FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI
SCHOOL OF AGRICULTURE AND AGRICULTURAL TECHNOLOGY
DEPARTMENT OF ANIMAL SCIENCE AND TECHNOLOGY

Session/semester: 2018/2019 Harmattan Examination
Course code/Title: AST 401 – Quantitative and Hereditary Genetics **Time Allowed: 3hrs**
Instructions: **Answer five questions in all, at least one from each section.**

SECTION A:

1. Differentiate between the following terms giving examples where necessary;
i) Spontaneous and induced mutation. (ii) Forward and Reversed Mutation (iii) Mutants and Mutagens.
iv) Acrocentric and Metacentric chromosome (v) Alleles and Chromosomes

2. a) What are the benefits of Structural Abberations that occur in a chromosome to the Animal breeder.
b) Using diagrams explain various variants that can occur in the structure of a chromosome.

3. a) What are the chromosome numbers in the following livestock species;
(i) Rabbit (ii) Pigeon (iii) Chicken (iv)Goat (v) Cattle
b) With the aid of a well labeled diagram explain sex determination in poultry breeding.

SECTION B:

4. Explain with iliustrations the differences between additive and Non-additive gene actions.

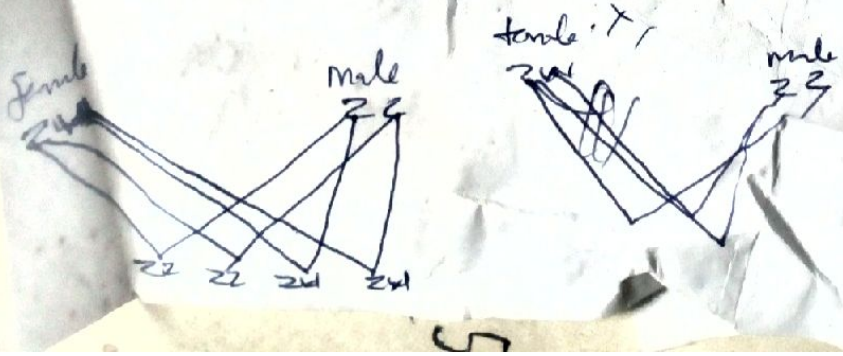
5. Given an intermating between F_1 individuals with genotypes Tt Cc, show with Punnet square;
(i) The F_2 individuals (ii) The genotypic ratio of F_2 individuals (iii) The Phenotypic ratio of the F_2 individuals
Note: Tt is an allele for height, where tall is dorminant to short, while Cc is the allele for eye colour, where brown colour is dorminant to blue colour.

SECTION C:

6. i) Explain briefly what you understand by heritability estimate, considering heritability value of 50% do you classify it as high or low – interpret.
ii) List and state likely methods of estimating heritability.

7. Write short notes on the following giving examples in each case;
i) Phenotypic Correlation
ii) Genetic Correlation
iii) Environmental Correlation
iv) Causes of genetic correlation.

8. Define and explain what you understand repeatability estimate to mean and state its' uses in Animal Breeding.



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