

**CHUKA**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

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

**BIOC 334: INDUSTRIAL BIOCHEMISTRY**

**STREAMS: BIOC**

**TIME: 2 HOURS**

**DAY/DATE: TUESDAY 6 /07/ 2021**

**2.30 PM – 4.30 PM**

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**INSTRUCTIONS:**

- Answer Question ONE and any other TWO Questions.
- Do not write on the question paper

**QUESTION ONE: (30 MARKS)**

- (a) Describe production process and benefits of biogas. [7 Marks]
- (b) Discuss the aerobic sludge digestion. [5 Marks]
- (c) Describe microbial production of lactic acid. [8 Marks]
- (d) Explain the microbial production of amino acids and their use in pharmaceutical industry. [6 Marks]
- (e) Explain why newspaper takes 6 weeks to degrade while plastic bags takes 10-20 years to degrade in marine environment. [4 Marks]

**QUESTION TWO : (20 MARKS)**

- (a) Describe production and use of microbial enzymes in industry. [10 Marks]
- (b) List and describe five classes / types of bioreactor used in bioprocess technology. [10 Marks]

**QUESTION THREE : (20 MARKS)**

(a) Using chemical and structural formulae, discuss biosynthesis of  $\beta$ -lactam Antibiotics by *Acremonium chrysogenum*. [12 Marks]

(b) Outline methods for the determination of organic matter content in wastewaters. [8 Marks]

**QUESTION FOUR : (20 MARKS)**

(a) Outline major causes of wines defects and explain how they are detected. [8 Marks]

(b) Modern brewing operations involve five basic steps. Discuss them. [12 Marks]

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