

**CHUKA**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

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

**BIOC 334: INDUSTRIAL BIOCHEMISTRY**

**STREAMS: BSC BIOC (Y3 S2)**

**TIME: 2 HOURS**

**DAY/DATE: WEDNESDAY 08/04/2020**

**8.30 A.M. – 10.30 A.M.**

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**INSTRUCTIONS:**

- Answer question ONE and any TWO questions.
- Do not write on the question paper.

**QUESTION ONE: 30 MARKS**

- (a) Explain advantages of using microorganisms for Single Cell Protein (SCP) production. (7 marks)
- (b) Discuss the anaerobic sludge digestion. (5 marks)
- (c) Describe microbial production of lactic acid from lignocellulosic biomass. (8 marks)
- (d) Explain the microbial production of amino acids and their use in pharmaceutical industry. (6 marks)
- (e) Explain why cotton gloves takes 5 months 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 proteases in pharmaceutical 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) Giving specific examples, describe classification of grape wines. (12 marks)
- (b) Describe production process and benefits of biogas. (8 marks)
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