BCHET-149

ASSIGNMENT BOOKLET

Bachelor's Degree Programme
(BSCG)

MOLECULES OF LIFE

Valid from 1st July, 2021 to 30th June, 2022

School of Sciences
Indira Gandhi National Open University
Maidan Garhi
New Delhi-110068
(2021-2022)

Dear Student,

Please read the section on assignments in the Programme Guide for B. Sc. 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** for this course. The assignment is in this booklet, and it consists of two parts, Part A and B. It covers all blocks of the course. The total marks of all the parts are 100, of which 35% are needed to pass it.

Instructions for Formatting Your Assignments

Before attempting the assignment 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:

ROLL NO.: ……

NAME: ……

ADDRESS: ……

……

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COURSE CODE: …….

COURSE TITLE: …….

ASSIGNMENT NO.: ……..…

STUDY CENTRE: ……..….. **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) Solve Part (A) and Part (B) of this assignment, and **submit the complete assignment answer sheets within the due date.**

6) The assignment answer sheets are to be submitted to your Study Centre within the due date. **Answer sheets received after the due date shall not be accepted.**

   We strongly suggest that you retain a copy of your answer sheets.

7) This assignment is **valid from 1st July, 2021 to 30th June, 2022**. If you have failed in this assignment or fail to submit it by **June, 2022**, then you need to get the assignment for the year **2022-2023**, and submit it as per the instructions given in the Programme Guide.

8) **You cannot fill the examination form for this course** until you have submitted this assignment.

We wish you good luck.

ASSIGNMENT

Molecules of Life
Elective Course in Chemistry

Course Code: BCHET-149
Assignment Code: BCHET-149/TMA/2021-2022
Maximum Marks: 100

Note: Attempt all questions. The marks for each question are indicated against it.

PART-A

1. a) List the important cell organelles of a typical eukaryotic cell. Describe the structure and function of any two organelles from this list. (5)

   b) Describe in brief the structure of disaccharides? How is maltose different from sucrose? (5)

2. a) What are the blood group substances? How do they chemically differ from each other? (5)

   b) What are lipoproteins? What is their functional role? (5)

3. a) List the important functions of biomembranes. (5)

   b) What are the main steps involved in transcription? Briefly describe the process of transcription in a cell. (5)

4. a) Write the structures of tyrosine and tryptophan. Which group are they categorised into and why? (5)

   b) Describe the steps involved in the synthesis of a polypeptide. (5)

5. a) Name the types of interactions involved in the primary and higher order structures of protein. How is the primary structure of proteins different from the structural formula of organic compounds? (5)

   b) Differentiate between the following pairs. (5)

      i) Cofactor and Coenzyme

      ii) Apoenzyme and Holoenzyme

PART-B

6. a) Explain the mechanism involved in the enzyme catalysis of biochemical reactions. (5)

   b) Define the following: (5)

      i) Entropy

      ii) Free energy

      iii) Metabolism

      iv) Metabolites

7. a) Explain with the help of examples what is meant by convergent and divergent nature of metabolism. (5)

b) Describe in brief the first ATP - generating step of glycolysis. (5)

8. a) Name the enzyme involved in the conversion of pyruvate to acetyl–CoA. Explain how it is different from the other enzymes. (5)

b) Which metabolic processes the following reactions belong to? What is the similarity between the two? (5)

i) Pyruvate ⟶ Oxaloacetate

ii) Acetyl–SCoA ⟶ Malonyl-CoA

9. a) Taking a suitable example explain the inhibition of protein biosynthesis by antibiotics in prokaryotes. (5)

b) How is polypeptide chain elongated during protein biosynthesis? Describe the process. (5)

10. a) Name the different RNAs found in the cell and explain the structure of any one of these. (5)

b) What are the similarities and differences between RNA replication and RNA transcription? Explain. (5)