

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

RESIT/SPECIAL

EXAMINATION FOR THE AWARD OF DEGREE
OF BACHELOR OF SCIENE IN BIOCHEMISTRY

BIOC 334: INDUSTRIAL BIOCHEMISTRY

STREAMS: BSC (BIOC)

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 18/11/2020

8.30 A.M. – 10.30 A.M.

INSTRUCTIONS

(i) Answer All the Questions

(ii) Do not write on the question paper

QUESTION ONE (30 MARKS)

(a)(i) Briefly describe five types of phytoremediation techniques. (5marks)

(ii) Discuss the role of microorganism in sewage treatment process. (7marks)

(b) Outline microbial production of yogurt. (7 marks)

(c) List and describe fundamental benefits of fermented milk in human body. (4 marks)

(d) Microbial cultures can be used to produce **aroma** compounds, either specifically for application as food additives or *in situ* as a part of food fermentation processes. Using specific examples, discuss this statement. (7 marks)

QUESTION TWO(20 MARKS)

- (a) What are some of the pre-requisites for using microorganisms to manufacture a product? (3 marks)
- (b) Distinguish between penicillin and cephalosporin antibiotics. (2marks)
- (c) Describe microbial production of β -lactam antibiotics. (10marks)
- (d) Artemisinin is a leading antimalarial today and is obtained from extracts of the Wormwood tree, *Artemisia annua*. Explain how genetically-engineered strain of *S. cerevisiae* have been used to improve production of Artemisinin. (5marks)

QUESTION THREE (20 MARKS)

- a. Define co-metabolism and explain why it is important for biodegradation? (10 marks)
- b. Explain the use of microbial enzymes in industry. (10 marks)
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