National Open University Of Nigeria
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Science
OCTOBER/NOVEMBER 2016 EXAMINATION

COURSE CODE: BIO 402
COURSE TITLE: CYTOGENETICS OF PLANTS
TIME ALLOWED: 2 Hours
INTRUCTION: Answer question ONE (1) and any other THREE (3) questions

1a. Enumerate the role of Wilhelm Roux in the development of cytogenetics (4 marks)
b. You are given the following chromosome complement for a plant with
Chromosome number, 2n =12; aa, bb, cc, dd, ee, ff.
Give the chromosome complement and the chromosome number of the following aneuploids:
(i) A monosomic for chromosomes b, d and f
(ii) A double nullisomic for chromosomes a, c and f
(iii) A trisomic for chromosomes a, d and e (6 marks)
c. Write **short notes** on the following:
(i) Mitotic behavior in monoploids (5 marks)
(ii) Satellite chromosomes (5 marks)
(iii) Fertility in monoploids (5 marks)

2. (a) Outline the advantages of polyploidy (4 marks)
(b) Give reasons for the fact that banana cannot be propagated by seed (5 marks)
(c) Summarize Emund Beercher Wilson's principles of chromosome theory of inheritance (6 marks)

3. (a) Define the term cytogenetics (3 marks)
(b) Describe the different methods of production of monoploids (12 marks)

4. (a) Summarize Thomas Morgan's contributions to the chromosome theory of inheritance (4 marks)
(b) Distinguish between Autopolyploids and Allopolyploids (3 marks)
(c) Enumerate the genetic consequences of the following:
(i) deletion translocation (4 marks)
(ii) translocation (4 marks)

5. (a) Give reasons why aneuploidy is of more deleterious consequence than euploidy (3 marks).
(b) Classify and describe chromosomes based on the position of centromeres. Illustrate your answer (12 marks)
6. Give a **detailed** account of the nature and causes of aneuploidy (15 marks)