



TECHNICAL UNIVERSITY OF MOMBASA

School of Applied and Health Sciences
DEPARTMENT OF PURE AND APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN INDUSTRIAL MICROBIOLOGY AND BIOTECHNOLOGY
ABT 2211 BIOCHEMICAL TECHNIQUES AND INSTRUMENTATION
END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2024 SERIES

TIME: 2 HOURS

DATE: April 2024

Instructions to Candidates

You should have the following for this examination

Answer Booklet, examination pass and student ID. This paper consists of **FIVE** questions.

Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

QUESTION ONE (30 MARKS)

- a) State the principle of centrifugation. (5marks)
- b) Outline the instruments of a spectrophotometer apparatus. (7marks)
- c) Name any three media used in electrophoresis. (3marks)
- d) Give the applications of flame photometry (6marks)

e) Describe how atomic absorption spectrometry works.

(5marks)

f) i. State beer lambert law.

(1mark)

ii. If a solution containing ATP is found to have an absorbance of 0.17 in 1cm cuvette and the molar absorptivity is $1.54 \times 10^4 \text{ mol}^{-1} \text{ cm}$, calculate the concentration of ATP solution.

(3marks)

QUESTION TWO (15 MARKS)

a) Give the principles of molecular exclusion techniques

(5 marks)

b) Give five applications of gel filtration chromatography

(10 marks)

QUESTION THREE (15 MARKS)

a) Name any three types of centrifuges stating their uses

(9marks)

b) Differentiate between preparative and analytical centrifugation

(6 marks)

QUESTION FOUR (15MARKS)

a) State five factors affecting migration of protein in electrophoresis.

(5marks)

b) Describe how Preparing of gel is done during gel electrophoresis.

(6marks)

c) State the applications of polyacrylamide gel electrophoresis. (4marks)

QUESTION FIVE (15 Marks)

Discuss Protein precipitation techniques. (15marks)