

Max. Marks: 70

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SEVEN questions carrying FIVE marks each and students have to attempt any SIX questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Explain the following in brief:

- a) Definition of the term environment.
- b) Important water borne pathogens and diseases caused by them.
- c) Definition of metagenomics and its applications.
- d) Composition of the dairy waste.
- e) Organic farming.
- f) Microbial leaching.
- g) Degradation of lignocelluloses.
- h) Role of biosurfactants.
- i) Treatment of solid waste.
- j) Innovation in pollution treatment methods.

M-75664

S-2596



DGC-2022

SECTION-B

2. Explain different parameters used to monitor environmental pollution.
3. Discuss working and organization of rotating biological contactors for treating waste water.
4. What is bioremediation? Illustrate the importance of culture based techniques in bioremediation procedures.
5. Differentiate between biocompost and vermicompost.
6. Explain biochemistry, microbiology and applications of Biom mineralization.
7. Write a detailed note on treatment of biomedical waste.
8. Suggest various approaches used to control environmental pollution in the urban sector.

SECTION-C

9. Compare design and working of oxidation ponds and trickling filters for waste water treatment.
10. Give detailed procedure for the treatment of dairy industry waste.
11. Explain methodology and application of organic farming. Also briefly discuss the importance of vermiculture in agricultural upliftment.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.

M-75664

2596

Roll No.

Total No. of Pages: 02

Total No. of Questions: 11

Master of Science (Bio Technology)(Sem. – 1)
GENETICS AND MOLECULAR BIOLOGY

Subject Code: MBT-103

M Code: 75661

Date of Examination : 14-01-2023

Time: 3 Hrs.

Max. Marks: 70

INSTRUCTIONS TO CANDIDATES:

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains SEVEN questions carrying FIVE marks each and students have to attempt any SIX questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Explain the following in brief:

- Define linkage.
- Outcome of crossing over.
- Establishment of linkage maps.
- Ploidy and its genetic implications.
- Applications of pedigree analysis.
- Telomere structure and its importance.
- Principle of QTL-mapping.
- Complexity of a genome.
- Role of rRNA in translation.
- Post translational modifications.

SECTION-B

- Explain extra chromosomal inheritance using examples.
- Give a detailed account of Mendelian Principles. Provide supporting examples also.
- Explain methods and applications of Karyotyping.
- What are homeotic genes? Give examples. Explain their role in animal development.
- Write a detailed note on organization of Eukaryotic chromosomes.
- Explain various factors that determine the complexity of eukaryotic genomes.
- Discuss features of the genetic code. Also explain regulation of gene expression.

SECTION-C

- What is mutation? Explain types, causes and detection of mutations. Also compare germinal and somatic mutants.
- Explain the term Developmental Genetics. Discuss role of various genes involved in early development, maternal effect and pattern formation.
- Compare features of prokaryotic and eukaryotic transcription process in detail. Provide a detailed account of accessory proteins involved in the process of transcription.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.

M-75661

S-2371

M-75661

S-2371



DEC-2022

Roll No. _____

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc.(BT) (2014 to 2017) (Sem.-1)

INTRODUCTION AND FUNDAMENTALS OF BIOTECHNOLOGY

Subject Code : BSBT-105

M.Code : 47023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Q1. Answer briefly :

- How do biomolecules separates in gradient centrifugation?
- Give the name of model organism use to study prokaryotic system.
- What is biotechnology?
- By which microscope you can visualize
 - Bacterial cell
 - Flagella
- Define magnification of microscope.
- Give the name(s) of medium used for culturing fungi.
- Why do we preserve microbial culture? Name any one method.
- Give the name of microbial culture collection bank in India.
- What is the stationary and mobile phase in paper chromatography?
- Which type of incident rays are used in Electron microscope?

SECTION-B

- Discuss different types of isotopes used in radioisotopy technique.
- What is the basis of separation of nucleic acid in electrophoresis?
- What is the principle of ion exchange chromatography?
- Briefly explain the eukaryotic system used in biotechnology.
- What are the different parameters to characterize a microbe?

SECTION-C

- What is spectroscopy? Discuss the principle and application of any one spectroscopy?
- Discuss about different branches of modern Biotechnology and their future scope.
- Give different methods for preserving microbial culture.



Dec-2019

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc.(Biotechnology) (Sem.-1)

BASICS OF BIOSCIENCES

Subject Code : BSBT-107-18

M.Code : 75330

Time : 3 Hrs.

Max. Marks : 30

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying 2¹/₂ (Two and Half) marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying FIVE marks each and students has to attempt any TWO questions.

SECTION-A

1. Describe briefly :

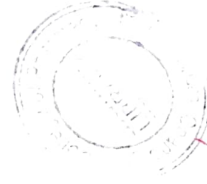
- a) Flora and Fauna
- b) Cellular organization
- c) Kingdom protista
- d) Xylem tissue
- e) Annual rings in plants
- f) Connective tissue
- g) Endocrine vs. Exocrine glands
- h) Biomolecules
- i) Mitosis vs. Meiosis
- j) Kingdom monera

SECTION-B

2. Differentiate between cork cambium and vascular cambium.
3. Differentiate between prophase and telophase of mitosis.
4. Give general account of plant kingdom.
5. Describe the cell structure with a well labelled diagram.
6. What do you understand from structural organisation in animals? Explain.

SECTION-C

7. Describe the various stages of meiosis with well labelled diagrams.
8. Give a brief account of classification of animals.
9. Describe various types of animal tissues with diagrams.



DEC-2019

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc.(BT) (2014 to 2017) (Sem.-1)
COMPUTER APPLICATION IN BIOTECHNOLOGY
Subject Code : BSBT-107
M.Code : 47024

Max. Marks : 60

Time : 3 Hrs.

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1) Answer briefly :

- a) Analogue Computers
- b) Online software
- c) Magnetic Tape-data representation
- d) Optical disks
- e) Joystick
- f) Soft Copy
- g) Citations
- h) NCBI
- i) Plotters
- j) Phylogram

SECTION-B

2. Explain the process of Multiple Sequence Alignment.
3. What are input devices?
4. Describe source data automation.
5. What are Bibliographic databases?
6. Explain the Genbank format.

SECTION-C

7. Explain the different types of hardware and softwares.
8. Describe the different types of phylogenetic analysis.
9. Write a note on NCBI data model.



Dec-2019

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No. _____

Total No. of Pages : 02

Total No. of Questions : 09

**B.Sc.(BT) (2018 & Onwards) (Sem.-1)
BIOCHEMISTRY AND METABOLISM**

Subject Code : BSBT-103-18
M.Code : 75326

Max. Marks : 60

Time : 3 Hrs.

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

- Answer briefly :
 - Define the term Biochemistry.
 - What are polysaccharides?
 - Give two examples of disaccharides.
 - Write functions of phospholipids?
 - Define Nucleotide.
 - What is meant by apoenzymes?
 - Define Active site of enzymes.
 - Define Glycolysis.
 - Explain in brief glycogenolysis.
 - Write functions of cerebrocides.



Dec-2019

SECTION-B

- Give a brief account on protein structure and classification.
- Write a detailed note on structure, classification and functions of lipids
- Explain in detail activation energy
- Give detailed account on structure and function of DNA.
- Write a note on sphingolipids and gangliosides.

SECTION-C

- Give a detailed account on TCA cycle.
- Describe structure, functions and properties of monosaccharides.
- Discuss β -oxidation of fatty acids in detail.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No. _____

Total No. of Pages : 02

Total No. of Questions : 11

M.Sc. (BT) (2018 Onwards Batch) (Sem.-1)
GENETICS AND MOLECULAR BIOLOGY

Subject Code : MBT-103

M.Code : 75661

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SEVEN questions carrying SIX marks each and students have to attempt any FIVE questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a. Dihybrid tests.
- b. Tetrad analysis
- c. Down's syndrome
- d. Leucine Zipper Motif of transcription Factor.
- e. Epistasis
- f. Telomerase
- g. Karyotype
- h. Signal Recognition Particle
- i. Promoter sequence
- j. Thymine dimer

SECTION-B

2. Discuss various types of chromosomal abnormalities and their characteristic phenotypic features.
3. Describe the process of replication of *E. coli* genome.
4. Discuss export of mRNA and initiation of translation in eukaryotes.
5. Explain how Cot curve analysis reveals complexity of a genome.
6. What is meant by quantitative trait? Discuss Mapping of QTL.
7. Describe splicing of pre-mRNA in eukaryotes.
8. How does LOD Score analysis help in establishing Linkage?

SECTION-C

9. Discuss post translational modifications of proteins in eukaryotes.
10. Explain the process of transcription by RNA Polymerase II in eukaryotes.
11. Explain various methods of repair of damaged DNA in a cell.



Roll No.

Total No. of Pages : 02

Total No. of Questions : 11

M.Sc. (BT) (Sem.-1)
NANOBIOTECHNOLOGY
Subject Code : MBT-112
M.Code : 75665

Time : 3 Hrs.

Max. Marks : 70

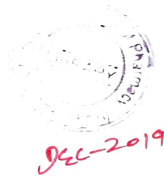
INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SEVEN questions carrying SIX marks each and students have to attempt any FIVE questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write short note on following :

- (a) Biomaterials
- (b) DNA-oligomers
- (c) Gold nanoparticles
- (d) Transducer
- (e) Amplifiers
- (f) Carbon nanotubes
- (g) Quantum dots
- (h) Buckyballs
- (i) Nanoinsecticides
- (j) Smart packaging



SECTION-B

2. Describe the structure and functional properties of biomaterials for nanotechnology.
3. Describe protein based nanostructures building blocks and templates with examples.
4. What are gold nanoparticles? Discuss hybrid conjugates of gold nanoparticles.
5. Discuss the impact of nanomaterials in biological processes with examples.
6. Discuss carbon nanotubes and quantum dots interface with biological macromolecules.
7. Discuss the applications of nanotechnology in toxin and contaminant detections.
8. Discuss the historical perspectives of integration of biology with chemistry and material science.

SECTION-C

9. What is molecular sensing? Discuss molecular recognition and flexibility of biomaterials.
10. What are DNA based nanostructures? Describe the topographic and electrostatic properties of DNA and proteins.
11. Write an essay on applications of nanotechnology in agriculture and food technology.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No.

Total No. of Pages : 02

Total No. of Questions : 11

M.Sc. (BT) (Sem.-1)
BIOMOLECULES AND METABOLISM
Subject Code : MBT-101
M.Code : 75659

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. SECTION-B contains **SEVEN** questions carrying **SIX** marks each and students have to attempt any **FIVE** questions.
3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

1. Answer briefly :

- a) Quaternary proteins
- b) Enzyme activity vs. Specific activity
- c) Myoglobin
- d) Km and Vmax
- e) Catalysis
- f) Biomembrane
- g) Glycoproteins
- h) Enzyme regulation
- i) Citric acid cycle
- j) Nucleotide



SECTION-B

2. Explain the formation of hydrogen bonding and disulphide bridges in the secondary structure of proteins with suitable examples.
3. What is collagen? Describe its structure, characteristics and role.
4. Explain enzyme inhibition. How would you know whether an inhibitor is competitive or non-competitive?
5. Deduce the Michaelis-Menton equation for the determination of Km and Vmax.
6. Describe the different types of RNA found in the cell. Discuss the forces that contribute to the stability and folding of RNA molecules.
7. Give a brief account of classification of carbohydrates. Also highlight functions.
8. Describe the stepwise β -oxidation of fatty acids.

SECTION-C

9. Give a general account of purification techniques of proteins with merits and demerits in each case.
10. Describe briefly DNA sequencing and its chemical synthesis with suitable examples.
11. Write short notes on :
 - a) Glycolysis
 - b) Oxidative phosphorylation.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Total No. of Pages : 02

--	--	--	--	--	--	--	--	--	--

Roll No.

Total No. of Questions : 11

M.Sc. (BT) (Sem.-1)

BIOMOLECULES AND METABOLISM

Subject Code : MBT-101

Mi.Code : 75659

Max. Marks : 70

Time : 3 Hrs.

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains SEVEN questions carrying SIX marks each and students have to attempt any FIVE questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly :

- Quaternary proteins
- Enzyme activity vs. Specific activity
- Myoglobin
- Km and Vmax
- Catalysis
- Biomebrane
- Glycoproteins
- Enzyme regulation
- Citric acid cycle
- Nucleotide

SECTION-B

- Explain the formation of hydrogen bonding and disulphide bridges in the secondary structure of proteins with suitable examples.
- What is collagen? Describe its structure, characteristics and role
- Explain enzyme inhibition. How would you know whether an inhibitor is competitive or non-competitive?
- Deduce the Michaelis-Menton equation for the determination of Km and Vmax.
- Describe the different types of RNA found in the cell. Discuss the forces that contribute to the stability and folding of RNA molecules.
- Give a brief account of classification of carbohydrates. Also highlight functions.
- Describe the stepwise β -oxidation of fatty acids.

SECTION-C

- Give a general account of purification techniques of proteins with merits and demerits in each case.
- Describe briefly DNA sequencing and its chemical synthesis with suitable examples.
- Write short notes on :
 - Glycolysis
 - Oxidative phosphorylation.



NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No.

Total No. of Pages : 02

Total No. of Questions : 20

M.Sc. (BT) (2018 Onwards Batch) (Sem.-1)

NANOBIOTECHNOLOGY

Subject Code : MBT-112

M.Code : 75665

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SEVEN questions carrying SIX marks each and students have to attempt any FIVE questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Write short note on following :

1. How nano-biotechnology is different from nano-science?
2. What is the diameter of a bucky ball? How many pentagons and hexagons are there in a bucky ball?
3. Decipher the terms :
 - (i) MIMIC
 - (ii) PDMS in protein nanocircuity.
4. What are the effects of nanoparticles on the environment?
5. Give some examples of DNA Nanostructures.
6. Explain basic biological concepts and principles for the development of nanoengineering systems.
7. Discuss the nanotoxicology in marine system.
8. Which amino acids provide sharp bends/turns in protein chain?
9. Give few examples of bionanomachines.
10. Enlist the pro and cons for ZnO nanomaterials used as fertilizers in agriculture field.

SECTION-B

11. Explain the Principle for DNA based Nanostructure.
12. Discuss in detail structural and functional principles of Nanobiotechnology.
13. Write down the protein based nanocircuity in silicon wafer and antigen antibody binding with the specific site with neat diagram.
14. Explain the role of DNA as Functional Template for Nanocircuity.
15. Write a short note on current status and future perspectives of nanotechnology in agriculture field.
16. Discuss the role of liposome based nanobiosensor for pesticide detection.
17. Write a short note on Physico-chemical properties of nanoparticles that determine their potential toxicity.

SECTION-C

18. Discuss in detail the Nanoparticle based Biomaterial Hybrid Systems for bioelectronic Devices with examples and neat sketch.
19. Write a short on the following :
 - a) Nanomaterials used in food preservation.
 - b) Gold nanoparticles used in biosecurity.
20. a) Describe the generation of different ROS in a cell under the effect of toxic nanomaterials.
b) Give the name of various principles (any four) essential for framing the ethical guidelines for carrying out research activities in the domain of nanotechnology.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

