

UNIVERSITY OF ESWATINI
MAIN EXAMINATION PAPER 2018/2019

TITLE OF PAPER: SYSTEMATICS

COURSE CODE: BIO402

TIME ALLOWED: THREE (3) HOURS

INSTRUCTIONS:

1. ANSWER SECTION A AND SECTION B IN SEPARATE ANSWER BOOKS. MAKE SURE TO CLEARLY LABEL THESE BOOKS AS SECTION A OR SECTION B.
2. FOLLOW THE INSTRUCTIONS IN EACH SECTION.
3. ILLUSTRATE YOUR ANSWERS WITH LARGE AND CLEARLY LABELED DIAGRAMS WHERE APPROPRIATE.

SPECIAL REQUIREMENTS:

NONE

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATORS

SECTION A

Answer all the questions in Question 1 (i.e. both 1A and 1B).

Question 1

Questions 1A and 1B should be answered by way of diagrams with a minimum of writing (except for labels).

1A. Illustrate the concept of homology by demonstrating the evolutionary relationships (or lack thereof) between a bird's wing, a bat's wing, a mammalian forearm and the wing of an insect.

[15 marks]

2B. Use the data in the following table to create the most parsimonious cladogram showing the relationships between the named taxa.

Taxon	Gills	Lungs	Fins	Endothermic	Amniotic egg	Jaws	Wings	Feathers	Hair	Incus
1	1	0	1	0	0	0	0	0	0	0
2	1	0	1	0	0	1	0	0	0	0
3	0	1	0	0	0	1	0	0	0	0
4	0	1	0	0	1	1	0	0	0	0
5	0	1	0	1	1	1	1	1	0	0
6	0	1	0	1	1	1	1	0	1	1
7	0	1	0	1	1	1	0	0	1	1

[10 marks]

Answer one of the two questions in Question 2 (i.e. either 2A or 2B)

Question 2A

Explain the concept of homology by illustrating the evolutionary relationships (or lack thereof) between a bird's wing, a bat's wing, a mammalian forearm and the wing of an insect.

[25 marks]

Question 2B

Explain the processes involved in curating a natural history collection in a museum.

[25 marks]

SECTION B

On a separate booklet answer 2 questions in this section

Question 4

Discuss the contributions and drawbacks of the various disciplines used in modern taxonomy.

(25 marks)

Question 5

Explain the steps you would take, as a taxonomist, to study a plant community being considered for industrial development.

(25 marks)

Question 6

Reproductive features are conserved while morphological features are variable. How is this observation accommodated in taxonomic studies.

(25 marks)

END OF EXAMINATION PAPER