

THE OPEN UNIVERSITY OF SRI LANKA
B.Sc DEGREE PROGRAMME – LEVEL 4
FINAL EXAMINATION - 2015/2016
COURSE CODE – ZLU2280/ZOU2264
COURSE TITLE – ANIMAL FORM AND FUNCTION
DURATION – THREE HOURS



Index Number

Date : 20th January 2017

Time : 9.30 am – 12.30 pm

Instructions

- This question paper has two parts , **Part A** and **Part B**.
- **Part A**, structured essay question, is compulsory and answers should be written in the space given in question paper.
- Answers for **Part B** should be written in answer books/papers
- Please hand over both **Part A** and **Part B**.

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Part A

Question 1. (100 marks)

1. The nervous system is essential for mainly controlling and communication in human body.

1.1.i. Name the structural unit of the nervous system.

(2 marks)

1.1.ii. Write four main functions of structural unit of the nervous system.

1 ----- 2 -----

3 ----- 4 -----

(4 marks)

1.1.iii. Classify the structural units based on function and direction in which they transmit electric signals.

1 -----

2 -----

3 -----

(6 marks)

1.2.i. What are neuroglial cells ?

(5 marks)

1.2.ii. Name three types of neuroglial cells.

1 -----

2 -----

3 -----

(6 marks)

1.3. Neuron maintains resting membrane potential. What is the reason for formation of resting membrane potential ?

(3 marks)

1.4. Describe how resting membrane potential is formed in a neuron.

(5 marks)

1.5.a. What is the term that you used for changing the resting membrane potential?

(1 mark)

1.5.b. How do you describe the nerve impulse in relation to the changes you mentioned in 1.5.a?

(2 marks)

1.6. What is meant by threshold value of a neuron ?

(2 marks)

1.7. What would happen to the membrane and surrounding of the membrane during propagation of nerve impulse along the neuron ?

(8 marks)

1.8. Draw a graph to show the change of the resting potential to the action potential with four phases.

(15 marks)

1.9. a. What is refractory period ?

(4 marks)

1.9.b. Name and describe two types of refractory periods.

	Type	Description
1		
2		

(10 marks)

1.9.c. Write two features of neuron that determine the speed of transmission.

(2 marks)

1.10. Skeletal muscle shows different responses to different strength of stimuli indicating it has different properties. Name properties of skeletal muscles.

(10 marks)

1.11. What is meant by muscle tone ?

(3 marks)

1.12. One of the coordination methods of the human body is the electrical coordination. Name the other coordination method.

(2 marks)

1.13. Write six differences between electrical coordination and other coordination method that you have mentioned in 1.12

(10 marks)

(Total marks 100)

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PART B

Answer any *four (4)* questions.

2. Energy production processes take place in all organism and all living cells. All processes are collectively called cellular respiration.
- 2.a. Define the cellular respiration. (05 marks)
- 2.b. Briefly describe the major processes of production of energy from a glucose molecule in cytoplasm of animal cell. (75 marks)
- 2.c. Describe the differences in process when Fat molecule is used as source of energy in above process. (20 marks)
- (Total 100 marks)**
3. Digestive system of vertebrates prepare food for consumption by the cells through different basic processes.
- 3.a. Name the basic digestive processes that take place in human digestive system. (20 marks)
- 3.b. Briefly describe how different parts of the human digestive tract carryout above processes. (80 marks)
- (Total 100 marks)**
4. Blood of vertebrates and many invertebrates contain variety of reparatory pigments, which increases its ability to carry gases.
- 4.a. Name deferent types of respiratory pigments which carries oxygen in animals. (20marks)
- 4.b. Describe what properties of pigments make them as an efficient means of transporting oxygen. (60 marks)
- 4.c. Explain briefly how temperature and pH affect to oxygen transport in human. (20 marks)
- (Total 100 marks)**
5. Main function of the human heart is to circulate the blood by cardiac cycle .
- 5.a. How do you define the cardiac cycle. (5 marks)
- 5.b. Briefly describe the different stages of cardiac cycle . (70 marks)
- 5.c. Explain the importance of cardiac conducting system in rhythmic circulation of blood. (25 marks)
- (Total 100 marks)**
6. Write short notes on **any two (2)** of the following.
- | | |
|---------------------------------------|------------------------------|
| a. Humoral immune response . | b. Anti-clotting mechanisms. |
| c. Cellulose digestion in ruminants . | d. Sliding filament theory. |
- (each 50 marks)
(Total 100 marks)
7. Kidney has a vital role in maintaining a constant internal environment in human body.
- 7.a. Describe the role of the loop of Henle in water retention. (40 marks)
- 7.b. Briefly describe the renal mechanisms of acid- based balance. (60 marks)
- (Total 100 marks)**

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