BZYCT-133

ASSIGNMENT BOOKLET

Bachelor's Degree Programme

(BSCG)
(COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY OF VERTEBRATES)

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: ……

……

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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 is **valid from 1st January, 2023 to 31st December, 2023**. If you have failed in this assignment or fail to submit it by 31st December, 2023, then you need to get the assignment for the year 2024, and submit it as per the instructions given in the Programme Guide.

8) **You cannot fill the exam form for this course** till you have submitted this assignment.

We wish you good luck.

ASSIGNMENT

COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY OF VERTEBRATES

Course Code: BZYCT-133
Assignment Code: BZYCT-133/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) a) Which are the four successive layers present in the integument of mammals? (1)

   b) Which muscle is attached to the hair follicle of human beings and make hair stand erect? (1)

   ii) What are the different types of feathers? What are their functions? (3)

   iii) Choose the correct alternative: (5)

   i) The visceral skeleton is also referred to as (chondrocranium/ splanchocranium).

   ii) Jaws arose from the (mandibular/hyoid) arch.

   iii) The upper jaw is made up of the (palatoquadrate/Meckel's cartilage).

   iv) Branchial basket formed of the visceral arches is found in (teleosts/cyclostomes).

   v) If the jaw is attached to the skull and not suspended by the hyomandibula, the suspensorium is (autodiastylic/autostylic).

2. Fill in the blanks: (10)

   i) The four types of mammalian uteri are ……..,
   ……., …….. and ……. .

   ii) The muscle layer of the uterus is called …….

   iii) The sequence of organs of mammalian female genital system are:

   two ovaries ⟶ ……..…… ⟶ ……..……⟶
   …… ⟶ …….. .

   iv) In female birds only the …… gonad develops into the ovary.

3. i) List the primary divisions of the nervous system and their subdivisions. (5)

   ii) List the cranial nerves of special senses and the nerves that innervate the eye muscles. (5)

4. Describe specialised sensory organs of vertebrates and relate their role to their habitat. (10)

5. Briefly write the functions of the following hormones secreted in mammals. (10)

a) Adrenocoricotropic hormone

b) Parathormone

c) Aldosterone

d) Testosterone

e) Progesterone

Part-B **Maximum Marks: 50**

6. Explain the role of fate maps and patterns of development. (10)

7. i) How would you define a ligand in cell-to cell signalling? (3)

ii) What is the difference between juxtacrine and paracrine signalling? (3)

iii) How is EMT used in the embryo and in the adult? (4)

8. i) Chose the correct answer form alternatives provided. (5)

a) Fertilization is responsible for the activation/arrest of development.

b) Activation of the sperm ensures/does not ensure that sperm will meet the egg.

c) In organisms with external/internal fertilization, chemotactic mechanisms have been evolved to attract the sperm towards the egg.

d) A period of maturation in the female reproductive tract required for the transformation of sperm is known as activation/capactiation.

e) Sperm using an enzyme called acrosin/hyaluronidase penetrate their way through zona pellucida.

ii) Fill in the blanks with suitable words. (5)

a) ……. is the extension of egg cytoplasm around the entering sperm head.

b) Inhibitor of microfilament formation such as …… prevents the formation of fertilization cone.

c) The early response for the entry of sperm into the egg is prevention of ……. .

d) The ……. for polyspermy is mediated by the electrical depolarization of egg plasma membrane.

e) The slow block to polyspermy is achieved by …… reaction.

9. a) Describe the process of internalization of mesoderm in frog. What are the end results of the gastrulation process? (5)

b) Discuss the process of development of extra embryonic membranes in chick. (5)

10. a) Choose the correct term: (5)

i) The morula/blastocyst implants in the uterine endometrium.

ii) The ICM/trophoblast gives rise to the embryo.

iii) Ectopic pregnancy is the result of implantation inside/outside the uterus.

iv) HCG maintains/degenerates the corpus luteum.

v) Uteroplacental circulation occurs due to development of blood filled space in syncytiotrophoblast/inner celluar layer of trophoblast.

b) How do genetic and environmental defects cause problems in development? (5)