NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH, NATURAL RESOURCES AND APPLIED SCIENCES

SCHOOL OF AGRICULTURE AND NATURAL RESOURCE SCIENCES

DEPARTMENT OF NATURAL RESOURCES SCIENCES

QUALIFICATION: BACHELOR OF NATURAL RESOURCES MANAGEMENT	
QUALIFICATION CODE: 07BNRS	**LEVEL: 7**
COURSE CODE: ZLY520S	**COURSE NAME:** ZOOLOGY 1
DATE: NOVEMBER 2024	
DURATION: 3 HOURS	**MARKS:** 150

FIRST 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.

PERMISSIBLE MATERIALS

1. Examination question paper
2. Answering book

THIS QUESTION PAPER CONSISTS OF 5 PAGES (Including this front page)

SECTION A: SHORT QUESTIONS (Terminology) **[30 MARKS]**

QUESTION 1

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

1.1 Exterior opening of the water vascular system of echinoderms.
1.2 Excretory structures of earthworms (2/segment).
1.3 The blood-like fluid of animals with open circulatory systems.
1.4 Chemical produced by leeches to prevent blood clotting.
1.5 Most primitive phylum with a complete digestive system.
1.6 The pre-oral segment in annelids.
1.7 Producing eggs that are incubated and hatched within the parent's body, as with some fishes and reptiles.
1.8 The plate covering the gills of a bony fish.
1.9 Opening on segment 14 of earthworms, where eggs are released
1.10 Integument of molluscs that is covered by and secretes the shell.

QUESTION 2

One word in each of the following lists does not belong with the rest of the words in that list. Write down the number (only) and the word/term that doesn't fit. **[10]**

2.1 Sole; hake; shark; eel; anchovy; pilchard; sea horse
2.2 Parapodia; clitellum; setae; marine; tentacles
2.3 Planaria; bilharzias; leech; tapeworm, liver fluke
2.4 Sea cucumber; five arms; tentacles; leathery texture; anus; tube feet
2.5 Sun spider; poison fangs; powerful chelcerae; leg-like pedipalps; Solpugida
2.6 Polyp; medusa; triploblastic; gastro-vascular cavity
2.7 Nematoda; triploblastic; segments; anus
2.8 Tapeworm; scolex; strobila; ephyra
2.9 Cycloid scales; swimbladder; gills; spiral valve
2.10 Tentacles; jet propulsion; suckers; mantle; muscular foot

QUESTION 3

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

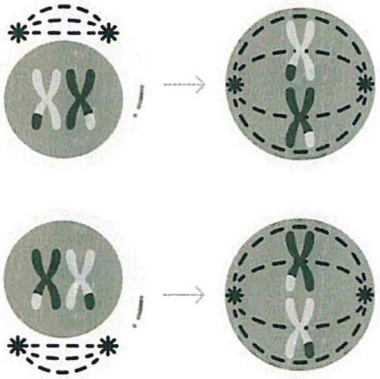
3.1 Dorso-ventrally flattened; about 34 somites; clitellum; suckers
3.2 Dorso-ventrally flattened; mid-ventral mouth; bilateral symmetry; incomplete digestive system
3.3 Triploblastic; hooks and suckers; no body cavity; no true segmentation
3.4 Tubefeet; anus on oral surface; ambulacral groove; radial symmetry
3.5 Diploblastic; nematocysts; polyp stage; "flower animals"
3.6 Jointed appendages; head + trunk; poison claws; predacious
3.7 Chelicerae; external fertilization; telson; carapace
3.8 Muscular foot; radula; head reduced; dorso-ventrally flattened
3.9 Prostomium; segments; setae; separate sexes
3.10 "Hedgehog skin"; radial symmetry; external fertilization; no anus

SECTION B: LONGER QUESTIONS **[120 MARKS]**

QUESTION 4 (Cell division)

4.1 Describe the process of crossing over in meiosis and explain its significance for genetic diversity. (2)

4.2 The diagram below shows two phases of meiosis. Identify the phases and explain what is happening. (4)



4.3 How does the chromosome number in daughter cells compare after mitosis and meiosis? (2)

4.4 Re-draw and complete the following table to compare/contrast mitosis and meiosis. (4)

Feature	Mitosis	Meiosis
Purpose of the process?		
Number of daughter cells		
Chromosome number of daughter cells?		
Crossing over occurs?		

[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 long whiskers mates with an orange female with short 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 F2 generation. Summarize your answers! (8)

10]

QUESTION 6

6.1 Explain the term "gastro-vascular cavity". Provide one example of an animal with a gastro-vascular cavity. (2)

6.2 Use Coelenterata as an example to explain the term "Polymorphism". (2)

6.3 Explain three primitive characteristics of Coelenterata – as compared to higher animals. (6)

6.4 Differentiate between the Porifera, Coelenterata and Platyhelminthes in the way they "perceive" their environment (sensory/nervous "systems"). (6)
[16]

QUESTION 7

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

7.2 In tabular form, explain 4 difference between the reproductive strategies of the Polychaeta and the Oligochaeta. (8)
[11]

QUESTION 8

8.1 What are the advantages and disadvantages of having an exoskeleton? (5)

8.2 To what insect order does the mopane worm belong? (1)

8.3 What are the functions of the ovigorous legs, found in Pycnogonida? (2)

8.4 In tabular form, provide 5 differences between the Chilopoda and the Diplopoda. (10)
[18]

QUESTION 9

A

Limpet

B

Garden snail

Questions 9.1, 9.2 and 9.3 refer to the pictures above.

9.1 Does the organism in picture A belong to the same mollusc class as the organism in picture B? If yes, state the class they both belong to. If no, state the class each one belongs to. (2)

9.2 Provide TWO characteristics that A and B share with each other, but NOT with other members of the phylum. (2)

9.3 Provide TWO differences between A and B (2)

9.4 In tabular form, provide 4 differences between the Polyplacophora and the Bivalvia. (8)
[14]

QUESTION 10

10.1 Name two distinguishing characteristics of the Echinodermata. (2)

10.2 What are the functions (2) of the pedicellariae found in some echinoderms? (2)

10.3 Re-draw the following table to compare the Asteroidea and the Ophiuroidea based on the following: Central disc; Ambulacral groove; Type of feeder and Opening for egestion. (8)

	Asteroidea	Ophiuroidea
Central disc		
Ambulacral groove		
Type of feeder		
Opening used for egestion		

[12]

QUESTION 11

11.1 Name 3 reasons why a sea squirt, a cephalochordate and a sea cow all belong to the same phylum. Also name the phylum they belong to. (4)

11.2 Explain the functions of the following features in fish. (6)

(a) Nose
(b) Lateral line (2)
(c) Swim-bladder
(d) Caudal fins
(e) Pectoral fins

11.3 What type of scales do you find in Chondrichtyes? (1)

11.4 Briefly explain how each of the following teleosts is adapted to its specific way of life. (4)

(a) Angler fish (2)
(b) Sole (2)

[15]

QUESTION 12

12.1 What is the distinguishing characteristic of the Class Amphibia? (1)

12.2 Why does one not find many amphibians in the desert? (3)

12.3 **Discuss** 4 major adaptations that allowed amphibians to move from water to land. Use proper explanatory sentences. (8)

[12]

TOTAL [150]