

SECTION A – MULTIPLE-CHOICE QUESTIONS**Instructions for Section A**

Answer **all** questions in pencil on the answer sheet provided for multiple-choice questions.

Choose the response that is **correct** or that **best answers** the question.

A correct answer scores 1; an incorrect answer scores 0.

Marks will **not** be deducted for incorrect answers.

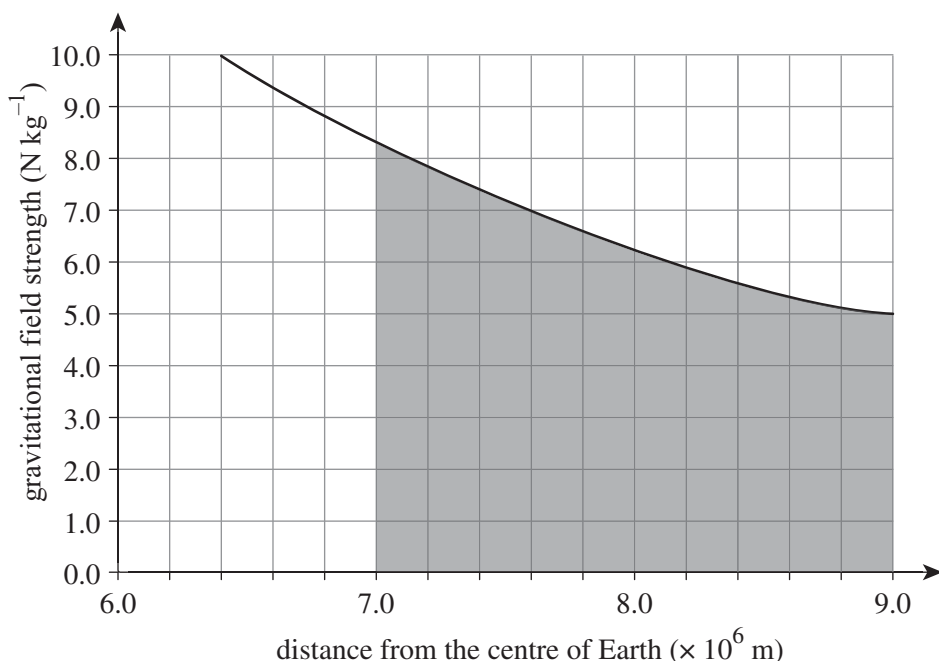
No marks will be given if more than one answer is completed for any question.

Unless otherwise indicated, the diagrams in this booklet are **not** drawn to scale.

Take the value of g to be 9.8 m s^{-2} .

Question 1

A 2 tonne decommissioned satellite is travelling in an elliptical orbit around Earth. At its closest point it is 7000 km from the centre of Earth and at its furthest point it is 9000 km from the centre of Earth.



Using the graph shown above, what is the **closest estimate** of the change in gravitational potential energy of the satellite as it moves from its closest point from the centre of Earth to its furthest point from the centre of Earth?

- A. $1.4 \times 10^1 \text{ J}$
- B. $1.4 \times 10^7 \text{ J}$
- C. $2.8 \times 10^7 \text{ J}$
- D. $2.8 \times 10^{10} \text{ J}$