



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

**SCHOOL OF SCIENCE AND TECHNOLOGY**

**COURSE CODE:                      BIO 303  
COURSE TITLE:                    GENERAL CYTOLOGY  
TIME ALLOWED:                  2 Hours**

**INSTRUCTION: ANSWER QUESTION 1 (COMPULSORY) AND ANY OTHER THREE QUESTIONS.**

1. a. Three (3) major control checkpoints exist during the course of eukaryotic cell cycle. Mention these checkpoints. Explain any one of these checkpoints. 10marks  
  
b. In a tabular form, make a brief comparison between RNA and Proteins. 15marks
2. a. Define the following terms:
  - i. Cytogenetics; 2marks
  - ii. Cytology; 2marks and
  - iii. Genetics. 2marks  
b. i. Mention the different types of Structural Chromosomal Variations. 4marks  
ii. Define each of the mentioned structural chromosomal variations. 4marks  
c. i. What is Numerical Chromosomal Variation? 5marks  
ii. Mention the different types of numerical chromosomal variations. 6marks
3. a. Mention the general cytogenetic procedures synonymous to all cytogenetic techniques. 8marks  
b. i. Define Karyotype. 2marks  
ii. After Karyotyping, mention the observable characteristics in the chromosomes. 5marks

- c. Outline the importance and applications of cytogenetics. 10marks
4. a. Mention the molecular composition of a cell. 5marks  
b. State the functions/importance of protein in a living cell. 5marks  
c. Mention the different types of Nucleic acids. 5marks  
d. Outline the roles of the different types of nucleic acids. 10marks
5. i. Mention the two major phase of cell cycle. 4marks  
ii. Name the five stages of mitosis. 5marks  
iii. Define the word “Embryology”. 2marks  
iv. Mention the stages of embryogenesis. 4marks  
v. Explain briefly, the word “Diakinesis. 10marks
6. a. State the function(s) of the following parts of a Light Microscope (15marks):  
i. Eye piece;  
ii. Body tube;  
iii. Objectives;  
iv. Diaphragm; and  
v. Stage.
- b. State the advantages of a Phase Contrast Microscope. **4marks**  
c. Define Darkfield Microscopy. 2marks  
d. Mention two advantages of an electron microscope. 4marks