



TECHNICAL UNIVERSITY OF MOMBASA
FACULTY OF APPLIED AND HEALTH SCIENCES
DEPARTMENT OF PURE & APPLIED SCIENCES
UNIVERSITY EXAMINATION FOR:
BTMB
ABT 4304 : BIOREACTORS PAPER TWO
SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: SEPTEMBER 2018

TIME: 2 HOURS

DATE: Pick Date Sep 2018

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

- a) Explain the principle of a flocculated cell reactors (4 marks)
- b) State the importance of agitation in a bioreactor (4 marks)
- c) Explain four factors of a sparger that are adequate for good performance of an aeration system (4 marks)
- d) Differentiate between cyclic-continuous and 'cell reuse semi continuous reactors (4 marks)
- e) State the importance of organism entrapment in a bioreactor (2 marks)
- f) State the advantages of axial flow impellers (4 marks)
- g) Explain the requirements for cultivation methods of products in a fermenter (4 marks)
- h) Differentiate the two types of pneumatically agitated bioreactors (4 marks)

Question TWO

- (i) Discuss the basic requirements in a bioreactor (10 marks)

- (ii) Describe stirred tank bioreactors (10 marks)

Question THREE

- (i) Describe the concept of positive pressure during sterilization in a bioreactor (6 marks)
(ii) Discuss the function of the components in an oxygen delivery system (14marks)

Question FOUR

- (i) Describe the growth kinetics of a batch bioreactor (15 marks)
(ii) Discuss the pros and cons of using batch systems (5 marks)

Question FIVE

The growth of cells in a bioreactor is affected by several factors. Discuss (20 marks)