

BZYCT-135

ASSIGNMENT BOOKLET

**Bachelor's Degree Programme
(BSCG)
PHYSIOLOGY AND BIOCHEMISTRY**

Valid from 1st January, 2023 to 31st December, 2023



**School of Sciences
Indira Gandhi National Open University
Maidan Garhi
New Delhi-110068**

(2023)

Dear Student,

Please read the section on assignments in the Programme Guide for Core 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** for this course. The assignment is in this booklet, and it consists of three parts, Part A, B and C. 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:

.....

.....

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) Complete each of Part A, Part B and Part C of this assignment separately, and **submit them together.**
- 6) The assignment answer sheets are to be submitted to your Study Centre as per the schedule made by the study centre. **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 will remain valid from January 1, 2023 to December 31, 2023.** However, you are advised to submit it within **12 weeks** of receiving this booklet to accomplish its purpose as a teaching-tool. Answer sheets received after the due date shall not be accepted.
- 8) **You cannot fill the exam form for this course** till you have submitted this assignment.

We wish you good luck.

ASSIGNMENT
PHYSIOLOGY AND BIOCHEMISTRY

Course Code: BZYCT-135
Assignment Code: BZYCT-135/TMA/2023
Maximum Marks: 100

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

Part-A

Maximum Marks: 50

1.
 - i) What prevents the epithelial lining of the walls of the stomach of animals from being digested by the HCl secreted by it? (5)
 - ii) What are the end-products of food that can be absorbed by the body? Explain how absorption of fats differs from absorption of proteins and sugars. (5)
2.
 - a) How is carbon dioxide transported when it is released by the tissues into the blood in mammals? What is the role of carbonic anhydrase? (6)
 - b) Select the four true statements: (4)
 - i) Arteries generally have a larger diameter than veins.
 - ii) Capillaries are made up of a single layer of endothelial cells surrounded by a basal membrane.
 - iii) The arteries near the heart are more elastic and dampen the oscillation in blood flow.
 - iv) Whole blood is more viscous than plasma because of the presence of blood cells.
 - v) The maximum pressure during a heart beat is systolic pressure.
 - vi) The maximum pressure during a heartbeat is known as diastolic pressure.
3.
 - i) Write short notes on: (5)
 - a) Green gland of crustaceans
 - b) Molluscan kidney
 - ii) Diagrammatically explain the biochemical pathways that produce ATP for vertebrate muscle contraction. (5)
4.
 - a) If a new compound is used that binds to membrane receptors by blocking them which hormone action will be blocked as a result? (2)
 - b) If cAMP formation is inhibited in the cell then what step in the hormone action will be affected? (2)
 - c) How can hormones mediate changes in the cell's function? (2)
 - d) What is the role of calcium ion as a second messenger? (4)
5.
 - i) Write the term used for the following: (5)
 - a) Female reproductive stem cell.

- b) Mature follicle containing fluid filled spaces.
 - c) A soluble polypeptide hormone synthesized by ovary during pregnancy.
 - d) C-21 steroid hormones having basic structure of pregnane nucleus.
 - e) Luteotropic hormone of pituitary.
- ii) Draw a labeled diagram of a cross section through the mammalian seminiferous tubule. (5)

Part-B

Maximum Marks: 50

6. a) Do as directed. (5)
- i) D-Mannose is a ketotriose (True/ False).
 - ii) Ribulose is ketopentose or aldopentose (Pick one option)
 - iii) Generally, molecule with 'n' chiral centers has how many stereoisomers?
 - iv) D form of carbohydrates is more abundant than L form (True/ False).
 - v) Enantiomers are pair of chiral molecules with non superimposable mirror images (True/ False).
- b) Describe the role of enzymes in lowering the activation energy and in coupled reactions. (5)
7. i) Derive Michaelis-Menten equation. (5)
- ii) Draw Lineweaver-Burk plot. (5)
8. i) List the Antioxidant vitamins and their roles. (5)
- ii) Discuss the consequences of free radical interaction with macromolecules. (5)
9. a) What is glycogenesis? Explain the steps involved in the process of glycogenesis. (5)
- b) Explain, how is fatty acid synthesis regulated? (5)
10. i) Choose the correct answer from the parentheses. (6)
- a) (Creatinine/Urea) is the main nitrogenous compound in urine.
 - b) Transamination reaction in amino acid synthesis is catalysed by enzyme (Decarboxylase/Transaminase).
 - c) Urea cycle is also referred to as (Krebs-Henseleit/Krebs) cycle.
 - d) In deamination, amino acid is converted into(keto acid/ carboxylic acid).
 - e) Process of breakdown of amino acids to α keto acids is called (cis-amination/transamination).
 - f) The alpha amino groups of all the amino acids is finally channelised to (glutamate/alanine).

- ii) Answer in 1-2 lines: (4)
- a) Define deamination.
 - b) Give glutamate dehydrogenase reaction (GDH Reaction).
 - c) Name the major transport form of ammonia.
 - d) Defect/deficiency in which enzyme of the urea cycle causes hyperammonemia?