



ILARA-MOKIN, ONDO STATE
DEPARTMENT OF PHYSICAL AND CHEMICAL SCIENCES
2018/2019 FIRST SEMESTER B.Sc. DEGREE EXAMINATIONS
BCH 315: MOLECULAR BIOLOGY OF THE GENE

INSTRUCTIONS: ANSWER ALL QUESTIONS

TIME: 2 HOURS

- a. Describe the genetic code and list ten (10) characteristics of it **(6 marks)**
 - b. Briefly explain the relationship between one nucleotide and one polypeptide **(3 marks)**
 - c. Translate the following nucleotide sequences into appropriate amino acid
i. 5'.....CUCUCUGUGUGUACAAAAUGA...3'
ii. 5'....AUGUUUCUUCCCACGUAAUAG...3'
iii. 5' ...CCAA AUGCACUAUUAGUUUAG...3'
iv. 5'... GUGC UAACCAAGGGUGAAUGA....3'
v. 5'... AUGCGUAAUUGUCAGCGUAUCUAA...3' **(5 marks)**
 - d. Differentiate between the process of transcription in prokaryotes and eukaryotes **(3 marks)**
 - e. List factors required for translation in prokaryotes **(1 mark)**
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- a. What is the central dogma of molecular biology? **(2 marks)**
 - b. Discuss in detail the Messelson-Stahl experiment establishing the semi conservative mechanism of DNA replication **(5 marks)**
 - c. Discuss the different postulated mechanisms put forward to explain DNA replication mechanism **(3 marks)**
 - d. Illustrate events that occur at the replication fork **(2 marks)**
 - e. Provide the mechanism of action of the following antibiotics: streptomycin, nalidixic acid, chloramphenicol and puromycin **(4 marks)**
 - f. Using appropriate illustration explain the gene structure of a typical prokaryote and eukaryote **(4 marks)**
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- a. List the reasons that makes transcription in eukaryotes more complex than prokaryotes **(2 marks)**
 - b. List the five types of RNA and their functions **(2 marks)**
 - c. Explain the wobble hypothesis **(2 marks)**
 - d. Discuss briefly the following: pseudo genes, oncogenes, split genes, Okazaki fragments, Shine-Dalgarno sequence **(6 marks)**
 - e. Describe all events that happen during DNA replication **(8 marks)**