



**KISII UNIVERSITY**  
**UNIVERSITY EXAMINATIONS**  
**SPECIAL EXAMINATION**

**FOURTH YEAR EXAMINATION FOR THE AWARD OF**  
**THE DEGREE OF BACHELOR OF EDUCATION SCIENCE/ ANALYTICAL**  
**CHEMISTRY**  
**SECOND SEMESTER 2021/2022**  
**(JULY, 2022)**

**CHEM441: BIOCHEMISTRY OF NUCLEIC ACIDS**

**STREAM: Y4 S2**

**TIME: 2 HOURS**

**DAY: FRIDAY, 12.00 PM – 2.00 PM**

**DATE: 00/07/2022**

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**INSTRUCTIONS:**

- 1. Do not write anything on this question paper.***
- 2. Answer ALL questions in section A and any TWO Questions in section B.***

***SECTION A***

1. Give two significances of ATP. (2 marks)
2. Give a brief account on the three components of nucleic acids. (3 marks)
3. Define nucleotides and nucleosides. Give examples. (4 marks)
4. Differentiate between DNA and RNA. (3 marks)
5. Write short notes on tRNA. (3 marks)
6. Explain the physical, chemical and spectroscopic properties of DNA. (6 marks)
7. Comment on the three common types of DNA helices. (6 marks)
8. a) What are the factors that stabilize the DNA helices? (3 marks)

b) Give a brief account on denaturation and renaturation of a DNA strand. (3 marks)

9. Write short notes on mutarotation of pentose sugars in nucleic acids. (7 marks)

## **SECTION B**

### **QUESTION 10**

10. a) Discuss the salient features of Watson and Crick model of DNA. (10 marks)

b.) Explain in detail different types of forces stabilizing the nucleic acids. (5 marks)

11.a.) Discuss chain termination method of DNA sequencing with its modification.

b.) Explain in detail some of the features on deviations from Watson-Crick Model. (8 marks)

12. a.) Explain in details Maxam-Gilbert method of DNA sequencing. (8 marks)

b.) Comment on Erwin Chargaff's rules. (7 marks)