LSE-06

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

Developmental Biology

Valid from 1st January 2021 to 31st December 2021

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

(2021)

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, 2021 to December 31, 2021**. 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/2021
Max. Marks: 100

Part-1 (Plant Developmental Biology)

1. Write the technical terms for the following : (1×10=10)

   i) A mass of cells that divides to form the archesporial mother cells.

   ii) A wall layer of anther that helps in its dehiscence.

   iii) The nutritive cell surrounding the nucellus and that develop from the inner-most layer of the integument.

   iv) The cell of the pollen grain that divides to form sperms.

   v) A chain of cells that attaches the embryo to the embryo sac.

   vi) Plants that flower irrespective of the length of the day.

   vii) The response of plants to touch.

   viii) The state of suspended growth and metabolism.

   ix) The meristems that produce secondary tissues.

   x) *in-vitro* clonal propagation.

2. Draw clear and labelled diagrams for the following: (2×5=10)

   i) Aleurone cells of a cereal with aleurone grains

   ii) Diagrammatic representation of secondary growth in a dicot stem of four years.

   iii) T.S. of a stem showing heartwood and sapwood

   iv) Endosperm with chalazal haustorium

   v) Dimorphic tapetum

3. Write detailed notes of the following: (2½×4=10)

   i) Physiological effects of plant growth regulators
   ii) Characteristics determining economic importance of wood
   iii) Syngamy and triple fusion
   iv) Autochory

4. Prepare a detailed account on types of incompatibility, its biological significance and methods to overcome it. (10)

5. With the help of a flow chart explain the processes involved in the initiation of flower primordial. (10)

PART II (Animal Development)

6. (a) Define cleavage in fertilized egg and give its two main characteristic features. Describe the mechanism of cleavage in the fertilized egg. (5)

   (b) Diagrammatically show the early, middle and late stages of gastrulation in the frog *Xenopus laevis.* (5)

7. (a) Describe the various types of morphogenetic movements of epithelial cells during early changes in the embryonic form and formation of organ rudiments. (5)

   (b) Describe the various experiments conducted by scientists to analyse the developmental potency of the embryonic nuclei. Also give the conclusions drawn by the scientists from these experiments. (5)

8. (a) Describe using well labelled diagrams the development of mammalian pancreas. (5)

   (b) List one larval form for each of the following animal groups: (5)

   (i) Sponges

   (ii) Molluscs

   (iii) Cyclostomes

   (iv) Hemichordates

   (v) Coelentrata

9. (a) Differentiate between allometric and isometric growth that occurs in multicelluar organisms. Describe the various factors that govern growth in multicelluar organism. (5)

   (b) Explain the process of implantation of the human embryo in the uterus. (5)

10. Write short notes on the following: (2 ½ ×10)

   i) Vertebrate Eye Field

   ii) Oogenesis in amphibians

   iii) Complete metamorphosis in insects

   iv) Origin of blastemal cells during regeneration in planarians.