



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
Plot 91 Cadastral Zone, Nnamdi Azikwe Express Way, Jabi, Abuja.  
**FACULTY OF EDUCATION**  
**2020\_1 Semester**

COURSE CODE: **SED321**  
COURSE TITLE: **BIOLOGY FOR INTEGRATED SCIENCE III**  
CREDIT UNITS: **2**  
TIME: **2 Hours**  
INSTRUCTIONS: **Answer question No. 1 and any other two**

1a) Great scientists like Schleiden 1838 and Schwann 1839, described the cell and the structure of its major organelles. What then is a cell according to these scientists?  
**(3 marks)**

1b) Describe the functions of five (5) of these major organelles of an animal cell when viewed under the light microscope. **(10marks)**

(1c) The two (2) types of cell division necessary if the organisms are to reproduce in life are: **(2marks)**

1d) State and explain the five (5) distinct phases that are involved in the first type of cell division. **(10marks)**

1e) Transgenic technique is preferred to the traditional methods of plant and animal breeding. List five (5) reasons to support this statement? **(5marks)**

2a) What is *Meiosis*? **(2marks)**

(2b) In a sentence explain the following terms:

- Heterozygous
  - Genotype
  - Allele
  - Chromosome
- (2marks)**

2c) Mention four (4) sex-linked traits in humans. **(4 marks)**

2d) Illustrate any four (4) types of interactions among living organisms. **(12marks)**

3a). Differentiate between scramble and contest competition. **(6marks)**

3b) Identify ten cultural methods of pest control **(5marks)**

3c) Mention four (4) characteristics of wood land that differentiates it from forest. **(4marks)**

3d) Identify four (5) medical conditions that are of genetic nature in humans. **(5marks)**

4a) List any four (4) distinct phases involved in cell division. **(4 marks)**

4b) Briefly explain the following as relates to methods of animal Improvement?

- i. transgenic organism
- ii. genetic engineering
- iii. artificial insemination **(8 marks)**

4c) Illustrate the outcome of a cross between pure F1 homozygous white flower (AA) and F1 Homozygous pure Red flower (aa) **(8marks)**