NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

QUALIFICATION: **BACHELOR of NATURAL RESOURCES MANAGEMENT**	
QUALIFICATION CODE: **07BNRS**	LEVEL: **7**
COURSE: **ZOOLOGY 1**	COURSE CODE: **ZLY520S**
DATE: **JANUARY 2025**	SESSION: **1**
DURATION: **3 HOURS**	MARKS: **150**

SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Mrs. Gertruida Louisa Theron
MODERATOR:	Mr. Helmuth Tjikurunda

INSTRUCTIONS
1. Answer ALL the questions. 2. Write clearly and neatly. 3. Number the answers clearly.

This paper consists of 5 pages including the front page

QUESTION 1

Provide the correct term for each of the following. **[10]**

1.1 The DNA (genetic material) inside the nucleus of a cell – not yet coiled into chromosomes.
1.2 The two versions of each gene that an individual inherited from each parent.
1.3 The genetic makeup that is inherited from the parents. EX. BB; bb; Bb
1.4 Animal with NO body cavity. For example, Platyhelminthes.
1.5 Animals where the mouth develops after the anus in the embryo (the second opening of the blastula becomes the mouth).
1.6 Exterior opening of the water vascular system of echinoderms.
1.7 Integument of mollusks that is covered by, and secretes the shell.
1.8 Common name for the parasitic flatworms belonging to the class Trematoda.
1.9 The blood-like fluid of animals with open circulatory systems.
1.10 The respiratory pigment found in the blood of Gastropods.

QUESTION 2

In each of the following lists, **ONE** characteristic does not belong with the rest. Write down the number (**only**) and the characteristic that doesn't fit. **[10]**

2.1 Nematocysts; tentacles; mesoderm; polyp; regeneration
2.2 *Fasciola*; ventral sucker; external parasites; incomplete digestive system
2.3 *Nereis*; hermaphroditic; parapodia; complete digestive system
2.4 Annelida; closed blood circulatory system; dorsal nerve cord; coelomates
2.5 Scorpions; book lungs; nephridia; cephalothorax
2.6 Crab; 1pr of antenna; mandibles; decapods, marine crustaceans
2.7 Octopus; external fertilization; foot divided into tentacles; radula
2.8 Brittle stars; regeneration; tube feet; ambulacral groove
2.9 Homocercal tail; shark; spiral valve; internal fertilization
2.10 Frog; 2-chamber heart; respire through skin; protrusible tongue

QUESTION 3

Each of the following sets of characteristics describes a Class. Write down the number (only) and the Class that the set refers to. **[10]**

3.1 Rows of tube feet; elongated body; tentacles around mouth
3.2 Powerful hind legs; moist skin; external fertilization; webbed feet
3.3 Prostomium; peristomium; setae; parapodia
3.4 Muscular foot; radula; shell consist of 8 plates;
3.5 Telson; carapace; compound eyes; pedipalps
3.6 Proglottids; strobili; hooks; saprozoic
3.7 Placoid scales; spiral valve; internal fertilization; fleshy fins
3.8 Dorsal pores; nephridiopores; clitellum; fertilization in cocoon
3.9 Malphigian tubules; trachea; 3prs of legs; parthenogenesis in some
3.10 Muscular foot; well-developed head; torsion; sensory tentacles

SUB-TOTAL [30]

SECTION B

QUESTION 4 (Cell division)

4.1 Match the terms below to the descriptions. Note that terms can be used more than once! You can only use the corresponding **LETTER** (3)

A = Anaphase **I = Interphase** **M = Metaphase** **P = Prophase**
T = Telophase

Animal cells begin to pinch in.
Chromatids line up against the equator
Chromosomes are not visible

4.2 Provide the correct term for each of the following descriptions (3)
The structure that connects the two sister chromatids
A group of two homologous chromosomes that come together to undergo crossing-over.
Type of cells found in your toes, arms, legs, etc.

4.3 Explain how the daughter cells produced during Mitosis differ from the daughter cells produced during Meiosis. (4)

4.4 Make use of drawings to explain the difference between homozygous and heterozygous offspring. (2)
[12]

QUESTION 5 (Genetics)

In Koi fish, black scales (B) are dominant over orange scales (b) and long whiskers (A) are dominant over short whiskers (a). A Heterozygous black male with short whiskers mates with a female that is heterozygous black with homozygous long whiskers.

5.1 What is the genotype of each parent fish? (2)

5.2 Using a Punnett square, determine the expected genotypes and phenotypes of the F1 generation. Summarize your answers! (9)

5.3 What are the chances (in percentage) for an offspring to be orange with short whiskers? (1)
[12]

QUESTION 6

Explain locomotion in each of the following groups:

6.1 Briefly explain how sponges feed. (4)

6.2 Explain the term phagocytosis, as found in sponges. (1)

6.3 Give one UNIQUE characteristic only found in Coelenterata, and give its function(s). (3)

6.4 Tabulate 3 ways in which the Platyhelminthes are more advanced than the Coelenterata (3)

6.5 In what way are Nematoda more advanced than the Platyhelminthes? (2)

6.6 Platyhelminthes are acoelomate animals. **Explain** what this means. (1)

6.7 What characteristic (linked to the phylum name) do all Platyhelminthes share? (1)

6.8 Describe the "head" area of *Taenia solium*. (3)
[18]

QUESTION 7

State whether the following statements (7.1 – 7.2) are True or False

7.1 *Nereis* is hermaphroditic (1)

7.2 Polychaete worms have external fertilisation (1)

7.3 As explained in the flow diagram we discussed in class, in what way are annelids MORE advanced than nematodes? (2)

7.4 Name the 3 classes of annelids discussed in class and explain how feeding differs between the 3 classes. (6)

7.5 What are the functions (TWO) of the Parapodia, found in polychaete worms? (2)

[12]

QUESTION 8

8.1 In **tabular form,** explain FOUR differences between the horseshoe crab (*Limulus*) and the ordinary sea crab. (8)

8.2 In **tabular form**, provide 4 differences between the Araneae and the Solpugida. **Also** give the common name of each Order. (4)

8.3 To what order of insects does the corn cricket belong? (1)

[13]

QUESTION 9

9.1 Name the THREE distinct body parts of the Mollusca. (3)

9.2 What is the feeding organ of mollusks called (1), and which class does not have this organ (1)? (2)

9.3 Explain the term "torsion" as found in some mollusks. (2)

9.4 In which class can torsion be seen? (1)

9.5 The Cephalopoda can be seen as well-developed/advanced molluscs. Discuss this statement by referring to some of the characteristics that support this statement. (6)

[14]

QUESTION 10

10.1 Explain how sea urchins move. (2)

10.2 What is the feeding apparatus of the sea urchin called? (1)

10.3 How do sea cucumbers differ from other echinoderms? (4 differences!) (4)

10.4 To which class do the sea cucumbers belong? (1)

10.5 Provide two functions for the pedicellariae found in starfish. (2)

10.6 What are the four components of the water-vascular system found in Echinoderms? (2)

[12]

QUESTION 11

Briefly explain how each of the following Teleosts (11.1 and 11.2) is adapted to its specific way of life.

11.1 Horse mackerel and tuna (3)

11.2 Eel (3)

11.3 Explain **FIVE** of the unique characteristics of sea horses (Hippocampus) that make them very **atypical** fishes. (5)

11.4 **Explain** six (6) major adaptations of fish to an aquatic lifestyle. (6)

[17]

QUESTION 12

12.1 Explain the difference between the feet of frogs and toads and provide a reason for the difference. (2)

12.2 Explain how the hind legs of a frog are specialized for jumping. (3)

12.3 Amphibians are ectothermic animals. What are the advantages of this? (4)

12.4 Why are there no ovoviviparous frogs? (1)

[10]

SUB-TOTAL [120]

TOTAL [150]