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(Knowledge for Development)

KIBABII UNIVERSITY
UNIVERSITY EXAMINATIONS
2017/2018 ACADEMIC YEAR

THIRD YEAR 1ST SEMESTER
MAIN EXAMINATION

FOR THE DEGREE OF BED, BSC & BBC

COURSE CODE: SZL 313

COURSE TITLE: ANIMAL GENETICS AND EVOLUTION

DATE: 15th January, 2018.

TIME: 2:00 – 4:00 p.m

INSTRUCTIONS TO CANDIDATES

Answer Question one (1) and any other two (2) Questions. Question one is compulsory and carries 30 marks, the other Questions carry 20 marks each.

TIME: 2 Hours

This paper consists of 2 printed pages. Please Turn Over



KIBU observes ZERO tolerance to examination cheating

1. Briefly explain the following theories and concepts as used in animal genetics and evolution
 - i) The theories that support evolution **(5 Marks)**
 - ii) The concept of speciation **(5 Marks)**
 - iii) Primordial Soup Theory **(5 Marks)**
 - iv) Mendelism **(5 Marks)**
 - v) The Hardy-Weinberg Theory **(5 Marks)**
 - vi) Darwinism **(5 Marks)**
2. Explain how each of the following isolating mechanisms contributes to speciation in organisms.
 - i) Geographic barriers **(5 Marks)**
 - ii) Ecological (including seasonal) isolation **(5 Marks)**
 - iii) Behavioral isolation **(5 Marks)**
 - iv) Polyploidy **(5 Marks)**
3. Discuss the role of each of the following in animal social behavior. **(20 Marks)**
 - i) Territoriality
 - ii) Dominance hierarchies
 - iii) Courtship behavior
4. Discuss the following as relates to the theory of evolution:
 - i) Convergent evolution and the similarities among species (ecological equivalents) in a particular biome (e.g. tundra, taiga, etc.) **(4 Marks)**
 - ii) Natural selection and the formation of insecticide-resistant insects or antibiotic-resistant bacteria. **(4 Marks)**
 - iii) Speciation and isolation **(4 Marks)**
 - iv) Natural selection and behavior such as kinesis, fixed-action-pattern, dominance hierarchy, etc. **(4 Marks)**
 - v) Natural selection and heterozygotes advantage **(4 Marks)**
5. a) Discuss Gregor Mendel's results and conclusions on inheritance of characteristics. **(8 Marks)**
 - b) Highlight how each of the following deviated from Mendel's conclusions:
 - i) Autosomal linkage **(4 Marks)**
 - ii) Sex-linked (X-linked) inheritance **(4 Marks)**
 - iii) Polygenic inheritance **(4 Marks)**