



**KENYATTA UNIVERSITY**

**UNIVERSITY EXAMINATIONS 2011/2012**

**SECOND SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF  
SCIENCE IN BIOTECHNOLOGY**

**SBC 534: INDUSTRIAL BIOTECHNOLOGY**

**DATE: MONDAY, 2<sup>ND</sup> APRIL 2012**

**TIME: 9.00 A.M. – 12.00 P.M.**

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**INSTRUCTIONS**

**Answer any ALL questions in Section A and 3 questions in Section B**

**SECTION A (8 QUESTIONS=40 MARKS)**

1. List the factors to consider in the selection of an enzyme immobilization matrix for industrial applications
2. Using examples, explain why some categories of inventions that are applicable in industrial biotechnology have been declared unpatentable.
3. Outline the requirements necessary for the successful development of biopharmaceuticals
4. Give examples of processes used downstream processing of bio-products and state their impact on bioprocess costs.
5. State the advantages and disadvantages of bioplastics over petrochemical plastics
6. Distinguish between a biosensor and a bioprobe
7. Why is biofuel production considered a part of “white biotechnology”?
8. Summarize the steps involved in a typical the sewage treatment process to purify organic wastes from agriculture and industry

**SECTION B (4 ESSAY QUESTIONS ANSWER 3 =60 MARKS)**

1. Many industrial enzymes are fungal enzymes. Using examples, discuss how the technology is developed into maturity as a production platform for industrial enzymes.
2. Provide an overview of the global status of industrial biotechnology and assess the prospects for adoption and commercialization of bio-based products in Kenya.
3. Describe the different kinds of bioreactors commonly used in bioprocessing.
4. Discuss the impact of biotechnology on the food industry

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