

UNIVERSITY OF SWAZILAND

MAIN EXAMINATION PAPER 2018

TITLE OF PAPER : INTRODUCTORY ZOOLOGY

COURSE CODE : BIO102

TIME ALLOWED : THREE HOURS

- INSTRUCTIONS :
1. THIS PAPER HAS TWO SECTIONS, A AND B
 2. USE ONE (1) ANSWER BOOKLET FOR EACH SECTION
 3. IN SECTION A, ANSWER QUESTION 1 (COMPULSORY) PLUS ANY OTHER QUESTION
 4. IN SECTION B ANSWER ANY TWO (2) QUESTIONS.
 5. EACH QUESTION CARRIES TWENTY FIVE (25) MARKS
 6. WHEREVER POSSIBLE ILLUSTRATE YOUR ANSWERS WITH LARGE CLEARLY LABELLED DIAGRAMS

SPECIAL REQUIREMENTS: NONE

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

SECTION A

QUESTION 1 (COMPULSORY) Write the answer only in your booklet

Note: All questions = 1 marks except * = 2 marks;

1. Rare but permanent changes in a gene are known as _____
2. In which type of mimicry is the mimic the same colouration as the model but harmless?
3. What is natality?
4. Give an example of altruism in nature.
5. Name one property used to describe communitites.
- 6*. Give any two factors which need to be satisfied for genetic equilibrium to be maintained.
7. What does oviparous mean?
- 8*. Give any two factors which need to be satisfied for genetic equilibrium to be maintained.
9. Suggest one reason why decomposition vital for life on earth?
- 10*. What is the importance of reproductive isolation?
11. The random exchange of alleles between populations is known as _____
12. Alternate forms of a gene are referred to as _____
- 13*. Name two characteristics shared by all members of the Kingdom Animalia.
14. Give an example of how humans have changed their environment to increase the carrying capacity of the land.
- 15*. List the two features which characterise mammals.
16. An individual with two identical alleles for a particular gene is _____
for that gene.
17. Which genotype is used in test-crosses?
18. Alleles which in homozygous recessive condition cause death of the individual are known as ____
- 19*. How did mammary glands contribute to mammalian success?

[Total = 25 marks]

QUESTION 2

a. Differentiate between the following:

- i. Incomplete dominance and codominance (3)
- ii. *r*-selected and *K*-selected organisms (3)
- iii. Notochord and hollow, dorsal nerve chord (3)
- iv. Hydrosphere and atmosphere (3)
- v. Ecosystem and community (3)

b. Using the respective Classes, briefly discuss the following

- i. Body modifications for flight (Aves)
- ii. Amphibians only partially adapted for terrestrial life (Amphibia) (10)

[Total = 25 marks]

QUESTION 3

a. Use the information to answer the questions below.

Symbols (for pea plant traits):

Y: yellow seeds y: green seeds P: purple flower p: white flower

Cross a pea plant that is heterozygous tall and for yellow seeds with a plant that is short and is also heterozygous for green seeds

- i) List the genotypes of each of the parents.
- ii) Use a punnet square to predict the possible outcomes of a cross between the 2 parents.
- iii) List the genotypes and the number of that genotype present in the offspring for each cross.
- iv) List the phenotypes and the number of that phenotype present in the offspring for each cross.

(15)

b. Discuss factors which lead to changes in alleles frequencies within populations.

(10)

[Total = 25 marks]

SECTION B

QUESTION 4

(a) Write one or two words that apply to EACH of the following: (2 marks each)

- (i) Organ of excretion in mammals
- (ii) Enzyme of starch digestion in humans
- (iii) Female hormone of pregnancy
- (iv) Enzyme involved in fat digestion
- (v) Muscle controlling entry into the stomach
- (vi) Where sperms enter the uterus
- (vii) Hormone responsible for masculinity
- (viii) Conduction lines for impulses in the nervous system
- (ix) Number of chambers in a human heart
- (x) Feeds only on consumers

(b) Write notes on the Resting potential. (5 marks)

[Total = 25 marks]

QUESTION 5

Describe and compare digestion in hindgut and foregut fermenters.

(25 marks)

[Total = 25 marks]

QUESTION 6

(a) Make labelled sketches of the following:

- (i) A fish heart (3 marks)
- (ii) An amphibian heart (4 marks)
- (iii) A mammalian heart (9 marks)

(b) List five(5) functions of blood in humans (5 marks)

(c) What is an open circulatory system? Give an example of an animal with such a circulatory system (4 Marks)

[Total = 25 marks]

END OF QUESTION PAPER