

UNIVERSITY OF RUHUNA

B.SC. GENERAL DEGREE LEVEL I (SEMESTER I) EXAMINATION – August/Sep 2017

SUBJECT : ZOOLOGY

COURSE UNIT: ZOO 1102 – Core Zoology

Time: 01 ½ hours

Index Number:

Answer **Part A** and **any two** questions from **Part B**.

Illegible handwriting would be penalized.

Question No.	Marks
Part A	1
	2
	3
	4
Part B	1
	2
	3
	4
Assessment	
TOTAL	

Part A: Answer all questions within the space given.

(45 minutes)

1.

(i). Give **two** conditions required for a population to remain at Hardy-Weinberg equilibrium.

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ii). Define the term divergent evolution.

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iii). Briefly describe the autogenous hypothesis of the formation of eukaryotes.

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iv). What is natural selection?

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v). What are the assumptions made by Darwin in the theory of natural selection?

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(10 marks)

2.

i). State the **three** key functions of lysosomes in a eukaryotic cell.

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ii). What are motor proteins? Briefly explain how these work.

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iii). Mention the functions of the following enzymes.

Primase

Helicase

iv). Name two membranous organelles involved in protein transport in cells, and mention how these function.

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v). State **two** differences between euchromatin and heterochromatin.

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(10 marks)

3.

i). Describe the main criteria that can be used in morphological classification of epithelial tissues.

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ii). Mention three specializations of epithelial cells.

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iii). What are gap junctions?

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iv). Briefly describe how glands are formed.

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v). Mention the importance of different blood cells in diagnosing diseases.

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(10 Marks)

4.

i). List four important fundamental questions scrutinized by scientists in the field of developmental biology.

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ii). Mention one key outcome of

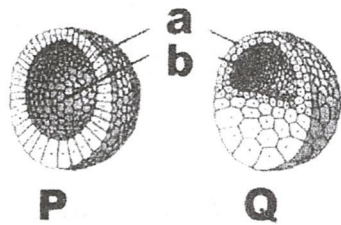
a) Sperm capacitation

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b) Gastrulation

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iii). Early embryonic stages of two different species (P and Q) are given in the picture below.
Name the two species P and Q. Name a and b.



P

Q

a

b

iv). State the key function of

a) morphogens

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b) Ca^{+2} wave across fertilized egg

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v). Draw a diagram to indicate the initiation of neurulation in the mammalian development.

(10 marks)

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Part B:

Answer any two questions only.

(45 minutes)

1. Describe the theory of organic evolution.

20 marks

2. Describe major components of cell membranes, and explain the dynamic nature of the cell membrane.

20 marks

3. Write short notes on the following.

i) Tight junctions

ii) Cells of connective tissues

20 marks

4. Briefly discuss the key features of acrosome reaction and cortical reaction in mammalian fertilization.

20 marks

Marks of the continuous assessment

Max. 20 marks

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