The Open University of Sri Lanka
Faculty of Natural Sciences
B.Sc/B.Ed Degree Programme

Department	: Zoology
Level	: Level 4
Name of the Examination	: Final Examination
Course Code and Title	**: ZYU4300 - Animal Form and Function**
Academic Year	: 2024/25
Date	: 21/05/2025
Time	: 1.30 pm - 3.30 pm
Duration	: 2 hours
Index number	:

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **Part A and Part B** with **6** questions in 8 pages.
3. **Part A**, structured essay question. is **compulsory** and answers should be written in the space given in question paper.
4. Answers for **Part B** should be written in answer books/papers provided.
5. All questions carry equal marks.
6. Answer for each question should commence from a new page.
7. Draw fully labeled diagrams where necessary.
8. Having any unauthorized documents/ mobile phones in your possession is a punishable offense.
9. Use blue or black ink to answer the questions.
10. Circle the number of the questions you answered in the front cover of your answer script.
11. Clearly state your index number in each page of answer script.

PART A

Question 1

1. This question is based on the Level of Organization of Living Things.

1.1 List the hierarchical levels of organization from the smallest to the most complex in complex multicellular organisms

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(3 Marks)

1.2 Define the term cell?

(1 Mark)

1.3 Name the two major components of the cytoplasm of a cell and state the main function(s) of each component.

(6 Marks)

1.4 Why are the cells in multicellular animals not able to act independently like those in unicellular organisms?

(4 marks)

1.5 Four types of tissues are found in animals. Among them which type is the most abundant?

(1 mark)

1.6 Give a classification of the tissue type mentioned above in 1.5 as a flow chart

(20 marks)

1.7 Define the term organ.

(4 marks)

1.8 What is the largest organ in the human body?

(1 mark)

1.9 Draw a cross-sectional diagram of it (mentioned above 1.8) and label its parts.

(20 marks)

1.10 Briefly explain three functions of the above-mentioned organ in 1.8

(9 marks)

1.11 What is an organ system?

(4 marks)

1.12 To study organ systems, mice are used as a model organism. What do you mean by model organism?

(5 marks)

1.13 Draw a fully labelled diagram of the internal anatomy of the mice.

(15 marks)

1.14 Describe the recommended actions to control bleeding encountered during dissection?

(2 marks)

1.15 How can the sex of a mice be determined based on external anatomical features?

(5 marks)

(Total 100 marks)

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Part B

Answer any three (3) questions.

2. The nervous system is the main controlling and communicating system of the body.
2.a. Describe the structure of a neuron. How is its structure adapted to its function in the nervous system? (50 marks)
2.b. Describe the evolutionary development of the nervous system from cnidarians to insects. (50 marks)
(Total 100 marks)

3. A Multicellular organism needs a respiratory system to provide a constant supply of oxygen and remove carbon dioxide between body tissues and the environment.

3.a. Describe the four main features that should be present in an efficient respiratory surface and briefly explain how each of these features facilitate efficient gaseous exchange. (20 marks)

3.b. Define the term countercurrent exchange system and explain how a countercurrent exchange system works using the fish gill as an example. Discuss why a countercurrent system is more appropriate for efficient gaseous exchange in fish compared to a parallel flow system. (50 marks)

3.c. Using suitable examples, discuss how aquatic insects have modified their tracheal system to suit life in water. (30 marks)

(Total 100 marks)

4.a. Using suitable examples, list three main functions performed by blood in the circulatory system. (10 marks)

4.b. Describe the evolutionary changes in the vertebrate heart from fish to mammals. Explain how these changes support the shift from aquatic to terrestrial life. (90 marks)

(Total 100 marks)

5. Digestion and absorption of food are essential processes that provide the body with the necessary nutrients and energy required for all the functions of an organism.

5.a. Describe the processes of digestion and absorption that take place in the small and large intestines. (80 marks)

5.b. What do you mean by diabetes mellitus? Write down the laboratory procedure for the identification of such a disease with the expected results and conclusion. (20 marks)

(Total 100 marks)

6. Write short notes on any **two (2)** of the following.

6.a. Compare the contraction of smooth muscles and skeletal muscles.

6.b. Respiratory pigments

6.c. Discuss the advantages and disadvantages of asexual reproduction and describe the different types of asexual reproduction found in animals.

6.d. Glomerular Ultrafiltration

(50 marks each)

(Total 100 marks)