



UNIVERSITY OF JOHANNESBURG
FACULTY OF EDUCATION
NOVEMBER EXAMINATION 2015

PROGRAMME: B. Ed. Intermediate Phase

MODULE: Natural Science and Technology for the Intermediate Phase

CODE: SATINB2

TIME: 2 hours

MARKS: 100

EXAMINER: Mr F Naude

MODERATOR: Ms K Fonseca

(This paper consists of 5 pages)

INSTRUCTIONS

Read the following instructions carefully before answering the questions.

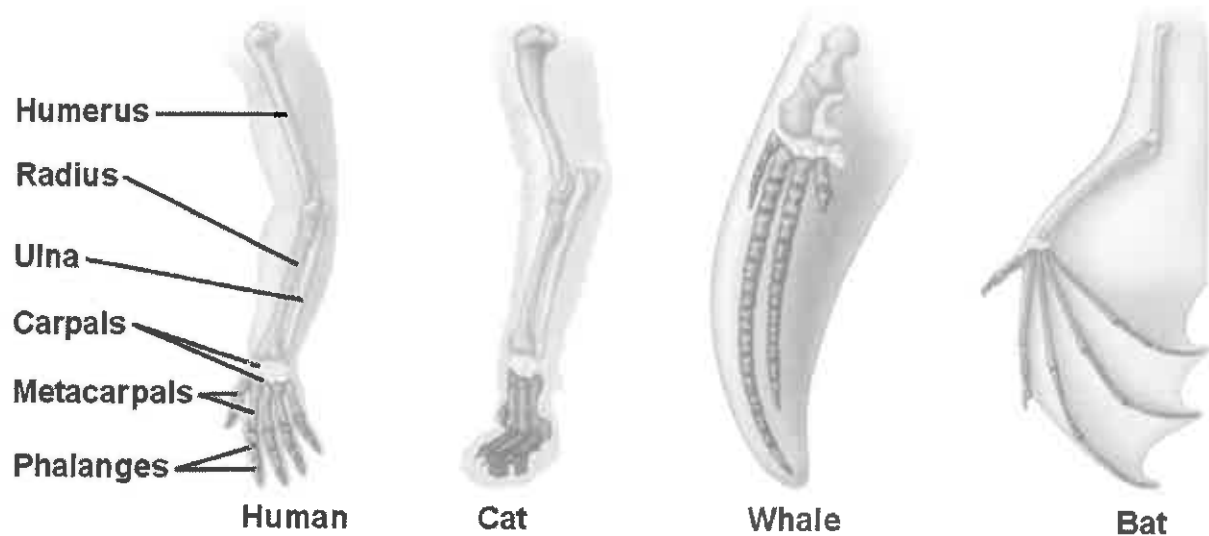
1. Answer all questions.
2. Read the instructions carefully and answer appropriately.
3. Use the mark allocation of each question as an indication of how much information to provide.

QUESTION 1

Unit 1: Introduction to Biological Sciences

- 1.1 During September 2015 a new species of hominid fossils, *Homo naledi* was described by a team of paleontologists.
- 1.1.1 Briefly describe what a paleontologist is. (2)
- 1.1.2 Explain the concept of common ancestry by using the discovery of *Homo naledi* as an example. (4)

- 1.1.3 The following diagramme shows the skeletal bones found in the forelimbs of four different mammal species. How can this be used as evidence to prove the theory of evolution? (4)



- 1.1.4 Many people have objections to the theory of evolution. Name one of these objections and describe how you will address this objection in your teaching of evolution. (3)

1.2 Biological organization:

- 1.2.1 List three differences between an animal cell and a plant cell. (3)
- 1.2.2 Give a definition of an organ and give two examples of plant organs. (4)
- 1.2.3 Choose any organ system found in the human body. List all the organs of that system and explain the function of that organ system. (6)
- (26)

QUESTION 2**Unit 2: Characteristics and Classification of living organisms**

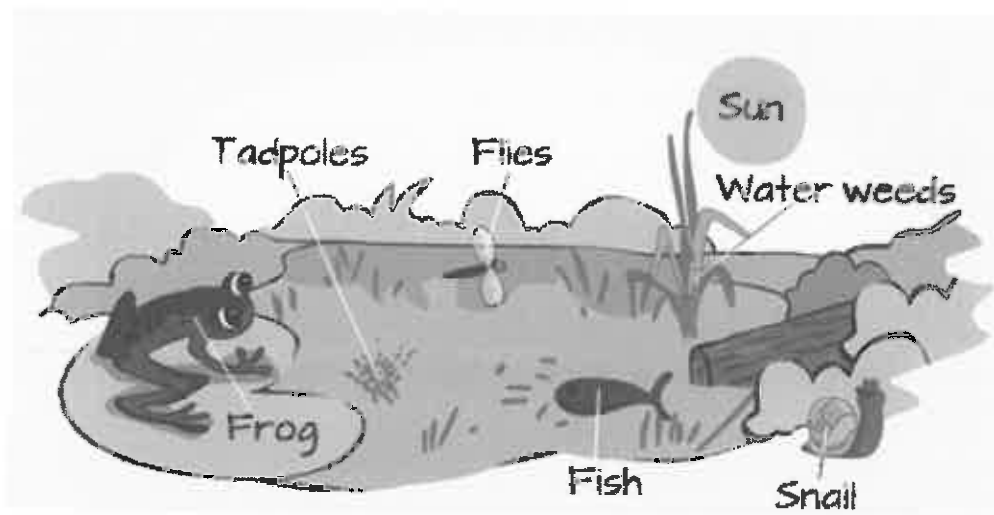
- 2.1 List the 7 characteristics of living organisms. (7)
 - 2.2 Draw a flow diagramme to illustrate the relationship of the 5 kingdoms of living organisms. (6)
 - 2.3 Compare the characteristics of fungi to those of plants using a table. (5)
 - 2.4 The animal kingdom contains a large diversity of organisms. Differentiate between vertebrate and invertebrate animals. Give two examples of each. (6)
- (24)**

QUESTION 3**Unit 3: Development of Organisms and the continuity of life.**

- 3.1 Bacteria reproduce asexually in favorable conditions. Briefly describe this process. (4)
 - 3.2 Draw a labelled diagramme of the reproductive structures in flowering plants. Also indicate which structures are male and which structures are female. (10)
 - 3.3 Choose any method of seed dispersal and explain how the seed is adapted to ensure optimal dispersal. (3)
 - 3.4 Explain the different stages in the lifecycle of a butterfly. Use illustrations to assist with your explanation. (8)
- (25)**

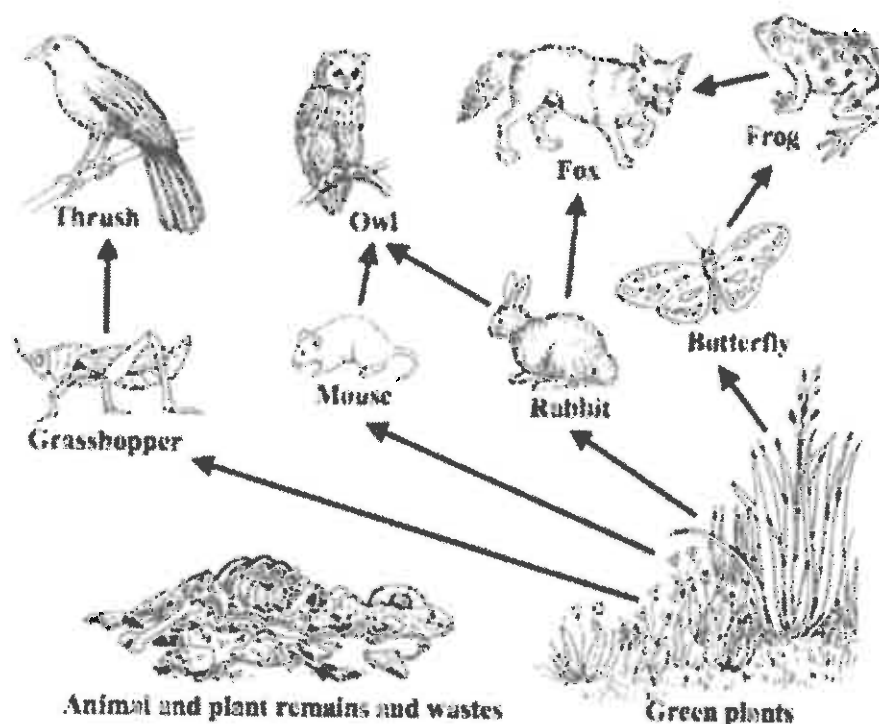
QUESTION 4**Unit 4: Ecology**

4.1 Study the following picture and answer the questions below:



- 4.1.1 Give two examples of abiotic factors visible in the picture. (2)
- 4.1.2 Name one producer visible in the picture. (1)
- 4.1.3 Give one example of an herbivore in the picture. (1)
- 4.1.4 The picture shows one species in different stages of its lifecycle. Name this animal. (1)

4.2 Study the following diagramme and answer the questions below:



4.2.1 Give a suitable heading for this diagramme. (2)

4.2.2 Explain what would happen if all mice and rabbits disappeared from this ecosystem. (4)

4.2.3 What would happen if all the frogs in this diagramme were poisonous? (4)

4.3 Choose any one of the following topics and write a short essay of no more than half a page. Include all environmental features and examples of the fauna and flora that lives in the chosen biome:

- a) Fire is life for Fynbos.
 - b) Forests are abundant in life.
 - c) Desserts aren't as dull as they seem.
 - d) Savannah: The pride of the Lowveld.
- (10)
(25)

TOTAL: 100