

**CHUKA**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**FOURTH YEAR EXAMINATION FOR THE AWARD OF  
BACHELOR OF EDUCATION SCIENCE**

**BOTA 436: INDUSTRIAL MICROBIOLOGY**

**STREAMS: BED (SCI) Y4S2**

**TIME: 2 HOURS**

**DAY/DATE: THURSDAY 11/12/2014**

**8.30 AM – 10.30 AM**

**INSTRUCTIONS:**

**Answer ALL the Questions in Section A and TWO Questions in Section B**

**SECTION A : 30 MARKS**

1. (a) Give two examples of bacterial that are used as probiotics in dairy industry. [2 marks]
- (b) List three characteristic traits achieved on industrial microorganisms through classic genetic techniques. [3 marks]
2. (a) Explain how the concentrations of gases in MAP are varied to inhibit microbial growth. [2 marks]
- (b) List three molecular techniques used in detection of food borne pathogens. [3 marks]
3. Describe the application of natural genetic engineering in industrial biotechnology. [5 marks]
4. Explain the properties conferred by chemically modified natural penicillin and cite specific examples of antibiotics. [5 marks]
5. (a) Explain briefly microbial product based inhibition in food preservation. [3 marks]
- (b) Name two groups / divisions of algae associated with production of algal toxins / red tides that cause shellfish poisoning. [2 marks]

6. (a) Name three gram positive bacteria that cause food borne intoxications. [3 marks]
- (b) State the importance of biotin and saturated fatty acids in the industrial production of glutamic acid. [2 marks]

**SECTION B: 40 MARKS: ANSWER TWO QUESTIONS**

7. Discuss the industrial production of lactic acid and its uses. [20 marks]
8. Describe four common food borne infections caused by bacteria. [20 marks]
9. Discuss the intrinsic factors that influence the growth of microorganisms in food. [20 marks]
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