



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA**  
**FACULTY OF SCIENCE**  
**Department of Pure and Applied Sciences**  
**2023\_2 EXAMINATIONS**

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**BIO 303: GENERAL CYTOLOGY**

**Time allowed: 2hrs**

**Credit Units: 2**

**Instruction: Answer question ONE (1) and any other THREE (3) questions.**

- 1a. List 3 methods of detecting radioisotopes (3 marks)
- 1b. Enumerate the four (4) principles of chromosome theory of inheritance as laid down by Edmund Beecher Wilson (4 marks)
- 1c. In a tabular form distinguish Euploidy from Aneuploidy under the following headings  
Definition  
Type of variation  
variations  
Occurrence  
Causes  
Role (13 marks)
- 1d. Outline the significance of chromosome packaging (5 marks)
- 2a. List the four (4) types of chromosomes based on the location of centromere (2 marks)
- 2b. Describe how DNA is organized into chromatin (4 marks)
- 2c. Explain the following types of chromosomes:
  - i. Acentric chromosomes (2 marks)
  - ii. Monocentric chromosomes (3 marks)
  - iii. Dicentric chromosomes (4marks)
3. In a tabular form state the major differences between Heterochromatin and Euchromatin (15 marks)
4. Expound on the meiotic behaviour in monoploids (15marks)
5. Discuss the role of carbohydrates as cellular constituents (15 marks)