National Open University of Nigeria
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Science
JULY, 2017 EXAMINATION

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

1. (a) Distinguish between monoploid and haploid numbers. (4 marks)
   (b) Enumerate the cytogenetic importance of telomeres. (3 marks)
   (c) Summarize Emund Beercher Wilson's principles of chromosome theory of inheritance. (4 marks)
   (d) If you are given the following chromosome complement for 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 chromosome b, d and f (4 marks)
   (ii) A double nullisomic for chromosomes a, c and f (4 marks)
   (iii) A trisomic for chromosome a, d and e (4 marks)

2. Write an **essay** on the classification of chromosomes based on the number of centromeres. (15 marks)

3. (a) Compare the following hypothetical monoploids for their degree of infertility. A: x = 5; B: x= 7 (3 marks)
   (b) Describe the **four** methods of production of monoploids. (12 marks; 3 for each)

4. (a) Enumerate the genetic consequences of deletion.
   (b) Write **short notes** on the following:
   (i) mitotic behavior in monoploids (5 marks)
   (ii) fertility in monoploids. (5 marks)

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