

Paper Reference(s) 9PH0/02
Pearson Edexcel Level 3 GCE

Physics
Advanced
PAPER 2: Advanced Physics II

Thursday 6 June 2024 – Morning

Time: 1 hour 45 minutes

Diagram Booklet

**THIS DIAGRAM BOOKLET MUST BE
RETURNED WITH THE QUESTION PAPER
AT THE END OF THE EXAMINATION.**

In the boxes below, write your name, centre number and candidate number.

| | | | | | |
|------------------|--|--|--|--|--|
| Surname | | | | | |
| Other names | | | | | |
| Centre Number | | | | | |
| Candidate Number | | | | | |

INSTRUCTIONS

There may be spare copies of some diagrams in case you need them.

CONTENTS

Page

3 Question 1

4 Question 6

5 Question 7

6 Question 9

7 Question 15

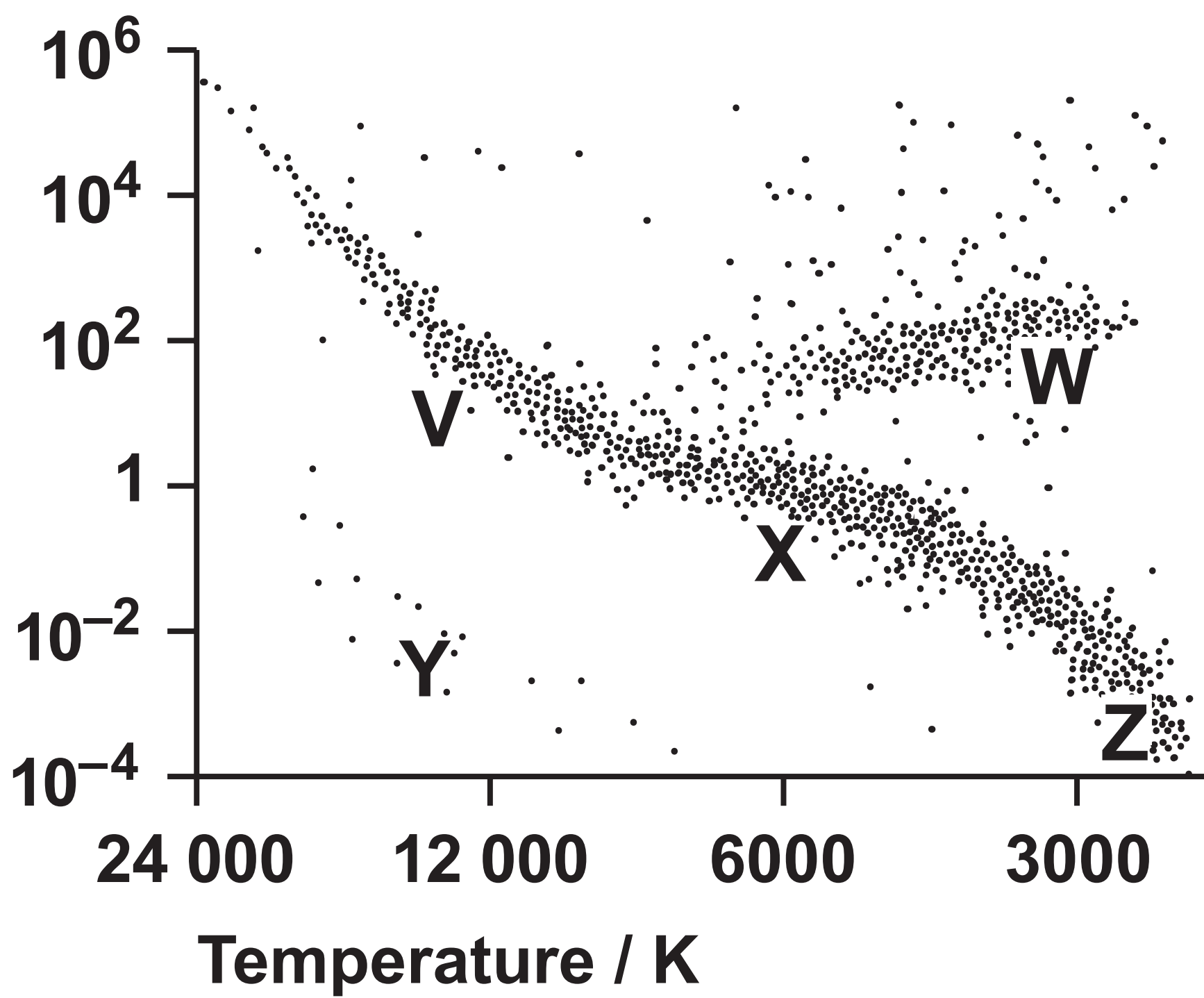
8 Question 16

9 Question 17(a)

10 Question 18(b) – not to scale

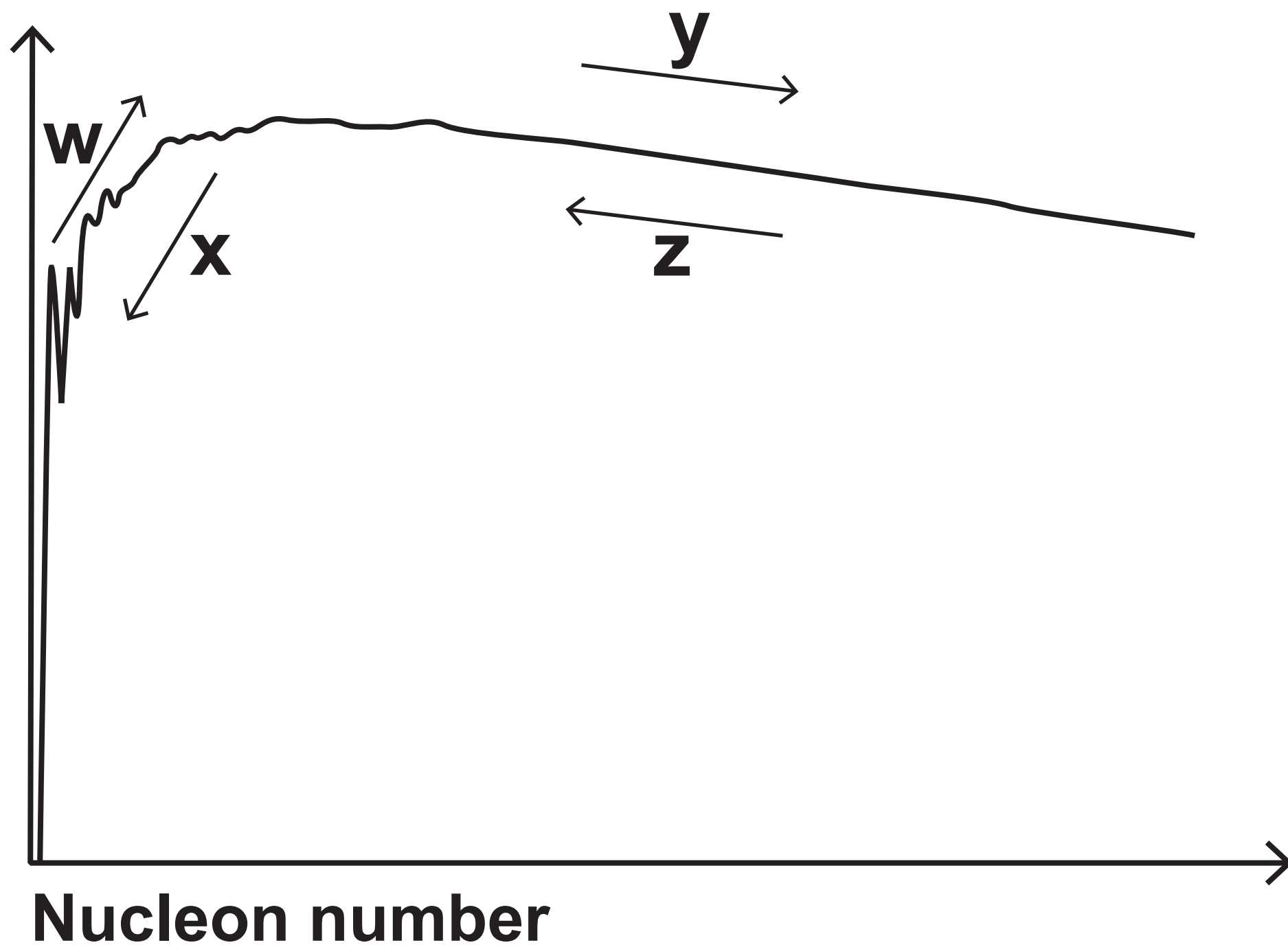
11 Question 19(c)(ii)

Question 1

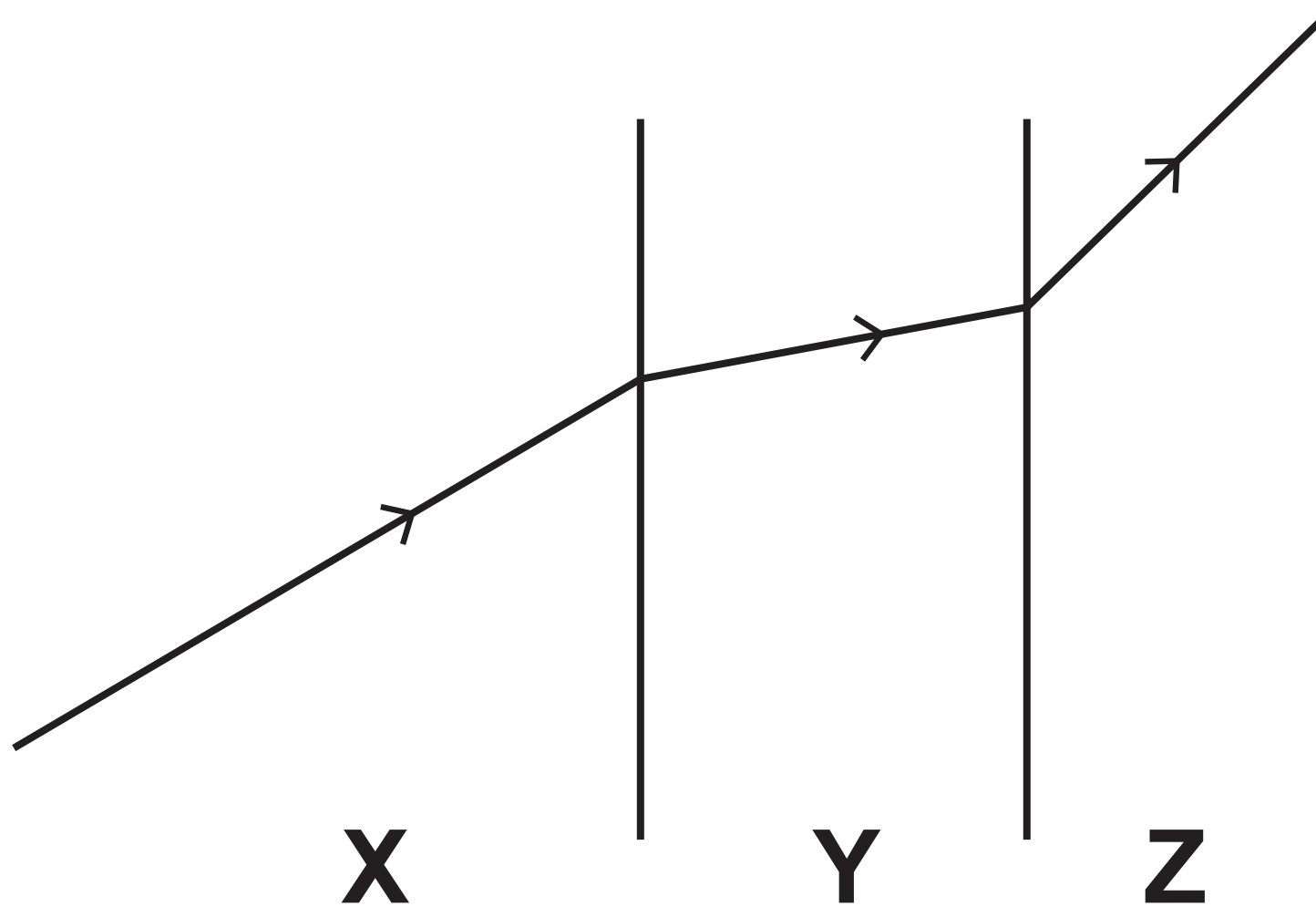
Luminosity / L_{\odot} 

Question 6

Binding energy
per nucleon

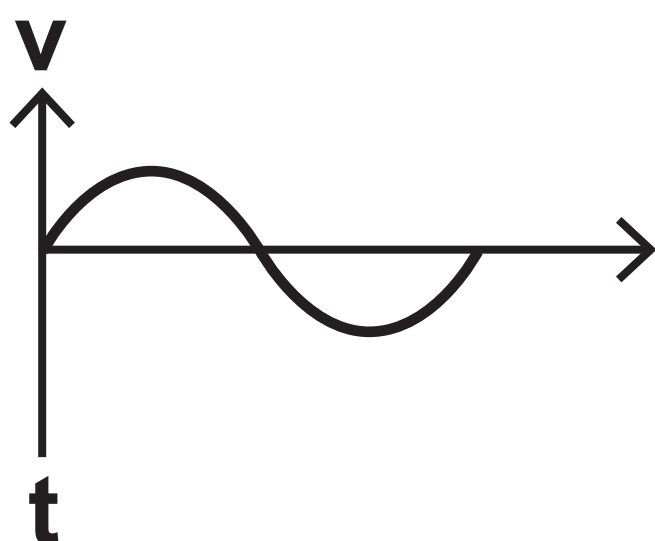


Question 7

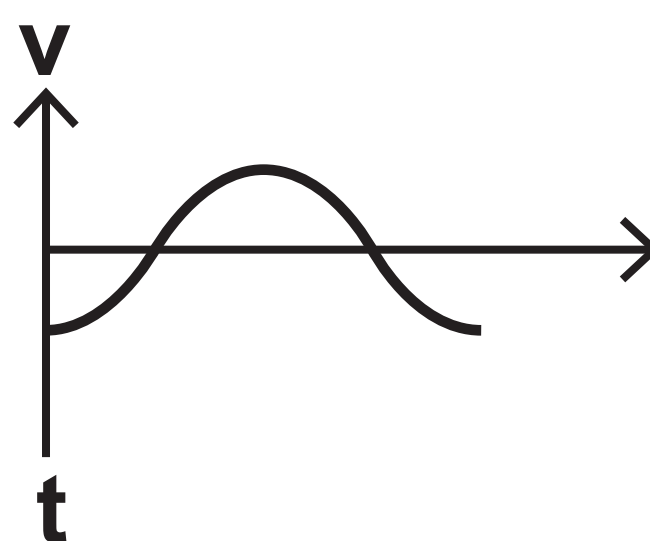


Question 9

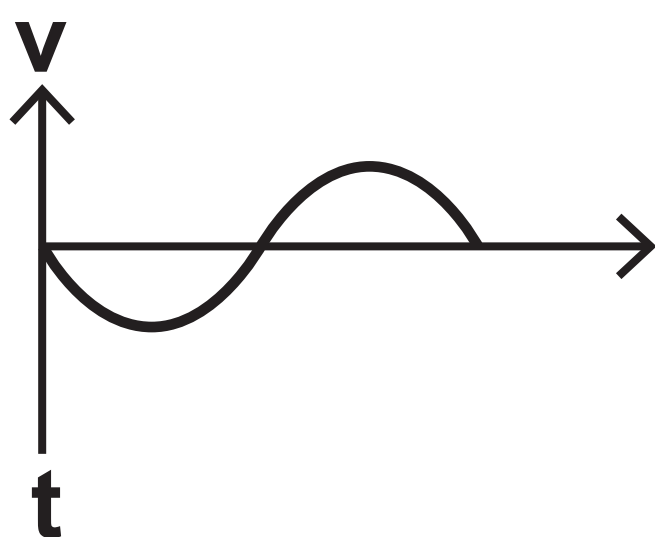
GRAPH A



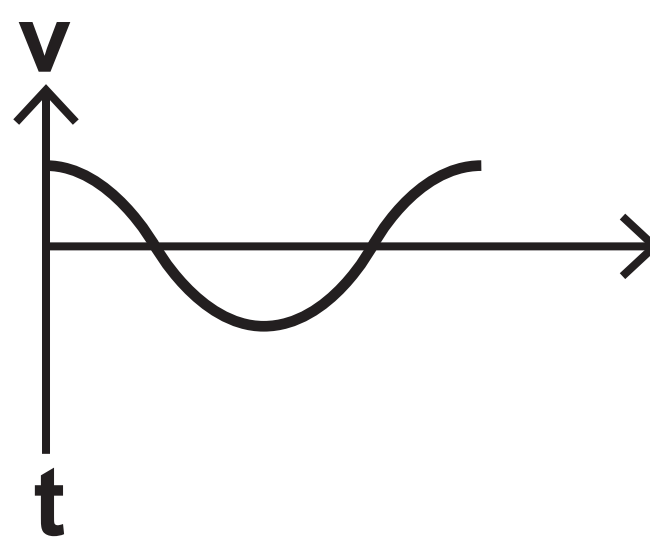
GRAPH B



GRAPH C



GRAPH D



Question 15

DIAGRAM 1

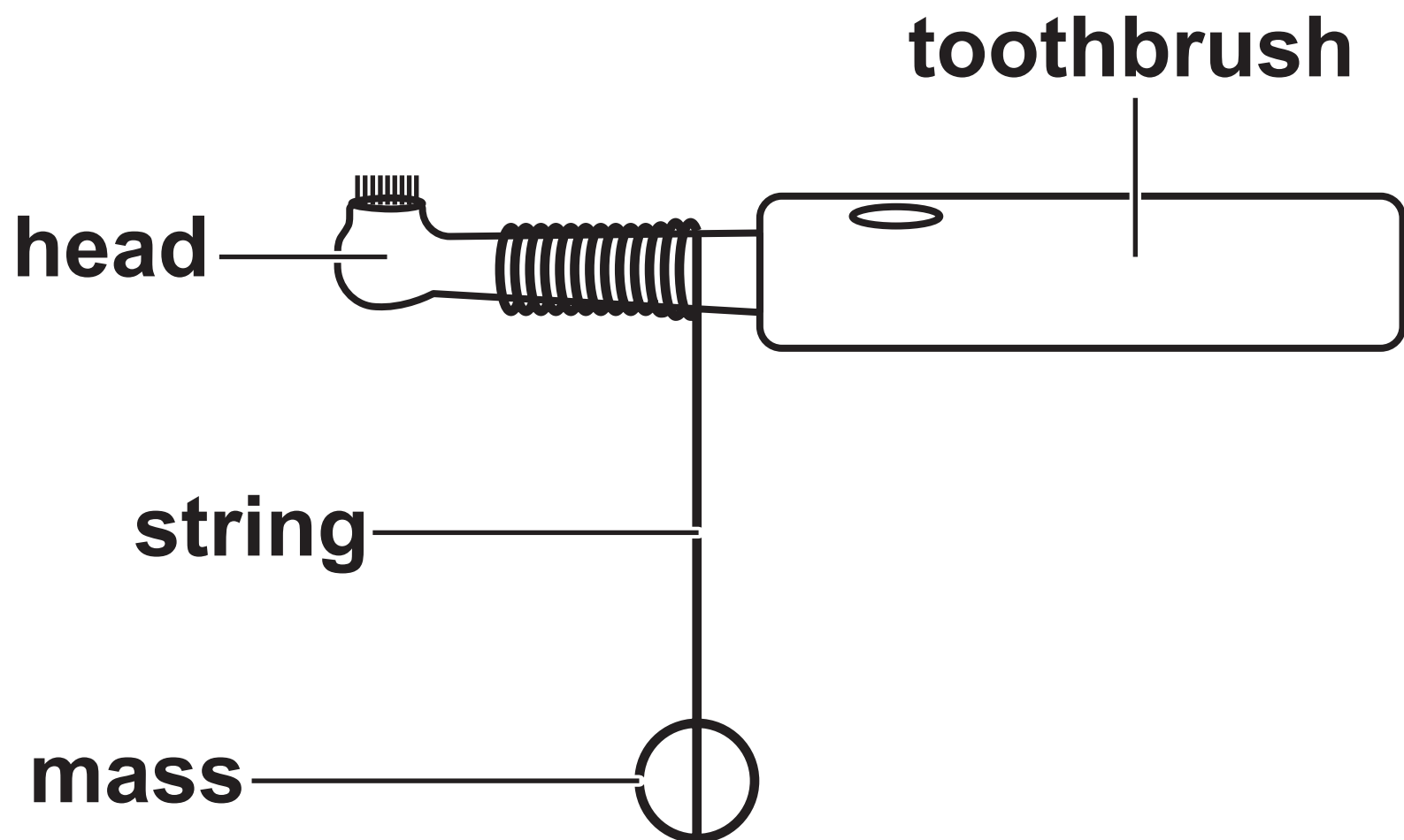
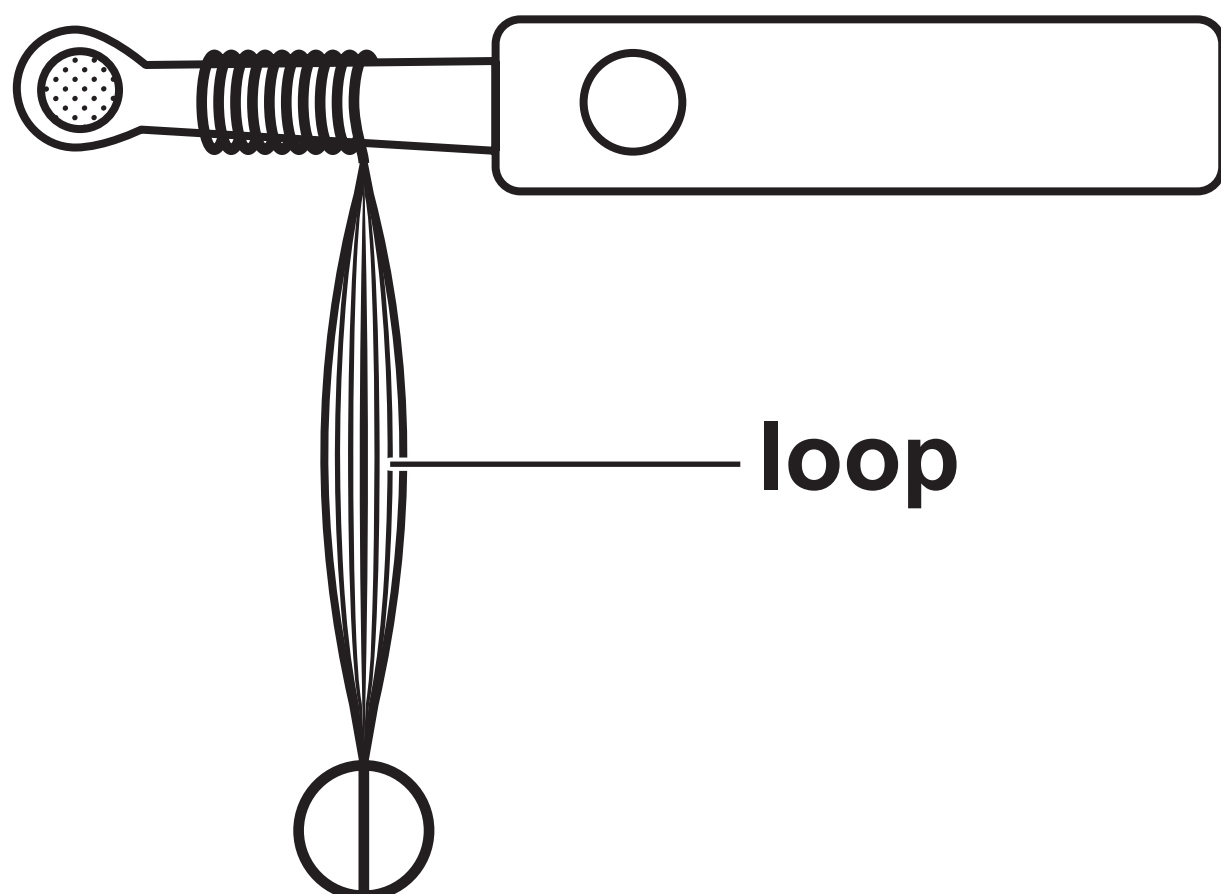
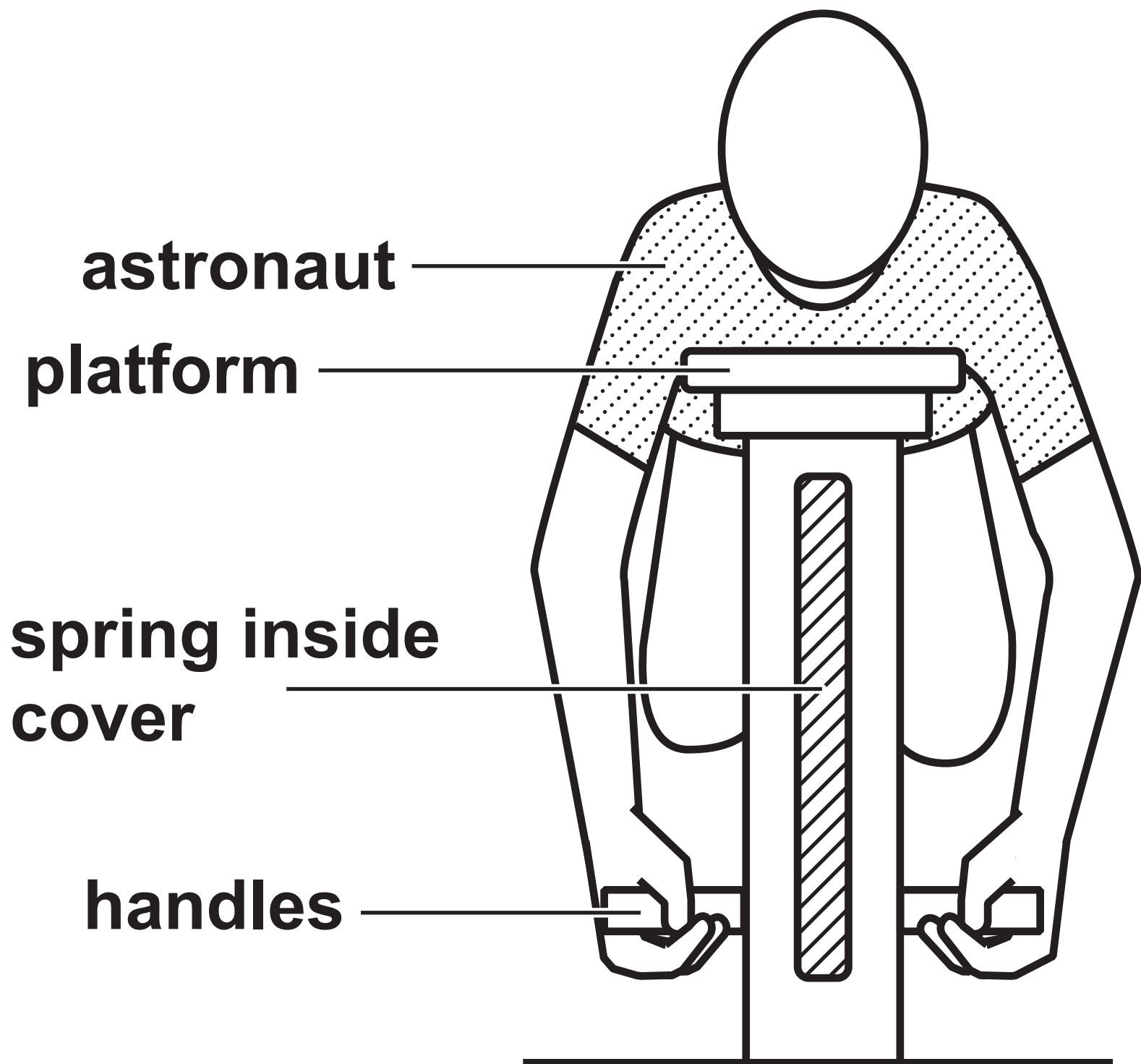


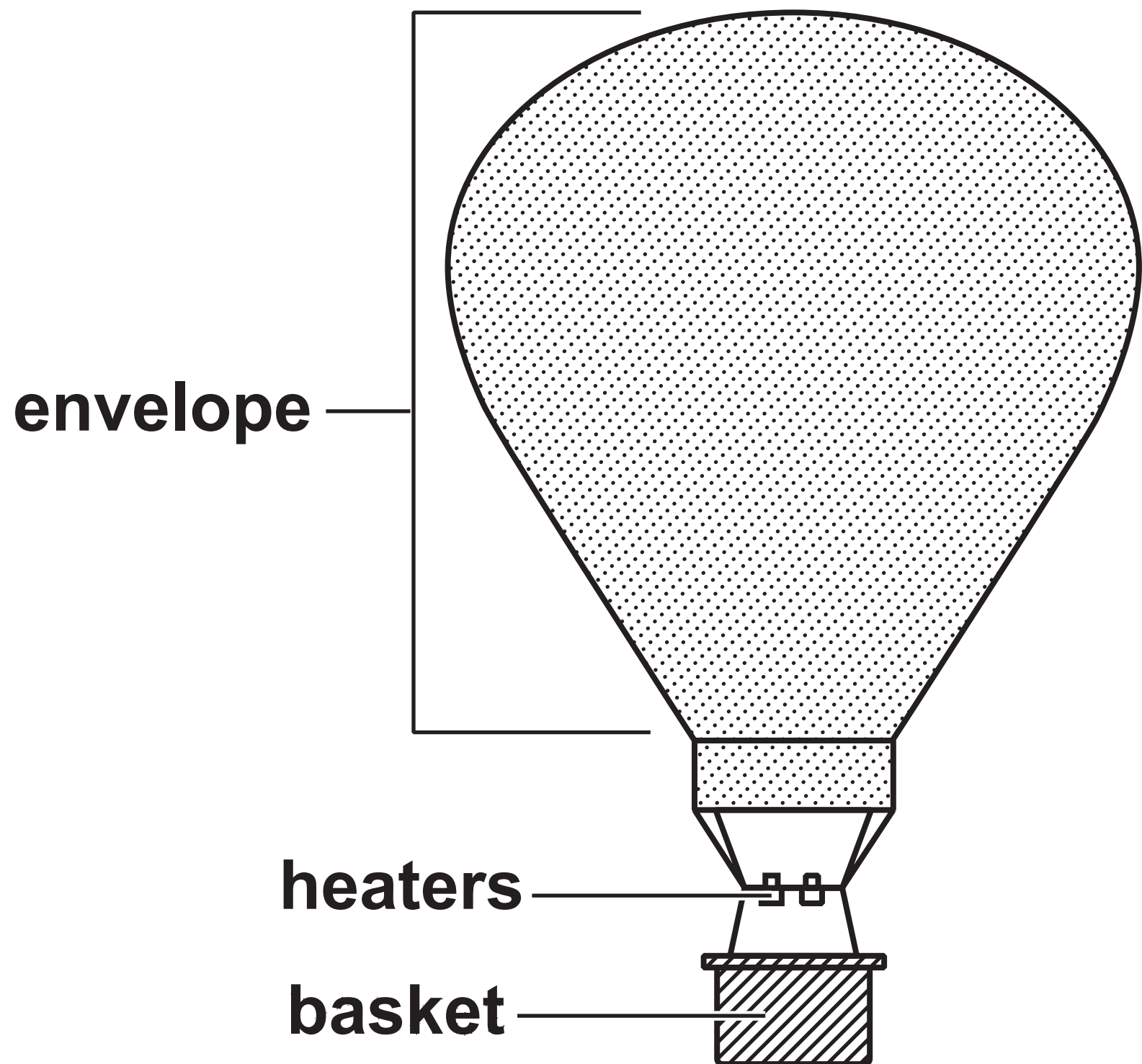
DIAGRAM 2



Question 16



Question 17(a)



Question 18(b)

Not to scale

$n = 5$ _____ -0.54 eV

$n = 4$ _____ -0.85 eV

$n = 3$ _____ -1.51 eV

$n = 2$ _____ -3.40 eV

$n = 1$ _____ -13.6 eV

Question 19(c)(ii)

| Isotope | Decay product | Emission | Half-life |
|------------------|------------------|----------|-----------------|
| americium-241 | neptunium-237 | alpha | 432 years |
| neptunium-237 | protactinium-233 | alpha | 2 100 000 years |
| protactinium-233 | uranium-233 | beta | 27 days |

Question 16

(Source adapted from:

<https://www.nasa.gov/content/nasa-astronaut-rick-mastracchio-3>)