



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
*University Village, Nnamdi Azikiwe Expressway, Plot 91, Cadastral Zone, Jabi, Abuja*  
**Faculty of Agricultural Sciences**  
*POP Exam2021\_2*

**Course Title:** Analytical Techniques for Animal Production I

**Course Code:** AGR 305

**Credit Unit:** 2

**Time Allowed:** 2 Hours

**INSTRUCTION:**

**Answer Compulsory question 1 (25 marks) and any 3 questions ( 15 marks each).**

**Question One**

- Calculate the mean, mode and median of this data 2, 5, 7, 7, 8, 9, 4, 4, 5, 10, 12, 3, 5, 13, 13 (6 marks)
- Differentiate between positive and negative correlation using a well-defined diagram (6 marks)
- Outline four (4) common sources of systematic errors (4 marks)
- Mention five (5) points to consider in developing a good sampling plan (5marks)
- With 2 relevant examples explain the terms Qualitative Data and Quantitative Data (4marks)

**Question Two**

- Describe Latin Square Design (3marks)
- Give two (2) advantages and two (2) disadvantages of this design (4 marks)
- Define the following Basic Probability Terms
  - Experiment
  - Outcomes
  - Event
  - Random Experiment:
  - Independent Event
  - Mutually Exclusive Events (6 marks)
- Explain the term Descriptive Statistics (2 marks)

**Question Three**

- Define Hypothesis (1 mark)
- Mention and explain the two(2) types of hypothesis (3 marks)
- what is Standard Deviation, give three (3) advantages and one (1) Disadvantage of Standard Deviation (5 marks)
- State the difference between accuracy and precision of experimental error. (4marks)
- Give two (2) attributes of a good sample (2 marks)

**Question Four**

a) Define the following:

- I. volumetric analysis
- II. Titration
- III. Standard Solution
- IV. Indicator
- V. Equivalent Point
- VI. End Point
- VII. Concentration

(7 marks)

b) Outline three (3) methods of determining end point in titration (3 marks)

c) Explain the meaning of Chromatography (3marks)

d) Highlight two applications of Chromatography in agriculture (2 marks)

**Question Five**

a) Highlight five (5) basic rules for Construction of Tables (5 marks)

b) Outline five (5) basic steps taken to ensure data collection, data analysis, interpretation and valid inference in an experiment (5marks)

c) Give the meaning of the term thermometric analysis (2marks)

d) Mention 6 equipment required for thermometric analysis (3 marks)

**Question six**

a) Outline five (5) criteria for rejection of analytical sample (4 marks)

b) Mention the six (6) parts of proximate composition. (3 marks)

c) Explain the term

- I. measures of dispersion (2 marks)
- II. measure of central tendency (2 marks)
- III. Data Collection (2 marks)
- IV. Experimental Error (2 marks)