

**NATURAL SCIENCES
ADMISSIONS ASSESSMENT**

D568/11

NSAA Mock Paper 1

80 minutes

SECTION 1

INSTRUCTIONS TO CANDIDATES

Please read these instructions carefully, but do not open this question paper until you are told that you may do so. This paper is Section 1 of 2.

A separate answer sheet is provided for this paper. Please check you have one. You also require a soft pencil and an eraser.

Please complete the answer sheet with your candidate number, centre number, date of birth, and name.

At the end of 80 minutes, your supervisor will collect this question paper and answer sheet before giving out Section 2.

This paper contains **five** parts: **A, B, C, D,** and **E**.

All candidates should complete **Part A** Mathematics.

All candidates should then complete **two** further parts chosen from:

Part B	Physics
Part C	Chemistry
Part D	Biology
Part E	Advanced Mathematics and Advanced Physics

Each part has 18 multiple-choice questions. There are no penalties for incorrect responses, only marks for correct answers, so you should attempt all of the questions in your **three** parts. Each question is worth one mark.

For each question, choose the **one** option you consider correct and record your choice on the separate answer sheet. If you make a mistake, erase thoroughly and try again.

You **must** complete the answer sheet within the time limit.

You can use the question paper for rough working, but **no extra paper** is allowed. Only your responses on the answer sheet will be marked.

Dictionaries and calculators are NOT permitted.

Please wait to be told you may begin before turning this page.

This question paper consists of 62 printed pages and 6 blank pages.

Paper content

PART A Mathematics.....	5
PART B Physics	16
PART C Chemistry	27
PART D Biology.....	38
PART E Advanced Mathematics and Advanced Physics	57

- 82 The average value of a function in an interval $a \leq x \leq b$ is given by

$$\frac{1}{b-a} \int_a^b f(x) dx$$

Find the average value of the function $f(x) = x^2 \sin x$ in the interval $-\pi \leq x \leq \pi$.

- A $\frac{\pi^2}{4}$
- B 2π
- C $\frac{\pi}{2}$
- D $\frac{3\pi}{4}$
- E 0
- 83 The velocity of a particle in ms^{-1} moving in one dimension is given by

$$v(t) = \frac{3}{2} - t$$

Find the **distance** travelled by the particle from $t = 0$ s to $t = 2$ s.

- A 1.25 m
- B 0.75 m
- C 1.0 m
- D 0.5 m
- E 0.8 m