

UNIVERSITY OF ESWATINI

FINAL EXAMINATION PAPER: MAY 2020

TITLE OF PAPER: APPLIED BIOLOGY  
COURSE CODE: B405  
TIME ALLOWED: THREE HOURS

- INSTRUCTION: 1. THIS PAPER IS DIVIDED INTO FOUR SECTIONS.
2. USE SEPARATE ANSWER BOOKLETS FOR EACH SECTION.
  3. ANSWER A TOTAL OF FOUR QUESTIONS, CHOOSING ONE QUESTION FROM EACH SECTION.
  4. EACH QUESTION CARRIES TWENTY FIVE (25) MARKS.
  5. ILLUSTRATE YOUR ANSWER WITH LARGE AND CLEARLY LABELLED DIAGRAMS WHERE APPROPRIATE.

SPECIAL REQUIREMENTS: NONE

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

[PLEASE TURN OVER]

**SECTION A**

Answer **ONE** question from this Section.

**AQ1**

Assuming that you are employed by the Eswatini water Services Corporation, propose on how you would ensure that the water bodies in a certain region are portable. What criteria or standards would you use to make your conclusions?

**[TOTAL MARKS = 25]**

**AQ2**

Determine the role of industrial microbiology in the socio-economic development of the Kingdom of Eswatini.

**[TOTAL MARKS = 25]**

**SECTION B**

**NOW USE A SEPARATE BOOKLET TO ANSWER SECTION C**

Answer **ONE** question from this Section.

**BQ 3**

Discuss the potential use of phytoremediation technology in environmental restoration in the Kingdom of Eswatini.

**[TOTAL MARKS=25]**

**BQ 4**

Discuss the use of vascular plant species richness and bio-indication as proxy to biodiversity monitoring.

**[TOTAL MARKS =25]**

**SECTION C**

**NOW USE A SEPARATE BOOKLET TO ANSWER SECTION C**

**Section C**

**Total marks available: 25**

**There are seven (7) questions in this section. Answer ALL the questions in this section**

CQ1: SARS-CoV-2 is thought to have crossed into humans from which host?

[1]

- a) Orangutans
- b) Pangolins
- c) Leopards
- d) Rhinos
- e) Domestic chickens

CQ2: When a female mare raises her tail to a male this is called

[1]

- a) Therophilly
- b) Fibroelastasis
- c) Lordosis
- d) Metastasis
- e) Baculum

CQ3: Obesity is associated with

[1]

- a) Gut bacteroidetes
- b) Intestinal shortening
- c) Disruption of circadian rhythms
- d) All of the above
- e) None of the above

CQ4: Cancer is most likely to occur in  
[1]

- a) Larger mammals (of different species)
- b) Larger mammals (of the same species)
- c) Humans who give birth many times and breastfeed (breast cancer)
- d) Humans only; no other species (plant or animal) gets cancer
- e) Animals only; plants do not get cancer

CQ5: Climate change  
[1]

- a) Has nothing to do with humans
- b) Means increased 'tropical diseases' outside of the tropics
- c) Means decreased 'tropical diseases' outside of the tropics
- d) Mainly affects plants due to changes in rain fall patterns
- e) None of the above

CQ6: Describe THREE benefits of female promiscuity in animals.  
[10]

CQ7: Explain what this means "A/pig/London/42/95 (H2N1)" and the illness it causes.  
[10]

**NOW USE A SEPARATE BOOKLET TO ANSWER SECTION D**

**Section D**

Total marks available: 25

There is one (1) question in this section. Answer **ALL** the questions in this section

DQ1: Distinguish between transgenesis and mutagenesis. With reference to a specific grain crop, explain how these scientific developments may contribute to food security.

[25]

**END OF EXAMINATION**