

084

THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF MEDICAL LABORATORY SCIENCES
ACADEMIC YEAR 2022/2023 – SEMESTER I



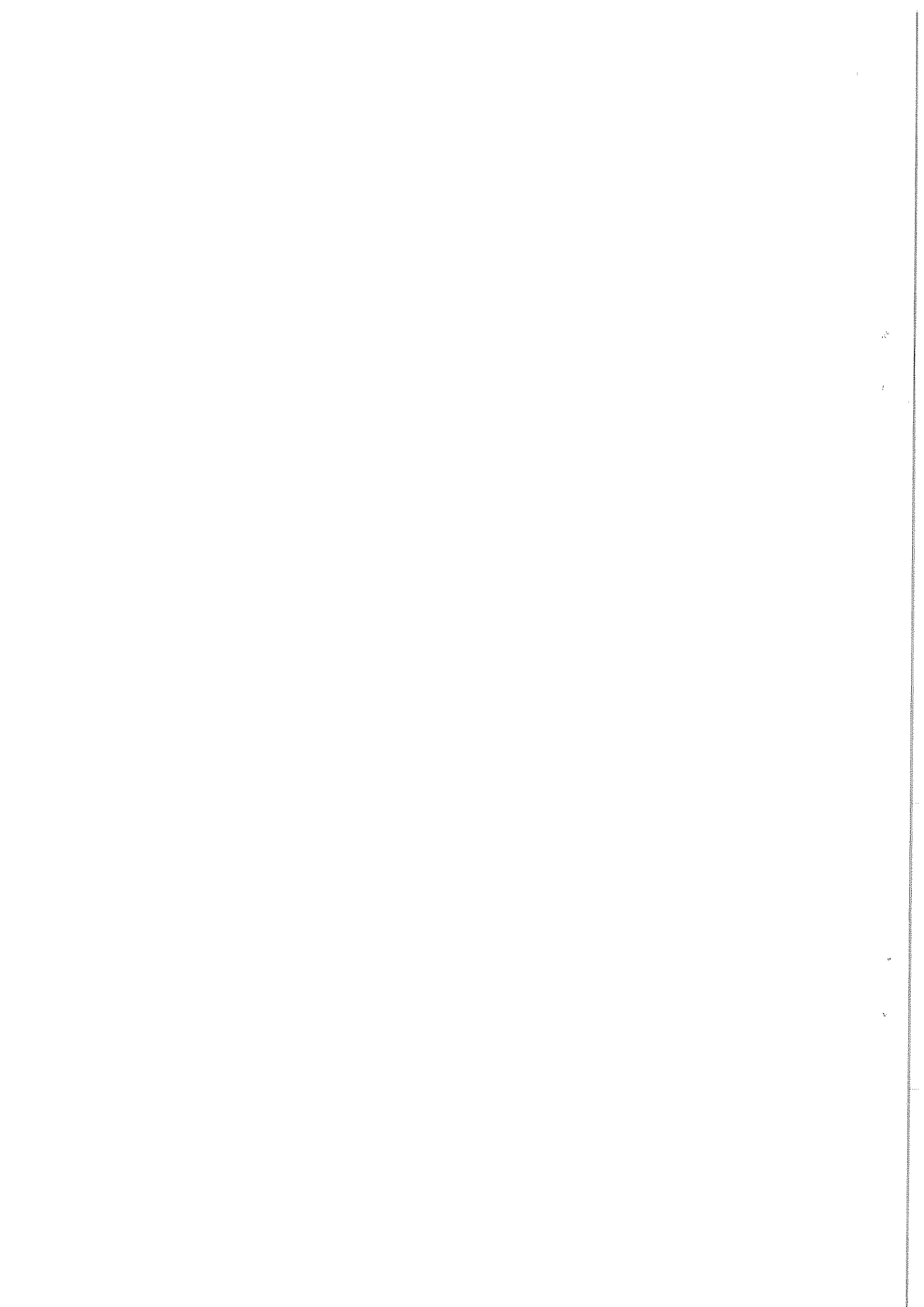
BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS
MDU5407 – LABORATORY AUTOMATION & INSTRUMENTATION

FINAL EXAMINATION

DURATION: 03 HOURS

DATE: 21st MARCH 2023

TIME: 09.30 AM – 12.30 PM



Part B: Structured Essay Questions (40 marks)

Q1.

1.1 Using a labeled diagram give essential parts of a spectrophotometer. (03 Marks)

1.2 Outline the difference between single-beam and double-beam absorption spectroscopy. (03 Marks)

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1.3 Briefly explain “stray light” in a spectrophotometer. (04 marks)

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(Total 10 marks)

Q2.

2.1 Outline the principle of Flame Photometry. (03 Marks)

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2.2 What is the function of flame (burner unit) in flame photometer? (03 Marks)

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2.3 State 04 (four) problems of the flame photometry technique. (04 Marks)

- i.
- ii.
- iii.
- iv.

(Total 10 marks)

Q3.

3.1 State 03 (three) commonly used principles in automated hematology analyzers. (03 Marks)

- i.
- ii.
- iii.

3.2 State the main difference between three-part and five-part automated hematological analyzers. (03 Marks)

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3.3 State four (04) advantages of automated hematological analyzers. (04 Marks)

- i.
- ii.
- iii.
- iv.

(Total 10 marks)

Q4.

4.1 What is the working principle of gel electrophoresis? (04 Marks)

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4.2 Briefly outline the steps of preparing 2% agarose gel solution. (02 Marks)

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4.3 In agarose gel electrophoresis, state (04) four factors that affect the migration of DNA. (04 Marks)

- i.
- ii.
- iii.
- iv.

(Total 10 marks)

Part C: Essay Questions (30 marks)

Q1. Briefly explain five (05) components of automated pre-analytical workstation. (15 Marks)

Q2.

a) Plot a graph of absorbance vs. concentration showing positive and negative deviations from the Beer-Lambert's law. (05 Marks)

b) Briefly explain how positive and negative deviations of the Beer-Lambert's law arise giving example for each. (10 Marks)

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