NATIONAL OPEN UNIVERSITY OF NIGERIA
14/16, Ahmadu Bello Way, Victoria Island

SCHOOL OF SCIENCE AND TECHNOLOGY
October, 2013 Examination

COURSE CODE: BIO402

COURSE TITLE: CYTOGENETICS OF PLANTS

TIME ALLOWED: 2 HOURS

INSTRUCTION: ANSWER ANY FOUR QUESTIONS

1a. (i)Define cytogenetics.
(ii)What is the cytogenetics importance of telomeres?
b. Write short note on the contributions of the following scientists to the development of
cytogeneticsas a discipline
(i) Cyril Darlington (ii) Edmund Wilson (iii) Edward Strasburger (iv) Edward Van beneden

2a (i) What do you understand by the terms aneuploidy and euploidy.
(ii)Distinguish between heterochromatin and euchromatin.
b(i)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

3a (i) Outline EmundBeercher Wilson's principles of chromosome theory of inheritance.
(ii)What was Thomas Morgan's contribution to the chromosome theory of inheritance?
bDescribe the different types of chromosomes based on the location of the centromere.

4a(i)Distinguish between the terms monoploid and haploid numbers.
(ii) Why are diploids usually fertile without experiencing the problems of fertility associated with
other states of euploidy?
b. Describe the different methods of production of monoploids.

5a (i)Distinguish between Autopolyploids and Allopolyploids.
(ii)Why is polyploidy less common in animals than in plants?
b. (i) 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.

6a (i) What are the advantages of polyploidy?

(ii)How do you think multipolar mitosis might cause aneuploidy?

b. (i) Why is aneuploidy of more deleterious consequence than euploid?

(ii)What are the genetic consequences of the following (i) translocation (ii) deletion