NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS
SEPTEMBER/OCTOBER 2015 EXAMINATION
SCHOOL OF SCIENCE AND TECHNOLOGY

COURSE CODE: **BIO 402**
COURSE TITLE: **CYTOGENETICS OF PLANTS**

TIME ALLOWED: 2 Hours
INTRUCTION: ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER THREE QUESTIONS

1. (a) What iscytogenetics? (2 marks)
   (b) Summarize **four** advantages of polyploidy. (8 marks)
   (c) Describe the **roles** of the following Scientists in the development of Cytogenetics:

i. Emil Heitz(5 marks)
ii. Wilhelm Roux (4 marks)
iii. Theodor Boveri (6 marks)

2. (a) Distinguish between monoploid and haploid numbers. (2 marks)
(b)Justify the fact that diploids are usually fertile without experiencing the problems of fertility associated with triploids? (4 marks)
(c) 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 monosomic for chromosome d and e. (3 marks)
ii. A double nullisomic for chromosomes b and f. (3 marks)
iii. A trisomic for chromosome d and e. (3 marks)

3. (a) CompareAutopolyploids and Allopolyploids. (3 marks)
(b) State the reasons why polyploidy is less common in animals than in plants. (4 marks)
(c) Enumerate the genetic consequences of the following:
(i) translocation (4 marks)
(ii) deletion (4 marks)

4. (a) Summarize Thomas Morgan's contributions to the chromosome theory of Inheritance. (4 marks)
(b) Outline **EmundBeercher Wilson's** principles of chromosome theory of inheritance. (6 marks)
(c) Banana cannot be propagated by seed. Discuss (5 marks)

5. Give a **detailed** description of the causes of aneuploidy. (15 marks)

6. (a) Define the terms aneuploidy and euploidy. (3 marks)
(b) Enumerate **four**advantages of Polyploidy. (6 marks)
(c) Provide the classification ofchromosomes based on the location of centromere.

(6 marks)