NST0

NATURAL SCIENCES TRIPOS Part IA

Wednesday 6th June 2018 9 to 12

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

You may **not** start to read the questions printed on the subsequent pages of this question booklet until instructed that you may do so by the Invigilator

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 adaptations allow plants to survive fluctuations in the availability of soil nutrients?

Or (b) What adaptations allow animals to survive fluctuations in the availability of their principal energy source?

B2. How do animals and plants detect and respond to rhythmical changes in the environment?

B3. Discuss the diverse implications of Laplace's law for the 'design' of organisms.

B4. What mechanisms allow water loss to be minimised while organisms carry out essential gas exchange with air?

B5. What mechanisms do animals and plants use to produce rapid movements?

END OF PAPER