

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

**Physiology**

**Valid from 1<sup>st</sup> January 2024 to 31<sup>st</sup> 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 'out of those 64 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 'responsibility will be yours'.



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

**(2024)**

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 for Elective Courses 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 (TMA)** for this course.

**Instructions for Formatting Your Assignments**

Before attempting the assignment please read the following instructions carefully.

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

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ENROLMENT NO.: .....

NAME : .....

ADDRESS .....

.....

COURSE CODE : .....

COURSE TITLE : .....

ASSIGNMENT NO.: .....

STUDY CENTRE : ..... DATE: .....

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**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 solving problems, clearly indicate the question number along with the part being solved. Be precise.
- 6) **This assignment will remain valid for one year from January 1, 2024 to December 31, 2024.** 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.
- 7) **You cannot fill the exam form for this course until you have submitted this assignment.**

**We strongly feel that you should retain a copy of your assignment response to avoid any unforeseen situation and append, if possible, a photocopy of this booklet with your response.**

We wish you good luck!

**ASSIGNMENT**  
**(Tutor Marked Assignment)**

**Course Code: LSE-05**  
**Assignment Code: LSE-05/TMA/2024**  
**Maximum Marks: 100**

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**Instructions:** Attempt all questions. Write your answers for part I and II in separate answer books. Draw neat and labeled diagrams wherever necessary. Be precise in your answer. Apart from the content, your answer will be graded for using your own language, clarity and logical presentation.

**Part I-(Animal Physiology)**

1. a) Define the following: (5)
- i) Stroke volume
  - ii) Action Potential
  - iii) Cardiac output
  - iv) Pulse rate
  - v) Glial Cells
- b) What is the sliding filament model of movement of muscles? How does the sliding movement occur at molecular level? (5)
2. a) Compare the types of nitrogenous wastes observed in animals. Identify which compounds can be excreted with a minimum of water, which is most toxic and which waste product is found in fish, insects and mammals. Data regarding velocity of conduction and diameter of nerve fibre of two species A and B is given below. Which species is an invertebrate? (5)
- b) Explain why the velocity of nerve impulse conduction in species B is more than species A? (5)

Species	Diameter $\mu\text{m}$	Velocity of conduction $\text{ms}^{-1}$
A	500	33
B	20	100

3. a) Define the following: (5)
- i) Anatomical dead space
  - ii) Cardiac output
  - iii) Resting potential in a nerve cell
  - iv) Parthenogenesis
  - v) Pheromones
- b) What do you understand by blood pressure? Explain the process of fluid transfer between the capillaries and tissue. (5)

4. a) What does an oxygen dissociation curve show? Draw and compare the oxygen dissociation curves of haemoglobin and myoglobin. (5)
- b) Why do animals exhibit differences between their essential food requirements? Where does the absorption of carbohydrates, lipids and amino acids take place in the vertebrate body? Describe the method of glucose absorption. (5)
5. a) Discuss the nature and functions of estrogen in mammals. (5)
- b) With the help of a diagram, discuss the formation and secretion of amino acid based hormones. (5)

### **Part II-(Plant Physiology)**

6. a) List the function of essential elements and describe any one of them. (5)
- b) Differentiate between macro nutrient and micro nutrient. Describe the role of any two micronutrients in plant metabolism. (5)
7. Write notes on the following: (2½×4=10)
- i) Biological clocks
  - ii) C<sub>4</sub> plants
  - iii) Vernalization
  - iv) Senescence
8. a) Discuss Red Drop and Emerson Enhancement effect. (3)
- b) Draw and describe Z scheme to illustrate the movement of electron in PS I (Photosystem I) & PS II (Photosystem II). (4)
- c) Describe loading and unloading in sieve tubes. (3)
9. a) What is the role of plant hormones in development and growth? Describe the effect of auxins and cytokinins plant parts. (5)
- b) Describe the ways how plant adapts to biological stresses. (5)
10. a) List the main function of stomata. Describe the mechanism of stomatal opening with labeled diagram. (5)
- b) Describe the role of proton pump in active transport of protons across plasma-membrane. (5)