



TECHNICAL UNIVERSITY OF MOMBASA

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Faculty of Engineering and Technology  
Department of Mechanical & Automotive Engineering  
UNIVERSITY EXAMINATION FOR:  
Diploma Chemical Engineering  
AAB 2150 : MICROBIOLOGY  
SPECIAL SUPPLEMENTARY EXAMINATION  
SERIES: AUGUST 2017  
TIME: 2 HOURS  
DATE: Pick Date Sep 2017

**Instruction to Candidates:**

You should have the following for this examination

- *Answer booklet*
- *Non-Programmable scientific calculator*

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

Maximum marks for each part of a question are as shown.

**Do not write on the question paper.**

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**Question ONE**

- a) Differentiate between; i) Obligate Anaerobes and Facultative Anaerobes  
ii) Hypertonic Solution and Hypotonic Solution. 5 marks
- b) Explain in detail the Physical requirements for Microbial growth. 15 marks

**Question TWO**

- a) What are the functions of the following parts of Eucaryotic Cell;
- i) Endoplasmic Reticulum
  - ii) Golgi Apparatus
  - iii) Lysosomes 6 marks
- b) Sketch a well labeled Eucaryotic Cell. 14 marks

**Question THREE**

- a) Differentiate between Enrichment Culture and Pure Culture. 4 marks
- b) Explain the following Direct methods of Microbial Growth measurement;
  - i) Plate Count
  - ii) Filtration
  - iii) Most Probable Number
  - iv) Direct Microscopic Count 16 marks

**Question FOUR**

- a) Differentiate between;
  - i) Stain and Staining
  - ii) Direct Staining and Negative Staining 6 marks
- b) State and explain three main Staining classes, giving one example in each case. 14 marks

**Question FIVE**

- a) Define the following;
  - i) Biotransformation
  - ii) Fermentation 4 marks
- b) Explain how Penicillin is produced. 16 marks