



FACULTY OF SCIENCE

DEPARTMENT OF ZOOLOGY

MODULE ZOO 11B1

ANIMAL DIVERSITY

APK CAMPUS

SUPPLEMENTARY EXAMINATION 2020

DATE JANUARY 2020

SESSION

ASSESSOR

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INTERNAL MODERATOR

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DURATION: 3HOURS

MARKS: 125

NUMBER OF PAGES: FOUR (4) PAGES

INSTRUCTIONS:

- 1. ANSWER ALL THE QUESTIONS**
- 2. KEEP PARTS OF THE SAME QUESTION TOGETHER IN ONE PAGE**
- 3. HAND IN BOTH THE EXAM PAPER AND ANSWER SHEET**

QUESTION 1**[10]****1.1 Define the following terms:****(5)**

- 1.1.1 Systema Naturae
- 1.1.2 Systematics
- 1.1.3 Phylogenetic Systematics
- 1.1.4 Evolutionary Taxonomy
- 1.1.5 Phylogeny

1.2 Fill in the missing words:**(5)**

1.2.1 The exoskeleton of crustaceans is formed by the underlying(.....a)..... and is moulted when the two (2) hormones(b) and (c)are in circulation.

1.2.2 The excretory organ of the flatworms is called a(a).....

1.2.3 Ctenidia are structures found in the(a) system of the Molluscan.

QUESTION 2**[10]****Discuss in detail the following terms:**

- 2.1 Neotenie
- 2.2 Clitellum
- 2.3 Monoecious
- 2.4 Prostomium
- 2.5 Eutely in leeches
- 2.6 Anisogametes
- 2.7 Taenidia
- 2.8 Zygotic meiosis
- 2.9 Sclerite
- 2.10 Ecdysone

QUESTION 3

[10]

3.1 Write an appropriate sub-discipline of Zoology pertaining to the following definitions: (5)

- 3.1.1** Form and structure
- 3.1.2** Organisms living at the expense of others
- 3.1.3** Mechanisms of inheritance
- 3.1.4** Structure of tissues
- 3.1.5** Embryology

3.2 Describe what the following unique characteristics of living organisms actually refer to. (5)

- 3.2.1** Complexity and hierarchical organisation
- 3.2.2** Possession of a genetic code
- 3.2.3** Chemical uniqueness
- 3.2.4** Metabolism
- 3.2.5** Environmental interaction

QUESTION 4

[20]

- 4.1** Embryological development from the unfertilised egg to the gastrula stage is referred to as ontogeny and involves all sexually reproducing organisms. Use **labeled illustration to discuss** the concept from the **stereoblastula to the gastrula stage**. Include all developmental stages and structures found in the different stages and use the relevant colour codes to indicate the various germ layer derivatives. (10)
- 4.2** List and discuss **four (4)** events in the egg that are triggered by the process of fertilisation. (4)
- 4.3** Why is the nucleus of an **unfertilised egg** sometimes called the germinal vesicle? (1)
- 4.4** Explain why the unfertilised egg is regarded as being in a **quiescent stage** instead of an active stage. (1)
- 4.5** How is **cleavage** different from ordinary mitosis (mitotic division)? (1)
- 4.6** The formation of the **coeloblastula** is regarded as the single most important evolutionary event in sexually reproducing organism. Explain this concept. (3)

QUESTION 5

[10]

Compare in table form the differences in the lifecycles of Obelia and Aurelia and include all prominent features of the life cycle in the two (2) species. (2 x 5 = 10)

QUESTION 6

[20]

- 6.1** Use labelled illustration to indicate the comparison between the **cross section of a flat worm and a roundworm**. Indicate all structures with the relevant colours to denote the respective germ layer derivatives. (30 x ½ = 15)
- 6.2** Write down **five (5) unique** features of the Ascaris as seen in its cross section. (5)

QUESTION 7

[20]

The Onychophora is regarded as the evolutionary link between the Annelida and Arthropoda species. Draw the cross section of the Onychophora, number all the structures seen **in the cross section and otherwise**. Name these structures. Use the correct colours to denote the various primordial germ layers identifiable in this structure.

QUESTION 8

[25]

- 8.1** Torsion and coiling (spiral winding) of the shell and visceral mass are phenomena peculiar to the 'gastropod mollusca'. Critically discuss this phenomenon. (12)
- 8.2** The presence of the water vascular system is unique to the Echinodermata. Describe with labelled diagrams the water vascular system of the asteroids. 10)
- 8.3** List and discuss in detail **three (3)** unique characteristics of the chordates. (3)

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