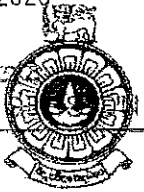




**THE OPEN UNIVERSITY OF SRI LANKA**  
**FACULTY OF HEALTH SCIENCES**  
**DEPARTMENT OF MEDICAL LABORATORY SCIENCES**  
**ACADEMIC YEAR 2019/2020 – SEMESTER I**

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**THE OPEN UNIVERSITY** 0128  
 SRI LANKA  
 22 SEP 2020  
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**EXAMINATION**

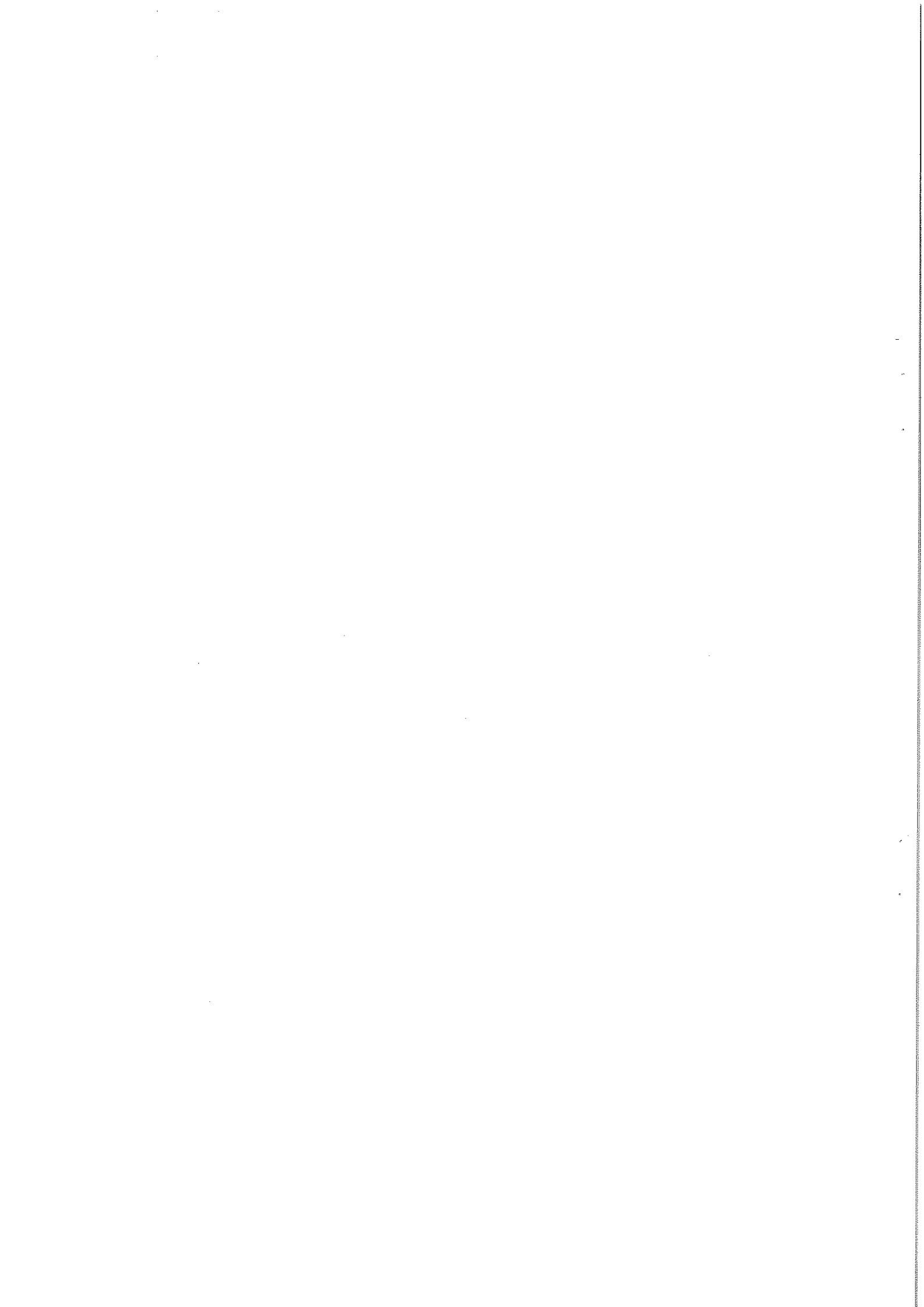


**BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS**  
**MDU6301/MLU4245- CYTOGENETICS AND MOLECULAR GENETICS**  
**FINAL EXAMINATION** **DURATION: THREE HOURS**

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DATE: 22<sup>nd</sup> SEPTEMBER 2020 TIME: 9.30 AM – 12.30 PM

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**Part B Structured Essay Questions (40 marks)**

**Question 01**

1.1 Briefly describe the structure of the DNA molecule. (4 marks)

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1.2 List **two (02)** main types of mutations occur in a new DNA strand. (2 marks)

- i) .....
- ii) .....

1.3 Give **two (02)** main DNA repair pathways essential for genomic homeostasis. (2 marks)

- i) .....
- ii) .....

1.4 Give **two (02)** examples for non-coding RNAs. (2 marks)

- i) .....
- ii) .....

**(Total 10 marks)**

**Question 2**

2.1 List **four (04)** major categories of bioinformatics tools. (2 marks)

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

2.2 Give **four (04)** examples for sequence analysis tools. (4 marks)

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

2.3 State **four (04)** main challenges in understanding of bioinformatics. (4 marks)

- i) .....  
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- ii) .....  
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- iii) .....  
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- iv) .....  
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**(Total 10 marks)**

**Question 3**

3.1 Define the term "Pharmacogenetics". (2 marks)

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3.2 What are the benefits of Pharmacogenetics? (3 marks)

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3.3 List **two (02)** limitations of Pharmacogenetics. (2 marks)

i) .....  
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ii) .....  
.....

3.4 List **three (03)** main models that can use to explain the structure of the chromosome. (3 marks)

i) .....  
ii) .....  
iii) .....

**(Total 10 marks)**

**Question 04**

4.1 Give **three (03)** events which occur at the interphase of mitotic cell division. (3 marks)

- i) .....
- ii) .....
- iii) .....

4.2 What are the **three (03)** distinct stages of interphase? (3 marks)

- i) .....
- ii) .....
- iii) .....

4.3 List **two (02)** uses of mitotic cell divisions in animals. (2 marks)

- i) .....
- ii) .....

4.4 Give **two (02)** differences between mitotic and meiotic cell divisions. (2 marks)

- .....
- .....
- .....
- .....
- .....
- .....

**(Total 10 marks)**

**Part C: Short Essay Questions (30 marks)**

**Question 1**

- 1.1 Write a short note on stem cells. (8 marks)
- 1.2 Briefly explain “assisted reproductive techniques (ART)”. (7 marks)

**Question 2**

- 2.1 Describe the process of conventional polymerase chain reaction (PCR). (10 marks)
- 2.2 What are the advantages and disadvantages of PCR? (5 marks)

