NATIONAL OPEN UNIVERSITY OF NIGERIA

Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Science

DEPARTMENT OF BIOLOGICAL SCIENCES

2024_2 EXAMINATION

COURSE CODE: **BIO 305**

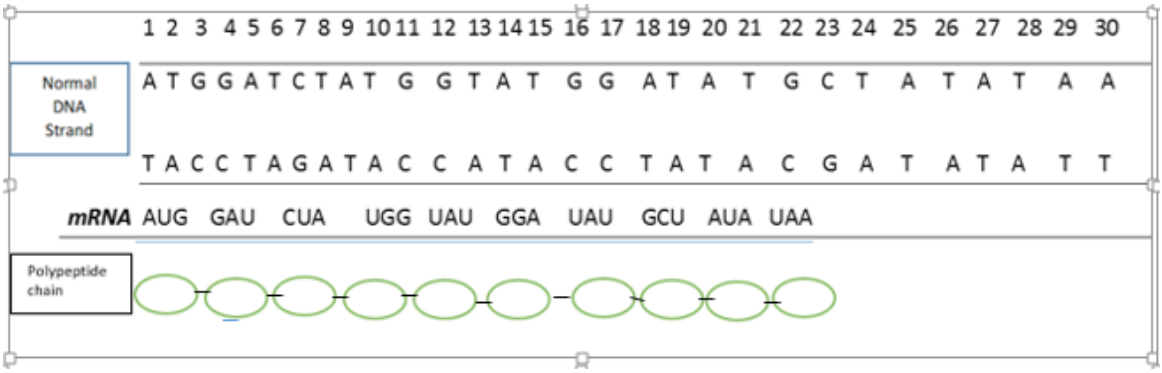
COURSE TITLE: **MOLECULAR BIOLOGY**

CREDIT UNIT: **3 Units**

TIME ALLOWED: 3 Hours

INSTRUCTION: Answer Question ONE (1) and any other THREE (3) Questions

1. a. Draw the diagram of cytosine 3 Marks
   b. Mention the diploid chromosome number of the following organisms: Dog, Tomato, Man 3 Marks
   c. Study the diagram below and use it to answer the following questions. If a G-C nucleotide is added between base pair 12 and 13 and between base pair 21 and 22,
      i. What will be the new sets of the messenger RNA
      ii. What will their corresponding amino acids? 10 Marks



   d. Succinctly, describe the process of RNA synthesis. 9 Marks

2. a. State the functions of DNA clamp and telomerase in DNA replication 3 Marks
   b. State the importance of DNA sequence. 3 Marks
   c. Give a detailed explanation on the first stage of protein synthesis. 9 Marks

3. a. Give two examples of genetic marker used in making linkage maps _____ 2 Marks
   b. Name any two microorganisms that are used as model animals in molecular biology 2 Marks
   c. What is a Nonsense Mutation? 6 Marks
   d. Describe the features of an RNA that acts as the 'factory' for the protein synthesis 5 Marks

4. a. Enumerate the characteristics of an organism suitable to be used as Model animal for molecular biology experiments 7 Marks
   b. Highlight the features of a DNA molecule 8 Marks

5. a. What is a Recon? 3 Marks
   b. What is a Missense Mutation 6 Marks
   c. Describe the Maxam and Gilbert's method of DNA synthesis. 6 Marks

6. a. What happened during the final stage of protein synthesis? 7 Marks
   b. Expatiate on the process of DNA replication 8 Marks