



# KISII UNIVERSITY

## UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF THE  
DEGREE OF BACHELOR IN PUBLIC HEALTH  
FIRST SEMESTER, 2021/2022  
(FEBRUARY - JUNE, 2022)

### PHES 201: BIOCHEMISTRY

**STREAM: Y2 S1**

**TIME: 3 HOURS**

**DAY: THURSDAY 9:00 – 12:00 P.M.**

**DATE: 02/05/2022**

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### INSTRUCTIONS

*1. Do not write anything on this question paper.*

### **SECTION A (40 Marks)**

#### **ANSWER ALL QUESTIONS**

1. a). Describe the property of proteins known as denaturation (2 marks)  
b). What are the functions of nucleic acids in cells (3 marks)
2. a) Describe how stereoisomerism is exhibited in monosaccharide's (3 marks)  
b). Differentiate glycogen from starch (2 marks)
3. a). With a Haworth diagram show how Epimerism occurs in glucose and mannose (3marks)  
b) Discuss some of the functions of Glycosaminoglycans (2 Marks)
4. a). What is an Enzyme (2 marks)  
b). List the different classes of enzymes (3 marks)
5. a) Differentiate between essential and non essential amino acids (3 marks)

- b).Discuss why the ATP molecule is the universal currency of energy in human cells (2 marks)
6. a). Describe the fate of glucogenic amino acids in metabolism (2 marks)
- b). Describe how diabetes and insulin deficiency leads to ketogenesis (3marks)
7. a). What is biotransformation? (3 marks)
- b). Describe the process of Bioremediation (2 Marks)
8. Describe the metabolic stages in decomposition of metabolic waste (5 marks)

**SECTION B. (30 MARKS). Short essay type**

1. Describe how you can carry out environmental diagnosis using biomonitors and biosensors ( 10 marks)
2. Discuss how catabolism of substrates is carried out by plasmids (10 Marks)
3. Describe bioreactors and their classification (10 marks)

**SECTION C (ESSAY TYPE) (30 MARKS)**

**ANSWER ANY TWO QUESTIONS**

1. Describe the use of microbes in reclamation of a disused quarry (15 marks)
2. Describe the process of transamination of amino acids (15 Marks)
3. Describe cholesterol, its structure and functions in the body (15 marks)