NATIONAL OPEN UNIVERSITY OF NIGERIA
14/16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS
SCHOOL OF SCIENCE AND TECHNOLOGY
JUNE/JULY EXAMINATION

COURSE CODE: BIO402
COURSE TITLE: Cytogenetics of Plants (2 units)
TIME ALLOWED:2 HOURS
INSTRUCTION: ANSWER ANY FOUR QUESTIONS

1ai.What are the advantages of polyploidy?
ii. How do you think multipolar mitosis might cause aneuploidy?
bi. Why is aneuploidy of more deleterious consequence than euploid?
ii. What are the genetic consequences of the following (i) translocation (ii) deletion

2ai. Distinguish between Autopolyploids and Allopolyploids.
ii. Why is polyploidy less common in animals than in plants?
bi. Why is it that banana cannot be propagated by seed?
ii. Arrange the plants with the genome formulas below according to their degrees of fertility starting with the most fertile. Give reasons to support your answer.
RRRRR RRYY RRRR.

3ai.What do you understand by the terms aneuploidy and euploidy.
ii. Distinguish between heterochromatin and euchromatin.
bi. You are given the following chromosome complement for plant with chromosome number
2n =10; bb, cc, dd, ee, ff.
Give the chromosome complement and the chromosome number of the following aneuploids.

(I) A trisomic for chromosomes c and e
(ii) A double nullisomic for chromosomes b and f
(iii) A monosomic for chromosome d and e

4a.i Define cytogenetics.
ii. What is the cytogenetic importance of telomeres?
b. Write short notes on the contributions of the following scientists to the development of cytogenetics as a discipline (i) Cyril Darlington
(ii) Edmund Wilson (iii) Edward Strasburger (iv) Edward Van Beneden

5a What was Thomas Morgan's contribution to the chromosome theory of inheritance?

b. Describe the different types of chromosomes based on the location of the centromere.

6ai. Distinguish between the terms monoploid and haploid numbers.
ii. Why are diploids usually fertile without experiencing the problems of fertility associated with triploids?
b. Describe the different methods of production of monoploids.