



**FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA  
SCHOOL OF LIFE SCIENCES  
DEPARTMENT OF MICROBIOLOGY**

**SECOND SEMESTER EXAMINATION 2014/2015 SESSION**

**COURSE CODE: MCB 324**

**COURSE TITLE: MICROBIOLOGICAL TECHNIQUES (3 UNITS)**

**CLASS: 300 LEVEL**

**Instruction: Answer FOUR questions, ONE at least in each section      TIME: 2 HOURS**

**SECTION A**

- 1      (a) Mention and explain the key formatting requirements of a scientific article  
       (b) Give a full description of the guidelines involved in writing a scientific paper
  
- 2      (a) Outline the steps involved in the collection and serological studies of a blood specimen.  
       (b) What criteria should be adhered to in the selection of the proper components required for the desired pH of a buffer solution.

**SECTION B**

- 3(a). (i). Enumerate the characteristics often used as additional aid to the identification of bacteria culturally  
       (ii). Distinguish between selective and differential media
- 3(b). Discuss the Sordelli's method of culture preservation
- 3(c). Calculate the cfu/ml of orange juice samples submitted to the laboratory for analysis if 103 and 107 colonies were counted in a duplicate plating when 0.1 ml of  $10^4$  dilution was used
  
- 4(a). (i). What is a defined medium?  
       (ii). What precautions will you take in pour plating?
- 4(b). (i) Describe the spread plate technique and the flaws  
       (ii) What is an aseptic technique? List 3 of such
- 4(c). How will you prepare 100 ml quantities of SDA if 84 g/L quantities is the manufacturer's instruction for its reconstitution?

**SECTION C**

- 5(a). Describe the different shapes exhibited by bacteria

- 5(b). List extracellular and intracellular structures obtained in a bacterial cell
- 5(c). Assume a tin containing 120 ml of left-over milk was screened for the presence of *Lactobacillus* sp. After serial dilution, a milliliter was plated out on nutrient agar from test tube No. 5. If 300 colonies were counted after incubating for 24 hours, calculate the bacterial load in 1 ml of the milk. What is the bacterial content of the entire milk?
- 6(a). How important are vitamins to the body? List the vitamin B complex and their names
- 6(b). What is serology?
- 6(c). Suppose 450 g of garden soil was screened for bacterial cells. If you plated out 1 ml of serially diluted 1 g of soil from test tube No. 4 and incubated, and 650 colonies were counted after 24 hours, calculate the bacterial load in 1 g of the soil. What will be the bacterial content of the soil?