



CRAWFORD UNIVERSITY
FAITH CITY, IGBESA, OGUN STATE

2012/2013 HARMATTAN SEMESTER EXAMINATIONS

COLLEGE: NATURAL AND APPLIED SCIENCES.

DEPARTMENT: BIOLOGICAL SCIENCES.

PROGRAMME: B.Sc BIOCHEMISTRY.

COURSE CODE: BCH 407.

UNIT:2

COURSE TITLE: INDUSTRIAL AND MICROBIAL BIOTECHNOLOGY.

STATUS: ELECTIVE.

INSTRUCTION: Answer any FOUR questions

TIME ALLOWED: 2 HOURS

- 1 (a) Discuss fermentation process with respect to the production of any of the following products-cheese or yogurt.
(b) Discuss batch culture and state reasons why you would use fed-batch culture instead of batch culture in a fermentation process.
- 2 (a) Write an essay on any THREE of the following:
 - (i) Primary metabolites.
 - (ii) Pentose phosphate pathway.
 - (iii) Secondary metabolites.
 - (iv) Bioreactor.(b) Describe clearly the following types of media:
 - (i) Semi-synthetic media.
 - (ii) Natural media.
 - (iii) Artificial media.
- 3 (a) Describe clearly the sequence of events associated with the isolation of microbial strain with novel products.
(b) Describe foaming and its control in a fermentation reactor.
- 4 (a) Describe in detail the industrial production of citric acid using a labeled flow diagram.
(b) Explain the term "Downstream processing". Give suitable examples.
- 5 Describe the various components of a bioreactor. Illustrate your answers with clearly labeled diagram.
- 6 Describe the following methods involved in the measurement of bacterial growth:
 - (i) Total count.
 - (ii) Viable count
 - (iii) Absorbance.
 - (iv) Dry weight