

UNIVERSITY OF RUHUNA

BACHELOR OF SCIENCE GENERAL DEGREE LEVEL I

(SEMESTER I) EXAMINATION - DECEMBER 2020

Subject : Zoology

Course Unit : ZOO 1102 - Core Zoology

Time: 01½ hours

Index No :

Answer the **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. (45 minutes)

Q1. (10 marks)

1.1 (A) State **three** lines of evidence for the belief that life on Earth arose about 3.5 billion years ago.

.....
.....
.....

(B) Mention the main difference between the pre-biotic atmosphere and the present-day atmosphere.

.....
.....

1.2 State **four** life-like properties of protobionts (pre-cells).

.....
.....
.....
.....

1.3 What are the major aspects of the 'RNA world hypothesis'?

.....
.....
.....

1.4 Mention how embryological evidence proves common ancestry during evolution.

.....
.....
.....

Give **one** example :

1.5 (A) What is speciation?

.....

(B) Mention the differences in the outcome between anagenesis and cladogenesis.

.....
.....
.....

Q2.

(10 marks)

2.1 What is the main difference between a living cell and a living virus?

.....
.....
.....

2.2 (A) Draw the chemical structure of a typical amino acid.

(B) What is special about the structure of Proline? Mention its impact on the protein's primary structure.

.....
.....
.....
.....

2.3 List the major components of animal cytoskeleton and name the major protein each of the components is made up of.

Major component	Major protein
.....
.....
.....

2.4 Mention how mature ribosomes are formed in eukaryotes.

.....
.....
.....

2.5 State **two** differences between heterochromatin and euchromatin.

Heterochromatin	Euchromatin
.....
.....

Q3.

(10 marks)

3.1 Mention the germ layer/(s) that is responsible for formation of following tissue types.

- Epithelial tissue -
- Connective tissue -
- Muscle tissue -
- Nerve tissue -

3.2 Fill in the following table using your knowledge on histology of connective tissues.

Specific tissue type	Main structural elements	Example for location
.....	Adipocytes
Hyaline cartilage
.....	Osteon/Haversian system
.....	Vocal cords

3.3 What is the function of hemidesmosomes?

.....

3.4 Mention the **two** types of smooth muscles and their main functional difference.

Type	Functional difference
i).
ii).

3.5 What is the specialty of transitional epithelium with reference to its function?

.....

Q4. (10 marks)

4.1 Name and give brief descriptions on **three** stages of spermatogenesis.

i).

 ii).

 iii).

4.2 Illustrate the internal structure of a hen's egg using a fully labelled sectional diagram.

4.3 Give **three** functions of Fertilizin- Anti-fertilizin reaction.

.....

4.4 Name the stage/process of development indicated in figures i and ii?



Figure i :

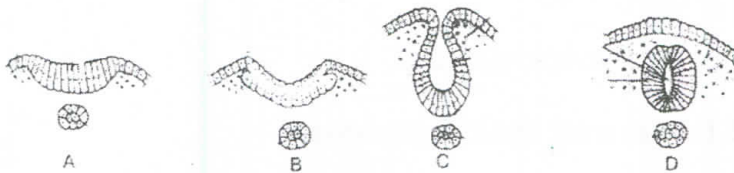


Figure ii :

4.5 Briefly describe the following.

- a) Poly breeders:
- b) Sperm agglutination:
- c) Acrosome reaction:
- d) Fate maps:

PART B: **(45 minutes)**

(40 marks)

Answer only two questions.

1. a). List different theories proposing how life originated on the Earth.
 b). Write a detailed essay on what is proposed by the most accepted theory.

2. Describe passive and active transport mechanisms across animal cell membranes.

3. Write short notes on **any three** of the following:
 - a). Specialization structures of apical membrane of epithelial tissues
 - b). Neuroglia cells in nervous tissue
 - c). Secretory mechanisms of exocrine glands
 - d). Components of blood tissue and their functions

4. Describe the importance of blastulation in the process of embryonic development.

 **For the assessment**

(20 marks)

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