



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

AUGUST – DECEMBER 2018 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF BIOLOGY

REGULAR PROGRAMME

BIO 213: TECHNIQUES IN INDUSTRIAL MICROBIOLOGY

Date: DECEMBER 2018

Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

- Q1. a) 1) List major microorganisms that are of industrial importance **(2 marks)**
- 2) A microorganism used in an industrial process must have other features besides just being able to produce the substance of interest in high yield. List and explain 6 characteristics of an ideal industrial microorganism **(3 marks)**
- b) Differentiate Primary metabolites and Secondary metabolites and give examples for each **(3 marks)**
- c) List two organizations which maintain culture collections, from which microorganisms can be obtained as pure cultures **(1 mark)**
- d) Briefly describe the following types of media **(4 marks)**
- i) Differential media
 - ii) Selective media
 - iii) General purpose media
 - iv) Enrichment media
- e) Describe streak plate method of microbial isolation **(2marks)**
- f) With the aid of a diagram describe the processes of fermentation **(4 marks)**

- g) Describe industrial scaling up process **(6 marks)**
- h) List and explain the advantages of enzyme immobilization **(2 marks)**
- i) Define the term bio-remediation and briefly explain the different types of bioremediation **(3 marks)**
- Q2. Discuss industrial application of microbes in Kenyan Industries **(20 marks)**
- Q3. As an industrial microbiologist discuss how you would make enzyme intended for industrial use immobile, stating the criteria you would use for choosing your support material **(20 marks)**
- Q4. Discuss sterilization methods and disinfection methods used for eliminating microbes **(20 marks)**
- Q5. Jane isolated a microbial strain that she identified as ideal for industrial use, explain the strategies that she would employ to develop or improve the isolated strain **(20 marks)**

END