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**NATURAL SCIENCES TRIPOS Part IA**

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Wednesday 5<sup>th</sup> June 2019 9 to 12

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PHO/1

**PHYSIOLOGY OF ORGANISMS**

**Written Paper**

Attempt **all** questions in SECTION A.

Follow the instructions on the multiple-choice booklet, and mark your answers on the machine-marked **answer sheet** provided.

Answer **two** questions from SECTION B.

Start each answer in a new booklet.

Write on only **one** side of the paper.

Write your candidate number and desk number on each booklet cover.

Fill in on each booklet cover the number of the answer which it contains, also put (in brackets) the number of the other question attempted in Section B.

Section A contains machine-scanned multiple-choice questions and carries 25% of the total marks for the examination. Section B contains essay questions and carries 50% of the total marks for the examination.

Stationery requirements:

Machine-scanned multiple-choice answer sheet

2 x 8 page booklets

Rough work pad

Approved calculators are allowed

**The multiple choice question booklet may NOT be removed from the Examination Room**

<p>You may <b>not</b> start to read the questions printed on the subsequent pages of this question booklet until instructed that you may do so by the Invigilator</p>
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**SECTION A (Multiple Choice)**

See the multiple-choice question booklet for instructions; answer **all** of the questions in that booklet and mark your answers on the answer sheet provided.

**SECTION B Essays**

Answer any **two** of the following questions, with a maximum of **one** from question B1. Begin each answer in a new booklet. Fill in on each booklet cover the number of the answer which it contains, also put (in brackets) the number of the other question attempted in Section B.

**B1. Either** (a) What are the strategies that animals use to survive fluctuations in temperature?

**Or** (b) Contrast the processes which control cell expansion leading to growth in plants, fungi and microbes.

**B2.** Discuss how organisms can use symbiotic relationships in order to gain nutrients.

**B3.** What are the fundamental principles that govern fluid movement within organisms?

**B4.** Compare and contrast the mechanisms used by plants and animals to sense the dark/light cycle.

**B5.** Compare and contrast plant growth regulators with endocrine control in animal systems, and in doing so, consider how plants manage without a central nervous system

**END OF PAPER**