LSE-06

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

Developmental Biology

Valid from 1st January 2022 to 31st December 2022

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

(2022)

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:

ENROLMENT 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) 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, 2022 to December 31, 2022**. 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-06
Assignment Code: LSE-06/TMA/2022
Max. Marks: 100

Part-1 (Plant Developmental Biology)

1. Make neat and labelled diagrams of the following: (2½×4=10)

   i) Types of ovules

   ii) Apomixis types

   iii) Cross-section of fruit of *Pyrus malus*

   iv) Storied and non-storied cambium

2. i) What new aspects of pollen biology have recently come to light with the use of the ultra-thin serial sectioning, isolation of live sperms and computer-aided 3-D reconstruction? (5)

   ii) With the help of labelled diagrams describe the following aspects of fertilization in angiosperms: pollen-stigma interaction, entry of pollen tube in the ovule, syngamy and triple fusion. (5)

3. Make clear and labelled diagrams of the following: (2½×4=10)

   i) Dimorphic tapetum

   ii) Monosporic type of embryo sac development

   iii) Types of apomixis

   iv) Embryo sac with zygote and primary endosperm nucleus

   v) Mature monocotyledonous and dicotyledonous embryos

   vi) L.S. seed with operculum

4. Discuss the various applications of plant tissue and organ culture. (10)

5. Write short notes on the following : (2½×4=10)

   i) Morphological changes accompanying floral induction

   ii) Production of haploids by tissue culture

   iii) Abscission of leaves and fruits

   iv) Variants of endosperm

PART II (Animal Development)

6. a) Describe the three basic types of regeneration seen in animals. Give an example for each type. (5)

   b) With the help of diagrams explain the steps of nuclear transplantation experiment in frog eggs. (5)

7. Using examples of each, explain the difference between: (10)

   i) Allometric and isometric growth

   ii) Totipotency and pluripotency

   iii) Holoblastic and meroblastic cleavage

   iv) Morphollaxis and epimrphosis

8. a) Describe the process of metamorphosis in urodeles. (5)

   b) Describe the various stages in the development of cancer. (5)

9. Describe the following briefly: (10)

   i) Fate of CFU-M, L stem cells in mammals

   ii) Test for genomic equivalence

   iii) Role of morphogenetic field in development of eye

   iv) Role of prothoracic gland in insect metamorphosis

10. a) Describe the basic process of oogenesis in animals with the help of suitable diagrams. (5)

    b) Make a chart to classify the eggs in animals on the basis of: (5)

       i) amount of yolk

       ii) location of yolk