

UNIVERSITY OF BOLTON

SCHOOL OF SPORT AND BIOLOGICAL SCIENCES

BSC (HONS) MEDICAL BIOLOGY
BSC (HONS) MEDICAL BIOLOGY WITH
FOUNDATION

SEMESTER ONE EXAMINATION 2019/2020

INVESTIGATING SCIENCE AND PERSONAL
DEVELOPMENT

MODULE NO: BIO4001

Date: Monday 13th January 2020

Time: 10.00 am – 12.00 pm

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

There are TWO questions on this paper.

Answer BOTH questions.

All questions carry equal marks.

The exam is TWO HOURS long.

Permitted notes will be provided at the beginning of the exam

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Answer BOTH questions.

1. You are a biologist researching the effect of exposure to air pollution on the incidence of asthma in children. Your project aims to determine if there is a link between the distance that primary schools are situated from a major road and the prevalence of asthma within the school population in a local authority area. Explain how you would use scientific method to address your project's aims. Your explanation should cover all aspects of scientific method that have been covered in this course.

50 marks

2. Write an essay on **ONE** of the following topics. In your answer, you should review evidence for and against the statement, and you should then arrive at an informed conclusion. You must show evidence of having consulted recent articles in the popular scientific press, such as *New Scientist* and *Scientific American*. You are permitted to refer to the **ONE** side of A4 notes that you made on the topic.
 - a) The UK government has banned the sale of 'energy drinks' to young people under 18 years of age because of the potential negative health effects of these drinks. Discuss the scientific evidence that underpins the ban on the sale of these drinks.
 - b) Air pollution is now considered, by many, to be the world's largest environmental health threat. Identify the acute (immediate) and chronic (long term) impacts of exposure to oxides of nitrogen, ground-level ozone, and fine particulate matter on human health.

Question continued on next page

Please turn the page

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- c) Summarise the research evidence for the importance of the gut microbiome in the regulation of central nervous system function via the so-called 'Gut-Brain Axis'.
- d) Bisphenol-A (BPA) is known to disrupt endocrine system functions in a range of invertebrates and aquatic mammals. Present the scientific evidence for and against the concerns that BPA disrupts human endocrine system function.

50 marks

END OF QUESTIONS