UNIVERSITY OF JOHANNESBURG

UNIVERSITY OF JOHANNESBURG
FACULTY OF EDUCATION
NOVEMBER EXAMINATION 2016

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

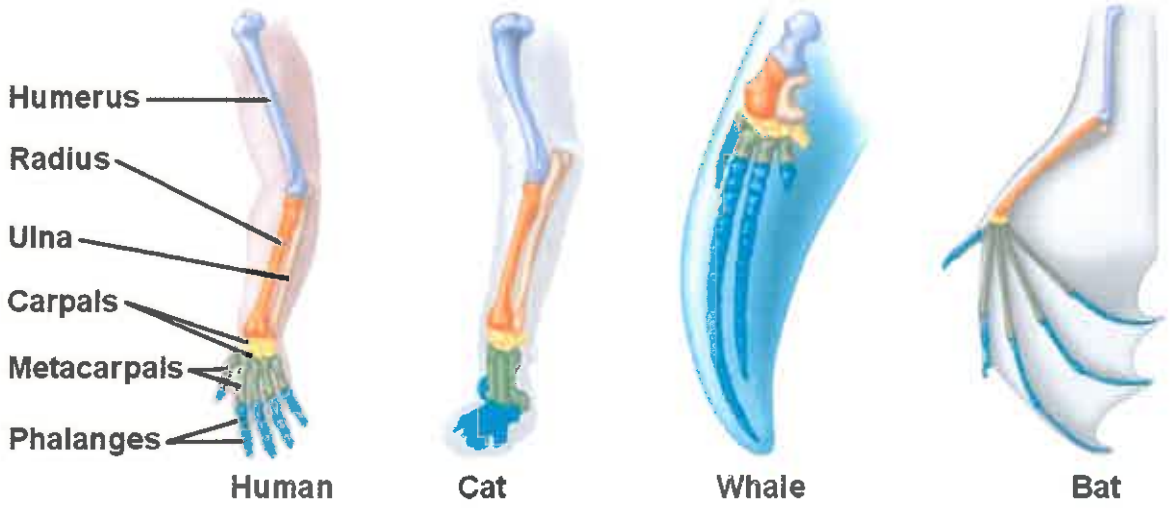
Unit 1: Introduction to Biological Sciences

1.1 During September 2015 a new species of hominid fossils, *Homo naledi* was described by a team of South African paleontologists.

1.1.1 Briefly describe what a paleontologist is. (2)

1.1.2 Explain the concept of natural selection. (4)

1.1.3 The following diagram 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 similarities between an animal cell and a plant cell. (3)

1.2.2 An organism consists out of many organ systems. Explain what this term refers to and give 2 examples of organs systems you would find in a fish. (4)

1.2.3 Choose any one of the organ systems you mentioned in question 1.2.2 and list all the organs of that system. Also explain the function of the organs. (6)

(26)

QUESTION 2

Unit 2: Characteristics and Classification of living organisms

2.1 Using a flowering plant as example list the 7 characteristics of living organisms and explain why plants are considered to be living organisms. (14)

2.2 Compare the characteristics of Plantae to those of Animalia using a table. (5)

2.3 The animal kingdom contains a large diversity of organisms. Differentiate between vertebrate and invertebrate animals. Give two examples of each. (5)

(24)

Question 3

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

3.1 Briefly explain the difference between sexual and asexual reproduction. (4)

3.2 Draw a labelled diagram 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)

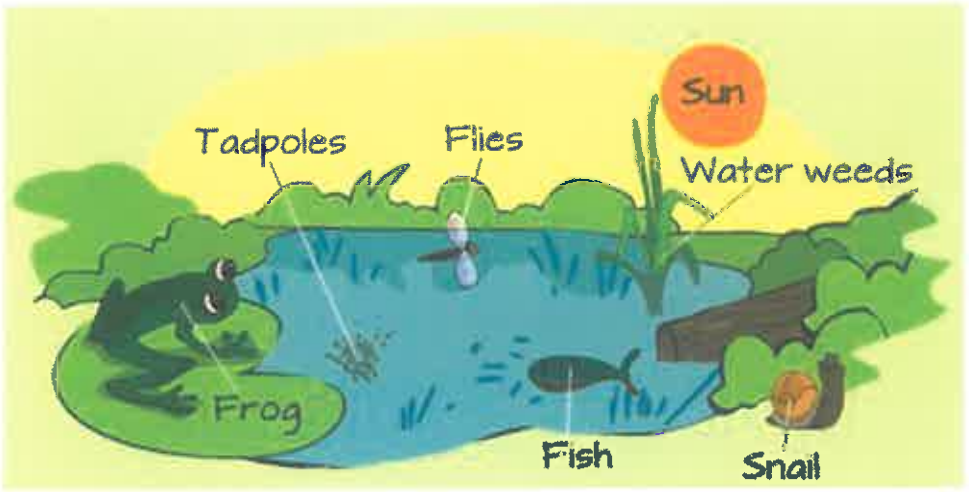
3.4 Explain the different stages in the lifecycle of a Mopane moth. Use illustrations to assist with your explanation. (8)

(25)

Question 4

Unit 4: Ecology

4.1 Study the following picture and answer the questions below:



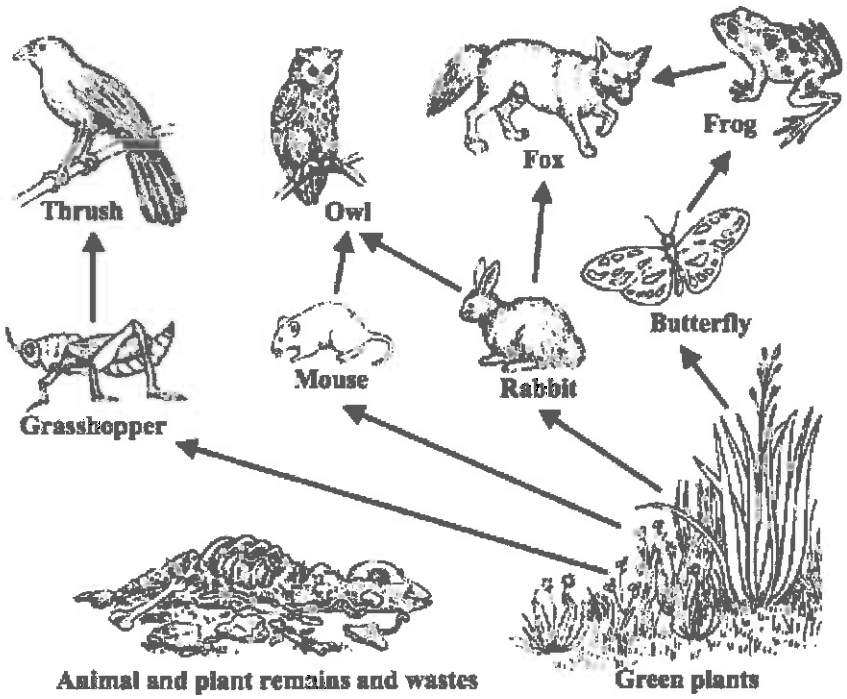
4.1.1 Give two examples of abiotic factors visible in the picture. (2)

4.1.2 Name one producer visible in the picture. (1)

4.1.3 Give one example of a herbivore in the picture. (1)

4.1.4 Give one example of a carnivore in the picture. (1)

4.2 Study the following diagram and answer the questions below:



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

4.2.2 Explain what would happen if all grasshoppers would disappear from this ecosystem. (4)

4.2.3 What would happen if all the frogs in this diagram 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 diversity.
c) Desserts aren't as dull as they seem.
d) Savannah: The pride of the Lowveld. (10)

(25)

TOTAL: 100

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