

**UNIVERSITY OF BOLTON**  
**SCHOOL OF SPORTS AND BIOLOGICAL SCIENCES**  
**BSC (HONS) MEDICAL BIOLOGY**  
**SEMESTER TWO EXAMINATION 2018/2019**  
**MEDICAL MICROBIOLOGY**  
**MODULE NO: BIO5010**

Date: Thursday 23 May, 2019

Time: 2.00 pm – 4.00 pm

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**INSTRUCTIONS TO CANDIDATES:**

Candidates are advised that the examiners attach importance to legibility of writing and clarity of expression. **YOU ARE STRONGLY ADVISED TO PLAN YOUR ANSWERS**

This examination paper carries a total of 100 marks.

There are **EIGHT** questions on this examination paper.

There are **TWO** sections on this paper.

Section A: Answer **ALL** questions.

Section B: Answer **ONE** question.

This examination is **TWO** hours long.

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Answer **SIX** questions in total.

Answer **ALL** questions in Section A and **ONE** question from Section B.

Make use of labelled diagrams where appropriate.

**Section A: Answer ALL of these questions**

1. Evaluate the importance of aseptic techniques in medical microbiology.  
(10 marks)
2. Biological safety cabinets and fume cupboards (fume hoods) look very similar but operate differently. Why is an understanding of both mandatory? Explain your rationale.  
(10 marks)
3. Discuss Koch's postulates.  
(10 marks)
4. Outline the working principle of High Performance Liquid Chromatography (HPLC). Highlight two specific applications of HPLC in medical microbiology.  
(10 marks)
5. The rapid emergence of resistant bacteria is occurring worldwide. Summarise the molecular genetic basis of antimicrobial resistance.  
(10 marks)

**[Total 50 marks]**

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**Section B: Answer ONE of these questions**

6. a) Describe the key stages of the lytic viral replication cycle.

(30 marks)

- b) Explain how the lytic and lysogenic viral replication cycles differ.

(20 marks)

**[Total 50 marks]**

7. Sequencing of DNA is a powerful tool for gathering information about microbes and their environments. Justify why and how DNA sequencing technologies have transformed our understanding of the human microbiome.

**[50 marks]**

8. Flow cytometry has become a routine method in medical microbiology. Identify at least FOUR applications of flow cytometry in medical microbiology, and elaborate on TWO of them.

**[50 marks]**

**END OF QUESTIONS**