

BOWEN UNIVERSITY, IWO
COLLEGE OF AGRICULTURE ENGINEERING AND SCIENCE
PURE AND APPLIED BIOLOGY PROGRAMME

PAB 401: POPULATION GENETICS
2021/2022 FIRST SEMESTER EXAMINATION
PRACTICALS

Answer all questions

Time allowed: 1 hour

1. You are provided with a bank of equal number of white and red beads where the white beads represent the dominant alleles and the red beads represents the recessive alleles. Draw two beads at a time and record as homozygous dominant, heterozygous or homozygous recessive. Select the beads until you have 80 beads.
Calculate the following:
 - (a) The total number of the heterozygous individuals in the drawn population of beads.
 - (b) The number of the homozygous recessive alleles in the drawn population of beads.
 - (c) The number of the homozygous dominant alleles in the drawn population of beads.

(12 marks)
2. Use the allelic frequency in 1 above to determine if the population of beads is in Hardy-Weinberg equilibrium (use the tabulated chi-square value of 3.84 at 1 degree of freedom with a p-value of 0.05).

(8 marks)
3. State any five assumptions by which Hardy-Weinberg equilibrium can be met.

(5 marks)