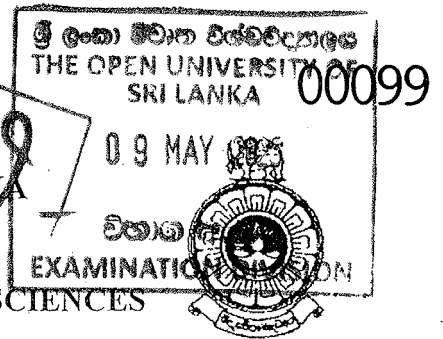


THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF MEDICAL LABORATORY SCIENCES



ACADEMIC YEAR 2024/2025 – SEMESTER I

BACHELOR OF MEDICAL LABORATORY SCIENCES (BMLS) HONOURS

MDU6301 – CYTOGENETICS & MOLECULAR GENETICS

FINAL EXAMINATION

DURATION: 03 HOURS

DATE: 9TH MAY 2025

TIME: 09.30 AM – 12.30 PM

Part B: Structured Essay Questions (40 Marks)

Q1.

1.1 Define “Pharmacogenetics.” (03 Marks)

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1.2 List **four (04)** benefits of pharmacogenomics. (02 Marks)

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

1.3 State **one (01)** key barrier to the progress of pharmacogenomics. (02 Marks)

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1.4 Briefly explain how molecular microbiology helps in disease diagnosis. (03 Marks)

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(Total 10 Marks)

Q2.

2.1 State the purpose of chromosome banding techniques in cytogenetics. (02 Marks)

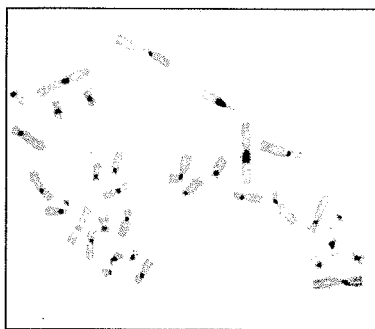
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2.2 Identify the chromosomal banding technique shown in the following diagram. (02 Marks)



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2.3 List **four (04)** principles of ethics that should guide the framework of genetic services. (02 Marks)

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

2.4 Briefly explain **one (01)** ethical issue that can arise in human genetic testing. (04 Marks)

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(Total 10 Marks)

Q3.

3.1 State the purpose of "Sequence Alignment" in sequence analysis. (02 Marks)

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3.2 State **one (01)** difference between local alignments and global alignments. (02 Marks)

Local alignments	Global alignments

3.3 List **three (03)** applications of bioinformatics in molecular medicine. (03 Mark)

- i.
- ii.
- iii.

3.4 Briefly explain the central paradigm of bioinformatics. (03 Marks)

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(Total 10 Marks)

Q4.

4.1 What is the role of reverse transcriptase enzyme in **Reverse Transcriptase-Polymerase Chain Reaction**? (02 Marks)

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4.2 State **four (04)** advantages of **Real Time-Polymerase Chain Reaction**. (02 Marks)

- i.
- ii.
- iii.
- IV.

4.3 List **three (03)** Post-PCR applications.

(03 Marks)

- i.
- ii.
- iii.

4.4 Briefly explain the ethanol precipitation method used in Post-PCR clean up. (03 Marks)

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(Total 10 Marks)

Part C: Essay Question. (30 Marks)

Answer the question in the booklet provided.

Q1. Describe the common techniques in Assisted Reproductive Techniques (ART).

(15 Marks)

Q2. Describe different karyotyping techniques used to diagnose chromosomal abnormalities.

(15 Marks)

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