



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA
FACULTY OF SCIENCE
Department of Biological Sciences
2025_2 EXAMINATIONS

BIO 305: Molecular Biology

Time: 2½ Hours

Credit Units: 3

Instruction: Attempt FOUR (4) questions only. QUESTION 1 is compulsory.

- 1a. (i). Discuss the use of yeasts as models for the study of eukaryotic cells **(7 marks)**
(ii). List three (3) techniques used in molecular biology **(3 marks)**
- b. (i). Define the following; - Genes **(2 marks)**
- Chromosomes **(2 marks)**
(ii). Give explanatory notes on sex chromosomes **(7 marks)**
- c. Briefly highlight the four (4) changes that can occur as a result of the breakage of a chromosome structure **(4 marks)**
- 2a. (i). What are the three (3) subunits or components of a nucleotide? **(3 marks)**
(ii). Mention three (3) major differences between the RNA and DNA **(3 marks)**
- b. Explain the structure of the DNA **(9 marks)**
- 3a. Explain the process of DNA **replication** **(10 marks)**
- b. List the five (5) stages involved in the process of DNA **transcription** **(5 marks)**
- 4a. Define the following; (i) Genetic code **(2 marks)**
(ii) Codon **(2 marks)**
(iii) Nonsense codon **(2 marks)**
- b. (i) Outline six (6) characteristics of the genetic code **(6 marks)**
(ii) List the three (3) nonsense codons of the genetic code? **(3 marks)**
- 5a. Describe the concept of the central dogma **(8 marks)**
- b. (i). Briefly discuss the significance or importance of DNA sequencing? **(5 marks)**
(ii). Mention two (2) methods of DNA sequencing **(2 marks)**
- 6a. (i). Explain metabolic pathways? **(5 marks)**
(ii). Define metabolism **(2 mark)**
(iii). Differentiate between catabolism and anabolism **(4 marks)**
- b. Mention the four (4) stages involved in the complete breakdown of glucose? **(4 marks)**