UNIVERSITY OF RUHUNA

BACHELOR OF SCIENCE GENERAL DEGREE LEVEL II (SEMESTER II)

January/February 2018

SUBJECT: Zoology **Time: 01 ½ hours**

***COURSE UNIT:* ZOO 2202 – Human Biology and Genetics**

Answer **any three** questions only.

Illegible handwriting would be penalized.

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1. Describe the adjustments shown by people permanently living in high altitudes.

2. Answer both parts (Both will be given equal weight).

i) Briefly explain the Cultural evolution of human.

ii) Write an account on 'neurofibromatosis' (NF-1) emphasizing the genetic cause and phenotypic manifestations.

3. Answer both parts (Both will be given equal weight).

(i) Briefly describe how the phenotypic outcome of 'linkage with crossover' differs from that of 'independent assortment'.

(ii) In Fruit flies, assume that the genes controlling the wing-shape and the eye-color are located 15 map units apart. Round wings (allele *R*) are dominant over long wings (allele *r*), while brown eyes (allele *B*) are dominant over white eyes (allele *b*).

(a) Determine the phenotypic outcomes of a test cross for fruit flies that are heterozygous for both traits?

(b) If the above crosses produced 800 fruit flies, predict the numbers of different phenotypes resulted from the crosses. What is characteristic about these numbers?

(c) If these two genes were completely linked, predict the numbers of possible phenotypes resulted from a similar test cross mentioned in (a) giving reasons.

(d) Assuming complete linkage, what will be the probability of getting three (03) long-winged ~~red~~ white-eyed flies out of six (06) offspring from the above cross?

4. Write a detailed account on 'epigenetic inheritance'.

****Marks from continuous Assessment (Genetics + Human Biology) (20 marks)

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