CHE-09

ASSIGNMENT BOOKLET

Bachelor's Degree Programme (B.Sc.)

BIOCHEMISTRY

(Valid from 1st January, 2020 to 31st December, 2020)

It is Compulsory to submit the Assignment before filling in the Term-End Examination Form.

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
Indira Gandhi National Open University
New Delhi
(2020)

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 percent, 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:…….....……

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COURSE CODE : ….....……

COURSE TITLE : ….....……

ASSIGNMENT NO.: ….....……

STUDY CENTRE : ….....…… DATE:..…….
(NAME AND CODE)

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 1st January, 2020 to 31st December, 2020.

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
Biochemistry
An Elective Course in Chemistry and Life Sciences

Course Code: CHE-09
Assignment Code: CHE-09/TMA/2020
Maximum Marks: 100

Answer all the questions given below.

1.	a)	How are peroxisomes and lysosomes generated in a cell? What are their functions?	(5)
	b)	Describe different modes through which cell membrane controls the transport of ingoing and outgoing molecules?	(5)
2.	a)	What are anomers? Explain the existence of anomers in sugars taking D-glucose as an illustrative case.	(5)
	b)	Describe the various ways of classifying carbohydrates. Give examples for each class.	(5)
3.	a)	What prostaglandins and leucotrienes? Give their functions.	(5)
	b)	Elaborate on the role of t-RNA in protein biosynthesis.	(5)
4.	a)	Describe the ways of classifying amino acids and give example of each class.	(5)
	b)	What are the structural and functional differences between myoglobin and haemoglobin?	(5)
5.	a)	What is Michaelis-Menton equation? Explain the significance of V_{max} and K_m is this equation.	(5)
	b)	What is the difference between macrominerals and trace elements? Write the main functions of any two trace elements.	(5)
6.	a)	How is the standard free energy for chemical reactions different from the standard free energy for biochemical reactions? With the help of an example explain the significance of coupling in biological reactions.	(5)
	b)	Standard free energy change alone cannot predict the direction of a biochemical reaction. Comment.	(5)
7.	a)	Explain the mechanism of action of the enzyme aconitase on citrate in TCA cycle.	(5)
	b)	Compare the energetics of metabolic oxidation of glucose and a fatty acid.	(5)
8.	a)	Explain in brief the regulation of glycogen metabolism.	(5)
	b)	How many moles of ATP and NADPH are required to convert 6 moles of CO_2 to fructose-6-phosphate? Give all the reactions involved.	(5)
9.	a)	Describe the process of RNA transcription.	(5)
	b)	What is the role of ribosomal P-site and A-site in protein biosynthesis? How does streptomycin perform its antibiotic function?	(5)
10.	a)	What is genetic engineering? Describe any one of its applications.	(5)
	b)	Write the structural features of an antibody molecule. Discuss any one mechanism by which antibodies interact with antigens.	(5)