



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA
FACULTY OF SCIENCE
Department of Biological Sciences
2025_2 EXAMINATIONS

BIO402: Cytogenetics of Plants

Time: 2 Hours

Credit Units: 2

Instruction: Answer THREE (3) questions only. QUESTION 1 is compulsory.

1. (a)i. Define Cytogenetics (3 marks)
ii. List five (5) plants that have spontaneous monoploids (5 marks)
(b) i. List the three (3) shapes chromosomes assume during anaphase (3 marks)
ii. Telomeres are of cytogenetic importance. Discuss (6 marks)
(c) Write short notes on the following levels of Chromosome Packaging:
i. First Level (5 marks)
ii. Fourth Level (8 marks)

Total Marks = (30 marks)
2. (a)i. Outline the relationship between Genic Balance and Development (4 marks)
ii. Give an account of gamete production (7 marks)
(b) Write a comprehensive note on Aneuploidy (9 marks)

Total Marks = (20 marks)
3. (a) Account for the occurrence of polyploidy in plants compared to animals (6 marks)
(b) Describe Theodore Boveri's experiment on double fertilization (14marks)

Total Marks = (20 marks)
4. (a)i. Outline the main diagnostic features of inversions (4marks)
ii. Explain the concept of basic chromosome number (6marks)
(b) To have a normal meiosis, there must be two homologous chromosomes present.
In line with this, discuss meiotic behaviour in monoploids (10marks)

Total Marks = (20 marks)
5. (a)i. Differentiate between heterochromatin and Euchromatin (2 marks)
ii. Edward Strasburger contributed immensely to Cytogenetics. Discuss (6 marks)
(b) Give an account of the origin of variations in Chromosome number (12 marks)

Total Marks = (20 marks)