

ASSIGNMENT BOOKLET
Bachelor's Degree Programme (B.Sc.)

MOLELCULES OF LIFE

(Valid from January 1st 2023 to December 31st 2023)

Please Note

- You can take electives (56 to 64 credits) from a minimum of TWO and a maximum of FOUR science disciplines, viz. Physics, Chemistry, Life Sciences and Mathematics.
- You can opt for elective courses worth a MINIMUM OF 8 CREDITS and a MAXIMUM OF 48 CREDITS from any of these four disciplines.
- At least 25% of the total credits that you register for in the elective courses from Life Sciences, Chemistry and Physics disciplines must be from the laboratory courses. For example, if you opt for a total of 64 credits of electives in these 3 disciplines, at least 16 credits should be from lab courses.
- You cannot appear in the Term-End Examination of any course without registering for the course. Otherwise, your result will not be declared and the onus will be on you.



School of Sciences
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Maidan Garhi, New Delhi-110068
(2023)

Dear Student,

We hope, you are familiar with the system of evaluation to be followed for the Bachelor's Degree Programme. At this stage you may probably like to re-read the section on assignments in the Programme Guide that we sent you after your enrolment. A weightage of 30 per cent, as you are aware, has been earmarked for continuous evaluation, which would consist of one tutor-marked assignment. The assignment is based on Blocks 1, 2, 3 and 4.

Instructions for Formatting Your Assignments

Before attempting the assignments, please read the following instructions carefully:

1. On top of the first page of your answer sheet, please write the details exactly in the following format:

ENROLMENT No.:

NAME :

ADDRESS :

.....

.....

COURSE CODE :

COURSE TITLE :

ASSIGNMENT NO.:

STUDY CENTRE :
(NAME AND CODE)

DATE :.....

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

2. Use only foolscap size writing paper (but not of very thin variety) for writing your answers.
3. Leave 4 cm margin on the left, top and bottom of your answer sheet.
4. Your answers should be precise.
5. While writing answers, clearly indicate the Question No. and part of the question being solved.
6. Please note that:
 - i) The Assignment is valid from Jan, 2023 - Dec, 2023.
 - ii) The response to this assignment is to be submitted to the Study Centre Coordinator within eight weeks of the receipt of this booklet in order to get the feedback and comments on the evaluated assignment.
 - iii) In any case, you have to submit the assignment response before appearing in the term end examination.
7. **We strongly suggest that you should retain a copy of your assignment responses.**

Wishing you all good luck.

Tutor Marked Assignment

Molecules of Life

Course Code: BCHET-149
Assignment Code: BCHET-149/TMA/2023
Maximum Marks: 100

Note: This assignment is based on all the four Blocks of the entire course.

PART-A

1. a) Describe the method for fractionation of subcellular organelles. (5)
- b) What is the role of Golgi bodies in protein processing? Illustrate with the help of a diagram. (5)
2. a) Name the storage polysaccharides present in animals and plants. Indicate the structural differences between these. (5)
- b) i) What are lipoproteins? Name the major groups of lipoproteins. (5)
- ii) What is the significance of phospholipids in the membrane structure and function.
3. a) Why are the amino acids called α -amino acids? The amino acids tyrosine and tryptophan have nonpolar side chains; still these are placed in the uncharged polar group, why? Write the advantages of polar side chains in the amino acids. (5)
- b) Describe the stereochemistry of the peptide bond and explain how this is significant in restricting the number of conformations of a polypeptide chain. (5)
4. a) How does the pH affect the activity of enzymes in the biological systems? Illustrate your answer. (5)
- b) What is the significance of vitamins and minerals in the living system? Write one biochemical reaction in which the coenzyme of cyanocobalmin is associated and explain the mechanism of the reaction. (5)
5. a) When is a reaction called spontaneous? Differentiate between ΔG and ΔG° and describe their significance in predicting the direction of a biochemical reaction. (5)
- b) What is meant by the turnover of ATP? How is oxidative phosphorylation related to it? Write the steps involved in the phosphorylation process. (5)

PART-B

6. a) Differentiate between anabolism and catabolism. Write the mechanism of the reaction of conversion of glyceraldehyde-3-phosphate to pyruvate. (5)
- b) Describe the process of biosynthesis of fatty acids catalysed by fatty acid synthase. (5)
7. a) How is feedback regulation different from allosteric regulation? Name the most important regulatory enzyme and its allosteric effector in the glycolytic pathway. Also write the reaction catalysed by this enzyme. (5)
- b) Define photophosphorylation. Differentiate between substrate level and oxidative phosphorylation. (5)

8. a) Describe the structure and role of ribosome in protein synthesis. (5)
- b) What are the advantages of using immobilized enzymes? How is the production of enzymes from microorganisms carried out? (5)
9. a) Describe the role of DNA polymerase in DNA replication.
- b) Describe the process of unwinding of the double helix during DNA replication. (5)
10. a) Name two carbohydrates that are metabolised by glycolysis. Write the reactions and enzymes involved in their entry into the glycolytic pathway. (5)
- b) Describe the pathways involved in the removal of amino group from amino acids. (5)