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

Session/semester:	**2015/2016 / Harmattan**	**Date : 26-04-2015**
Course code / Title:	**AGR 303 / Agricultural genetics**	**Time allowed 3 hours**
Instructions:	**Answer five questions in all; at least one question from each section**	

Section A

Question No. 1

a) Black and red skin colours in goats are governed by B and b alleles respectively. Suppose a mating between a black skinned buck and a red skinned doe results in at least one red skin colour offspring.
   i) What is the genotype of the buck?
   ii) What will be the appearance of the offspring of a cross of the F1 back to its red coloured doe?

b) Write down a tetra-hybrid ratio?

Question No.2

Describe with illustrative examples, factors which can cause departures from classical Mendelian inheritance.

Section B

Question No. 3

Using a DNA base sequence of fifteen (15) bases, explain the process of protein synthesis in any named livestock

Question No. 4

a) Explain the term 'Recombinants'.
b) How many linkage group can be found in man?
c) Define the term "Linkage analysis"
d) Using examples, explain the term 'Backcross' mating.
e) List the three (3) kinds of RNA found in mammals.

Section C

Question No. 5

With the aid of an equation, state and explain the Hardy-Weinberg's principle.

Question No. 6

Briefly describe four types of gene action and give an example in each case

Section D

Question No. 7

a) Describe the following terms in relation to the DNA molecule.
   i) Replication ii) Transcription iii) Translation
b) Write the arrangement of the nucleotide bases as described by Watson-Crick's model of DNA molecule

Question No. 8

a) Write short notes on the following
   i) Cloningii) Recombinant DNA technology iii) Genomics vi) Transgenesis
b) What are the differences between the old and modern day biotechnology.