BOWEN UNIVERSITY, IWO
COLLEGE OF AGRICULTURE, ENGINEERING AND SCIENCE
MICROBIOLOGY PROGRAMME
2022/2023 FIRST SEMESTER EXAMINATION
MCB 413: PHARMACEUTICAL MICROBIOLOGY

Answer any **THREE** questions Time: 2 h 15 min

1. (a) Define the following terms giving **two** examples each:
   i. Chemotherapeutic agents
   ii. Antibiotic *(7 marks)*
   (b) Write extensively on **four** inhibitory actions of antibiotics *(12 marks)*
   (c) Describe the factors that influence the effectiveness of chemotherapeutic agents *(6 marks)*

2. (a) Give a detailed explanation of the bacterial growth curve *(15 marks)*
   (b) Differentiate between the following:
   i. Growth in a continuous culture and batch culture.
   ii. Bacteriostatic and Bactericidal agents. *(10 marks)*

3. (a) Draw a labelled diagram of the peptidoglycan structure in a bacterium and indicate on the diagram the positions where the following antimicrobial agents would act:
   (i) Beta-lactam antibiotics
   (ii) Lysozyme *(8 marks)*
   (b) Give reasons why antibiotic cell wall penetration in *Staphylococcus* spp. and *Klebsiella* spp. would differ. *(8 marks)*
   (c) Give **three** examples **each** of Gram-positive, Gram-negative, and spore-forming bacteria. *(9 marks)*

4. (a) Give **one** difference between broad and narrow-spectrum antibiotics. *(3 marks)*
   (b) What are the advantages and disadvantages of broad and narrow-spectrum antibiotics? *(10 marks)*
   (c) Enumerate the steps involved in the control of microbial contamination in the pharmaceutical industry *(12 marks)*

5. Write extensively on the sources of contamination of pharmaceutical products, especially during production and packaging. *(25 marks)*