



**NATIONAL OPEN UNIVERSITY OF NIGERIA
FACULTY OF AGRICULTURAL SCIENCES
DEPARTMENT OF CROP AND SOIL SCIENCES
2025_2 EXAMINATIONS.**

COURSE TITLE: (CROP GENETICS AND BREEDING)

COURSE CODE: CRP 305

TOTAL SCORE: 70 MARKS

TIME: 2 HRS

INSTRUCTIONS: ANSWER THREE (3) Questions in all. QUESTION 1 is compulsory (30 marks) and any other (2) questions (20 marks each)

- 1a. Briefly explain the following genetic terms:
a. Gene ii. Crop breeding iii. Phenotype iv. Genotype
v. Homozygous (10 marks)
- 1b. Make a dihybrid cross between a cowpea plant that is homozygous for tallness (TT) with yellow flowers (YY) and another cowpea plant that is homozygous for dwarfness (tt) with white flowers (yy).
 - i. List the gametes produced by the parents,
 - ii. Gametes produced in the F₁ generation
 - iii. Draw a punnet square stating the F₂ generations
 - iv. State the phenotypic and genotypic ratios respectively (20 marks)
- 2a. What is an allele of a gene? (5 marks)
- b. Highlight five (5) characteristics of genes (5 marks)
- c. Explain the causes of biological variation (10 marks)
3. Explain the term Heritability (10marks)
 - b. Discuss the following
 - i. Perfect flowers iii. Monoecious plants
 - ii. Imperfect flowers iv. Dioecious plants (10 marks)
4. a. Define selection (5 marks)
- b. Explain the method of using Pure-line Selection to improve self-pollinated crops (15 marks)