



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972-60200 – Meru-Kenya

Tel: +254(0) 799 529 958, +254(0) 799 529 959, + 254 (0) 712 524 293,

Website: info@must.ac.ke Email: info@must.ac.ke

University Examinations 2024/2025

FOURTH YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE BIOTECHNOLOGY

SHD 3403: BIOPHARMACEUTICS

DATE: JANUARY 2025

TIME: 2 HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE (30 MARKS)

- a) Explain the reasons for using excipients (2 marks)
- b) Illustrate the collaboration among different personnel in drug formulation (3 marks)
- c) Explain the rectal and vaginal administration routes of drugs (3 marks)
- d) Explain the principle behind chromatography technique (2 marks)
- e) Describe the two process of manufacturing technology for biopharmaceuticals (2 marks)
- f) Outline the criteria recommended by BCS guidance to Biowavers (3 marks)
- g) Describe the classification of drug metabolizing enzyme (2 marks)
- h) Write short notes on pharmacokinetic (2 marks)
- i) Differentiate between biological biosimilars and generic drugs (3 marks)
- j) Outline the regulation process for non-innovatory biotherapeutic products (2 marks)
- k) Illustrate electroporation (2 marks)
- l) Differentiate between bioavailability and bioequivalence (2 marks)
- m) Write short notes on recombinant viral vector vaccine (2 marks)

QUESTION TWO (20 MARKS)

- a) Discuss the clinical application of biospharmaceuticals (10 marks)
- b) Describe the development and regulatory approval of biosimilars (10 marks)

QUESTION THREE (20 MARKS)

- a) Discuss the application of biopharmaceutic classification system (10 marks)
- b) Describe sleeping beauty transposition (10 marks)

QUESTION FOUR (20 MARKS)

- a) Discuss pharmaceuticals produced by microorganisms (10 marks)
- b) Discuss different class of excipients used in the pharmaceuticals industries (10 marks)