



**ELIZADE UNIVERSITY,  
ILARA-MOKIN, NIGERIA**

**FACULTY: BASIC & APPLIED SCIENCES  
DEPARTMENT: BIOLOGICAL SCIENCES  
FIRST SEMESTER EXAMINATION  
2018/2019 ACADEMIC SESSION**

**COURSE CODE: BTH 303**

**COURSE TITLE: INDUSTRIAL BIOTECHNOLOGY**

**DURATION: 2 hours**

**HOD's SIGNATURE**

**NAME:.....**

**MAT. No:.....**

**INSTRUCTIONS: Answer any four questions**

**All questions carry equal marks**

1. A fermentation process requires certain materials for microorganisms to grow and synthesize intended products.
  - a. What are the classes of media components required for microbial growth (give examples of the materials)
  - b. Explain in details the criteria used to select the media materials used in fermentation process
  - c. Why are co-factors and synthesizers needed in a fermentation broth?
2. What are the examples of methods used in sterilizing air in preparation for a fermentation process:
  - a. In a tabular form compare air sterilization with chemical sterilization
  - b. Sterilization is a very important step in a fermentation process, what are the two types and what is the characteristics of these sterilization process
  - c. What are the principles of air sterilization?
3. Explain in detail the processes involved in the production of citric acid through fermentation approach.
4. Bioreactors are the heart of current biotechnological innovations for producing industrial products. Name two types of these bioreactors, state their uses and major disadvantages.
5. In biosynthesis processes, there are pathways used by microbes to metabolize sugars such as glucose. Sketch this pathway in detail
6.
  - (a) Write comprehensively on the production Ethanol
  - (b) State the differences in the production of ethanol and vinegar
  - (c) What type fermenter will be the most suitable for the production of penicillin and why?