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NATIONAL OPEN UNIVERSITY OF NIGERIA
University Village, Nnamdi Azikiwe Expressway, Plot 91, Cadastral Zone, Jabi, Abuja
Faculty of Agricultural Sciences

EXAMINATION QUESTION: APRIL, 2019

COURSE CODE: ANP310

COURSE Title: Genetics and Breeding

Credit Units: 2

INSTRUCTION: Answer question one (25 marks) and any other three questions (15 marks each)

TIME: 2 Hours

1. (a) Draw and label the different parts of a typical plant cell (8 marks)
   (b) List the different shapes of cells. (5 marks)
   (c) What is the major difference between plant and animal cell? (2 marks)
   (d) Using appropriate illustration, describe the breeding plan when few simply inherited characteristics are to be transferred from one parent to the other (10 marks)

2. Write short notes on the following:
   (a) Upgrading in animal breeding (5 marks)
   (b) Steps involved in Artificial Insemination (5 marks)
   (c) Development of synthetic varieties of plants (5 marks)

3. (a) Why is the proper understanding of the cell necessary? (4 marks)
   (b) What are the functions of the following parts of the cell?
   (i) Endoplasmic recticulum (4 marks)
   (ii) Golgi body (4 marks)
   (iii) Nucleus (3 marks)

4. (a) Differentiate between germinal mutation and somatic mutations (7 marks)
   (b) Explain clone Selection method of breeding asexually propagated crops (8 marks)

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5. (a) Briefly outline Mendel's laws of inheritance (6 marks)

(b) Discuss briefly the major benefits a farmer can derive from the use of artificial insemination

(9 marks)

6. (a) Define the following terms.

(i) Homologues (ii) Alleles (iii) Dorminant gene (iv) Recessive gene (6 marks)

(b) In cattle breeding, polled or absence-of-horns is dorminant over the horned trait, if the genotype of the homozygous horned individual is designated as hh, and polled individual as HH; Using the Mendelian laws, briefly illustrate the phenotypes of the F1 and F2 generations.

(9 marks)