CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN BIOCHEMISTRY

BIOC 330: BIOCHEMISTRY OF NUCLEIC ACIDS

STREAMS: **TIME: 2 HOURS**

DAY/DATE: THURSDAY 13/12/2018 **8.30 A.M – 10.30 A.M**

INSSTRUCTIONS:

- **Answer question one any other two questions**
- **Do not write on the question paper**

1. (a) Define plasmids and explain their role in cloning. [4 marks]

   (b) Describe the four (4) types of chromosomes in human based upon the position of the centromere. [4 marks]

   (c) Describe two (2) disorders associated with impaired packaging of DNA. [4 marks]

   (d) Provide a structural differentiation between a nucleoside and give two (2) examples of each. [6 marks]

   (e) Describe the structure of *E. coli* origin of replication (ori C) and explain the role of its components. [6 marks]

   (f) Explain the roles of DNA polymerases involved in replication of bacterial and eukaryotic genome. [6 marks]

2. (a) Explain the different ways through which DNA damage and repair can occur. [10 marks]

(b) Describe the secondary structure of t-RNA and give the roles of the various features. [10 marks]

3. (a) Describe DNA replication in eukaryotes. [10 marks]

(b) Explain the different forms of genetic recombination. [10 marks]

4. (a) Explain the relationship between genes and polypeptides. [5 marks]

(b) Briefly describe the steps involved in prokaryotic protein biosynthesis. [15 marks]
