



MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2017/2018

**THIRD YEAR FIRST SEMESTER EXAMINATION FOR
THE DEGREE OF BACHELOR OF SCIENCE IN
PHARMACEUTICAL SCIENCES WITH INFORMATION
TECHNOLOGY**

MAIN CAMPUS

PMT 313: BIOCHEMICAL TECHNIQUES II

Date: 1st March, 2018

Time: 8.30 - 11.30am

INSTRUCTIONS:

- Answer ALL Questions in Section A and
- Answer Question 11 and any ONE in Section B



Section A (Short answer questions)

Answer all questions in this section. Clarity will be awarded.

1. Describe the principle of dialysis and its application in a biochemistry laboratory. (5 marks)
2. Explain any FOUR (4) properties of chromatographic matrix. (5 marks)
3. Describe the principle of sedimentation (5 marks)
4. Explain how you would maintain protein stability during protein isolation. (5 marks)
5. Describe operational principle of western blot technique. State one function of the technique. (5marks)
6. Describe any TWO (2) biochemical methods used in nucleic acid research. (5 marks)
7. Explain any TWO (2) properties that influence protein purification. (5 marks)
8. Give and state a function of any TWO major reagents used in SDS-PAGE. (5 marks)

Section B (Essay questions)

Answer question 11 and ANY other question in this section.

9. A student walks into Maseno University clinic and based on the history, the clinician suspects infection by *Mycobacterium tuberculosis* and orders for test which turns positive. The student is put on medication. The student after completing his dose comes back to the clinic with the same symptoms. The clinician suspects a resistant strain of the bacteria and suggests for analysis of an enzyme that may be involved in this resistance.

Discuss how you would design a technique for analyzing the enzyme under the following:

- a) Fractionation (5 marks)
- b) Purification (5 marks)
- c) Quantification (5 marks)
- d) Biological activity (5 marks)

10. Discuss electrophoresis under the following

- a) Stacking gels and their significance (5 marks)
- b) Denatured gel electrophoresis (5 marks)

11. Discuss the determination of structure of a protein under the following:

- a) Edman degradation (5 marks)
- b) NMR spectroscopy (5 marks)