



FACULTY	EDUCATION & HUMAN SCIENCES		
DEPARTMENT	INTERMEDIATE & VOCATIONAL EDUCATION		
SCHOOL	SCHOOL OF EDUCATION		
SUBJECT	NATURAL SCIENCE & HEALTH EDUCATION 1A		
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DURATION	3 HOURS	MARKS	100

SECOND OPPORTUNITY EXAMINATION

EXAMINER: MS. N. HOEPFNER

MODERATOR: DR. L. KAMBEYO

NAME: _____

STUDENT NUMBER: _____

This question paper consists of **13 pages** including this cover page

INSTRUCTIONS

1. Answer all questions.
2. Provide an example and/or sketch wherever applicable.
3. **Calculators may be used, but under NO circumstances being shared.**
4. Write neatly and legibly.
5. Answer on the spaces provided on question paper.

UNIVERSITY OF NAMIBIA EXAMINATIONS

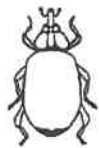
Question 1

[20]

Cross out the letter representing the correct answer.

1. In an experiment, the factor that we measure is called the:
 - A. Conclusion
 - B. Independent variable
 - C. Dependent variable
 - D. Controlled variable
2. A scientist hypothesizes that the temperature at which a crocodile's egg is incubated will determine whether the crocodile will be male or female. The independent variable in this example is:
 - A. The gender of the crocodile
 - B. The temperature
 - C. The incubator
 - D. The male crocodiles
3. Which of the following would be found in an animal cell undergoing mitosis but not in a plant cell undergoing mitosis?
 - A. Chromosome
 - B. Centriole
 - C. Spindle
 - D. Chromatid
4. The organelle serving as a primary packaging area for molecules to be distributed throughout the cell is a:
 - A. Vacuole
 - B. Mitochondria
 - C. Golgi apparatus
 - D. Ribosomes
5. Which of the following definitions is the definition of the MEDIAN?
 - A. The MEDIAN is the value that half of the entries are below, and half of the entries are above.
 - B. The MEDIAN is the value that has the highest frequency.
 - C. The MEDIAN is the largest value.
 - D. The MEDIAN is the average calculated by adding up all the values and dividing by the number of entries.

6. Which of the following organelles has a double membrane with pores?
- A. Golgi Body
 - B. Mitochondria
 - C. Ribosome
 - D. Nucleus
7. In which part of a pine tree are pollen grains produced?
- A. pollen cones
 - B. male flowers
 - C. seed cones
 - D. ovules
8. The structures of the Gymnosperm in which the female gametophyte develop are called
- A. needles
 - B. ovules
 - C. pollen grains
 - D. ovary
9. Which animal is viviparous?
- A. Butterfly
 - B. Cat
 - C. Duck
 - D. Frog
10. The pictures below show the stages in the life cycle of a beetle.



W



X



Y



Z

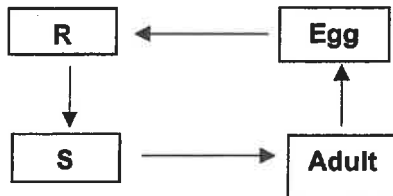
What would be the correct sequence for the development of the beetle?

- A. W, X, Y, Z
- B. Y, Z, X, W
- C. Z, Y, X, W
- D. Y, W, X, Z

11. Which of the following taxa cover the greater number of organisms:

- A. order
- B. phylum
- C. genus
- D. species

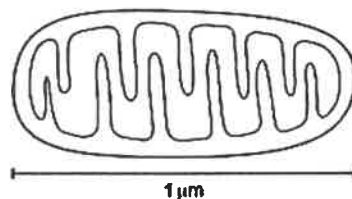
12. The diagram below shows the life cycle of a fly.



Which of the following correctly describes the characteristic of the fly at stages R and S?

	Stage R	Stage S
A.	can reproduce	cannot reproduce
B.	does not have wings	has wings
C.	does not look like the adult	looks like the adult
D.	feeds	does not feed

13. The diagram below shows a high-power drawing of a mitochondrion.



The actual length of the organelle is $1\mu\text{m}$. The diagram is 70mm.

What is the magnification of the cell?

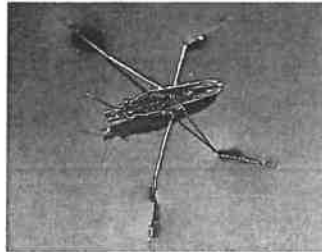
- A. 0.0007x
- B. x70
- C. 7000
- D. 70 000x

14. What is the correct binomial name for an African elephant?

- A. *loxodonta africana*
- B. Loxodonta Africana
- C. Loxodonta *africana*
- D. Loxodonta Africana

15. A botanist discovers a new plant in northern Namibia. Which of the following observations of the plant's characteristics would be useful in determining its identity with a dichotomous key?
- A. It was discovered in the summertime
 - B. It is wet from recent rain showers.
 - C. Its leaves curl up on the edges
 - D. It is eaten by native mopani worms.

16. What feature of water molecules makes it possible for the phenomenon below to be possible?



- A. Capillary action.
 - B. Cohesion.
 - C. Adhesion.
 - D. Surface tension.
17. Why does ice float?
- A. As water freezes, it expands and its density decreases.
 - B. As water freezes, air becomes trapped between the hydrogen bonds of water molecules giving the natural classification system
 - C. As water freezes, it takes up more oxygen from the atmosphere, causing it to have a greater buoyancy
 - D. Ice is a solid and will therefor float on water.
18. The process of *pulling clean water out of polluted water or salt water by pushing water through a membrane under pressure*, is known as:
- A. Osmosis
 - B. Diffusion
 - C. Active transport
 - D. Reversed osmosis

19. The circulatory system is composed of the heart and blood vessels, which in turn are composed of cells. This is an example of which characteristic of life?

- A. Living things are organised.
- B. Living things are homeostatic.
- C. Living things are adapted to a particular way of life
- D. Living things reproduce.
- E. Living things grow and develop.

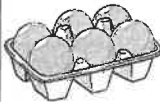
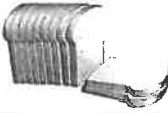
20. The skin in our body represents which level of biological organisation?

- A. Tissue
- B. Organ system
- C. Organ
- D. Cell

Question 2

[10]

2.1 Johanna was looking at several different store brochures. She then made the table below to show the prices on the same food at different stores. Help her to find the Mean, Median, Mode and Range of the prices at all three different stores

				
STORE A	N\$ 1.56	N\$ 2.99	N\$ 3.54	N\$ 8.25
STORE B	N\$ 1.89	N\$ 3.55	N\$ 2.99	N\$ 7.39
STORE C	N\$ 2.99	N\$ 1.65	N\$ 2.85	N\$ 9.15

- (a) What is the mean price of a loaf of bread at the three stores? _____
- (b) What is the median price of the food in Store A? _____
- (c) What is the mode price at the three stores? _____
- (d) What is the range of prices of the food in Store C? _____
- (d) What is the average price of food at Store B? _____

(5)

2.2 (a) Put the steps of the scientific method in the correct order.

- | | |
|------------------------------|------------------------------|
| (i) Draw conclusions | (ii) Test with an experiment |
| (iii) Do background research | (iv) Analyse results |
| (v) Construct a hypothesis | (vi) Ask a question |

(2)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

(b) Using the scenario below, match the steps of the scientific method to its corresponding statement.

Scenario: *Punaete has been working hard all summer on his tomato garden. Recently, he noticed that insects have been eating his tomatoes and tomato plants and he is worried about spraying them with harmful, store-bought pesticides.*

- (i) Punaete states that if he sprays his vegetables with a natural, homemade solution to help fight the bug problem, then his vegetables will still grow to the same size as they would if he used store bought pesticides _____
- (ii) Punaete sprays one third of his vegetables with store bought pesticides, one third of his vegetables with his homemade solution, and does not spray the remaining third (his control group) _____

- (iii) Punaete wonders how he can protect his plants from bugs without harming the vegetables _____

(3)

Question 3

[10]

3.1 The following statements refer to the basic structures of prokaryotes and/or eukaryotes.

Indicate whether each of the following statements refer to only prokaryotes, only eukaryotes or both types of organisms. Use the following abbreviations:

P (only prokaryote); E (only eukaryote) or B (both)

(5)

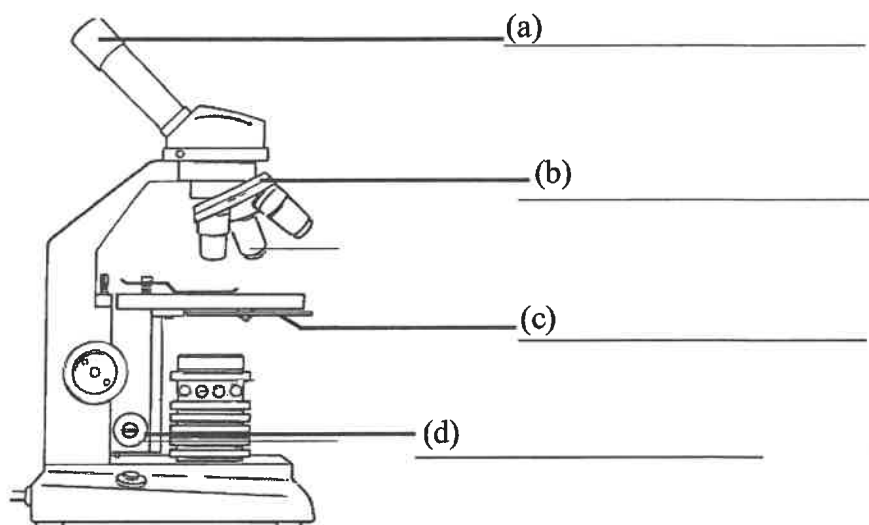
- (a) DNA present _____
- (b) Use flagellums for movement _____
- (c) Binary fission takes place _____
- (d) Linear chromosomes present _____
- (e) Cell wall of cellulose present _____

3.2 Write the name of the cell part or organelle that matches the structure or function of the following:

- (a) Transports materials within the cell _____
- (b) Organelle that controls all the cell functions in a eukaryotic cell _____
- (c) Site where ribosomes are made _____
- (d) Small bumps located on portions of the endoplasmic reticulum _____
- (e) Packages proteins for transport out of the cell _____ (5)

Question 4 [12]

4.1 Label the following parts of the light microscope as indicated on the drawing below. (5)



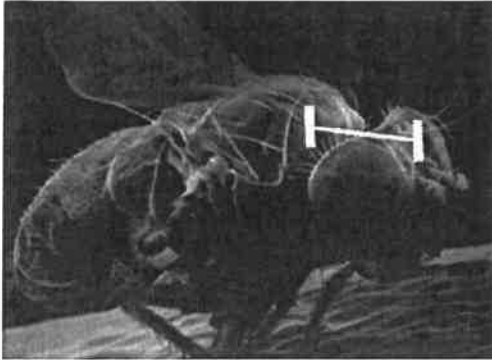
4.2 Which part of the microscope performs the following functions?

- (a) Holds the microscope slide in position _____
- (b) Holds up the microscope _____
- (c) Rotates the optic tube and ocular lens _____
- (d) Regulate the amount of light passing through the specimen _____ (4)

4.3 The following shows the eye of a fly as seen under the microscope.

The actual size of the eye is $1000\mu\text{m}$. Calculate how many times the image is enlarged.

(3)



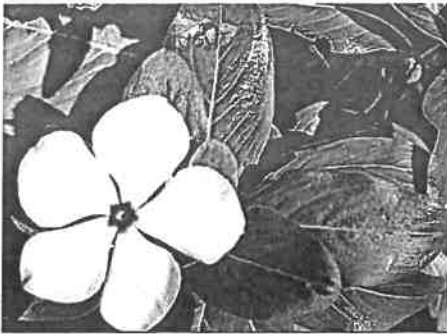
Question 5

[8]

5.1 The plants in the pictures below are all Angiosperms. They belong either in the Monocotyledon- or the Dicotyledon group. Identify the group in which each of the plants belong. Motivate your answer.

(4)

A.



B.



5.2 (a) Explain the term '*double fertilization*' in Angiospermae (2)

(b) Differentiate between self-pollination and cross-pollination. (2)

Question 6 [9]

6.1 Define the following in the life cycle of different animals:

(a) spawning: _____ (2)

(b) imago: _____ (1)

(c) molting: _____ (1)

(d) amplexus: _____ (1)

6.2 Compare the life cycles of birds with mammals with regards to:

(a) Similarities: _____ (2)

4(b) Differences: _____ (2)

Question 7

[7]

7.1 Distinguish between the following and give an example of each:

(a) Community and Population:

(2)

(b) Organ and Organ system:

(2)

7.2 Label the Following Examples as Based on their characteristic of life.

(a) Caterpillars turning into butterflies _____

(b) Sweating in hot weather cools down body temperature _____

(c) Neurons are nerve cells that send messages all over the body _____

(3)

Question 8

[12]

8.1 (a) Name the scientist that is known as the 'father of taxonomy'.

(1)

(b) Which modern system of naming did he develop?

(1)

8.2 Name three distinct ways that can be used to classify organisms and explain shortly what attempt is used to classify an organism on this basis.

(6)

8.3 Distinguish between the 5 Kingdom classification system of Linnaeus and the more modern 3-Domain Classification system.

(4)

Question 9

[12]

9.1 Shortly explain the reason for soft water **sometimes** appear as hard water.

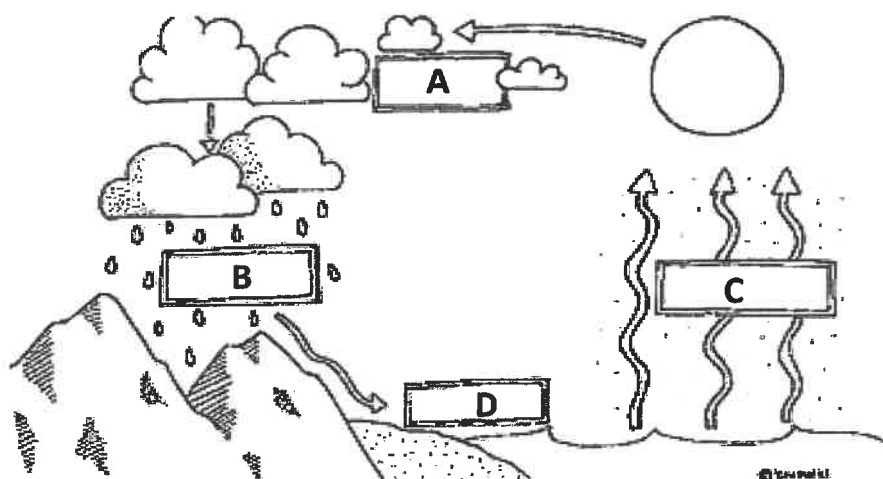
(2)

9.2 Name two ways of how polluted water can be purified for human consumption again.

(2)

9.3 Identify the different processes taking place in the water cycle.

(4)



A - _____
B - _____
C - _____
D - _____

9.4. Explain the meaning of the following concepts:

(a) Bio-accumulation.

(2)

(b) Eutrophication

(2)
