



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI -**  
**ABUJA**  
**FACULTY OF SCIENCE**  
**Department of Biological Sciences**  
**2022\_2 EXAMINATION**

**BIO 305: MOLECULAR BIOLOGY**

**Time allowed: 2hrs**

**Credit Units: 2**

**Instruction: Answer THREE questions only. Question 1 is compulsory.**

- 1a Explain why Techniques are needed in Molecular biology (4½ marks)**
- 1b Describe the following bio-physico-chemical techniques used in Molecular Biology (25½ marks)**
- 2a.. Give the one letter symbol and three (3) codons of the following amino acids (20 mrks)**
- i. Proline**
  - ii. Leucine**
  - iii. Arginine**
  - iv. Glycine**
  - v. Alanine**
  - vi. Threonine**
  - vii. Valine**
  - viii. Serine**
- 3a What are sex chromosomes? 9 mrks**
- 3b. Describe Francois Jacob and Jacques Monod's model for the control of gene expression *E. coli*. 11mrks**
- 4ai List 3 conditions required for fermentation to take place (3 marks)**
- ii. State two products of fermentation. (2 marks)**
- 4b. Expatiate on the unique features of the transfer-Ribonucleic acid (9 marks)**
- 4c Highlight the roles of Deoxyribonucleic acid in organisms (6mrks)**
- 5. Identify and explain the operational/functional basis of gene (forms assumed by a gene) (20 mrks)**