



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja**  
**Faculty of Sciences**  
**Department of Pure and Applied Sciences**  
**SEPTEMBER 2020\_1 EXAMINATION**

**COURSE CODE: BIO416**

**COURSE TITLE: INDUSTRIAL MICROBIOLOGY**

**CREDIT: 3 units**

**TIME ALLOWED: 2½ Hours**

**INTRUCTION: Answer question ONE (1) and any other FOUR (4) questions**

- 1a.** Describe the nature of industrial microbiology (4 mks)
  - b.** State three characteristics of a suitable microorganism for industrial uses (3 mks)
  - c.** Define the term bioprospecting (1½ mks)
  - d.** Give four examples of microbial cultures sourced from natural materials (2 marks)
  - e.** Explain the term culture media (3½ mks)
  - f.** Discuss different types of media (8mks)
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- 2a.** Discuss three different methods of plate technique (9mks)
    - b.** List three examples of mutagen (3mks)
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- 3a.** What is lyophilisation? (1mk)
    - b.** Explain lyophilisation technique (3mks)
    - c.** List and explain three methods of microbial culture storage at reduced temperature (8mks)
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- 4a.** What is Recombinant DNA Technology? (1mks)
    - b.** State 8 conditions for producing a genetically engineered bacterium (8mks)
    - c.** Describe Genetic Manipulation of Microorganisms (3mks)
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- 5a.** State any five features of the top fermenting yeasts (5mks)
    - b.** Explain the malting process (4mks)
    - c.** Explain briefly kelming (3mks)
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- 6a.** Discuss the term Wine (5mks)
    - b.** Explain the term spirit (4mks)
    - c.** Explain the production of sufu (3mks)