



**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 303

COURSE TITLE: GENERAL CYTOLOGY

TIME ALLOWED: 2 Hours

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

1. 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

2. a. Three (3) major control checkpoints exist during the course of eukaryotic cell cycle. Mention these checkpoints. Explain any one of these checkpoints.
5marks

b. In a tabular form, make a brief comparison between RNA and Proteins.
10marks

3. a. Mention the general cytogenetic procedures synonymous to all cytogenetic techniques. **4marks**
b. i. Define Karyotype. **2marks**
ii. After Karyotyping, mention the observable characteristics in the chromosomes. **4marks**
c. Outline the importance and applications of cytogenetics. **5marks**
4. a. Mention the molecular composition of a cell. **2 ½ marks**
b. State the functions/importance of protein in a living cell. **2 ½ marks**
c. Mention the different types of Nucleic acids. **2 ½ marks**
d. Outline the roles of the different types of nucleic acids. **7 ½ marks**
5. i. Mention the two major phase of cell cycle. **3marks**
ii. Name any three stages of mitosis. **3 marks**
iii. Define the word “Embryology”. **2marks**
iv. Mention the stages of embryogenesis. **2marks**
v. Explain briefly, the word “Diakinesis. **5marks**
6. a. State the function(s) of the following parts of a Light Microscope(**5marks**):
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**