CHE-09

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

BIOCHEMISTRY

Valid from 1st January to 31st December 2024

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
Maidan Garhi, New Delhi-110068

(2024)

Dear Students,

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 for Elective Courses 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 (TMA) for this course. The assignment is based on Blocks 1, 2, 3 and 4.

Instructions for Formating Your Assignments

Before attempting the assignment, please read the following instructions carefully.

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

Enrolment No.: .....……

Name: .....…….

Address: .....…….

Course Code: .....……. **…..……..**

Course Title: .....……. **…….**

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 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 solving problems, clearly indicate the question number along with the part being solved.

6. Please note that:
   i) The Assignment is valid from Jan 2024-Dec 2024.
   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.

Answer sheets received after the due date shall not be accepted.

We strongly suggest that you should retain a copy of your assignments.

Wishing you all good luck.

Tutor Marked Assignment
Biochemistry
Elective Course in Chemistry and Life Sciences

Course Code: CHE - 09
Assignment Code: CHE-09/TMA/2024
Maximum Marks: 100

Answer all the questions given below.

1. a) Differentiate between glyoxisomes and peroxisomes and give their important functions. (5)
   b) Describe the process of anomerisation taking glucose as the representative example. (5)

2. a) Write five chemical reactions which justify the pentahydroxy structure of glucose. (5)
   b) What are ketone bodies? How are these produced in the body? What does their presence in the body signify? (5)

3. a) Name the different components of the cell membrane and state its functions. Who gave the fluid mosaic model of structure of cell membrane? (5)
   b) What is the most common form of DNA? Explain the nature of forces responsible for holding the double helix together. (5)

4. a) What is the role of hydrophobic interactions in protein folding. Differentiate between the tertiary and quaternary structures of proteins. (5)
   b) What is meant by catalytic efficiency of an enzyme? Describe the mechanism of enzyme action. (5)

5. a) What is the difference between vitamins and coenzymes? Why should our daily diet contain water soluble vitamins? Write the physiological functions of calcium, phosphorus, sodium and potassium. (5)
   b) Differentiate between cysteine and cystine. What is the role of cystine in maintaining protein structure? (5)

6. a) Describe and differentiate between substrate level phosphorylation and oxidative phosphorylation taking suitable examples for both. (5)
   b) Name two inhibitors of glycolysis and explain their mechanism of action. (5)

7. a) Explain the following with respect to TCA cycle: (5)
      i) Substrate chanelling
      ii) Anaplerosis
   b) Describe the regulation of pyruvate dehydrogenase complex by product inhibition. (5)

8. a) Define funelling effect, photosystem and photophosphorylation in photosynthesis. (5)
   b) What is Hill reaction? Write the balanced equation for Hill reaction. Which photosystem is responsible for this? (5)

9. a) Name one similarity and one dissimilarity between the action of DNA polymerase and RNA polymerase. Describe the transcription process. (5)
   b) Describe the scope of biotechnology. Describe the process of separation of penicillin in the final stage of production. (5)

10. a) Describe the activation of amino acids during protein biosynthesis. How does an antibiotic affect protein biosynthesis? (5)
    b) List the different types of antibodies. What are the gross structural features of an antibody molecule? Name any three mechanisms by which antibodies interact with antigens. (5)