

Astronomy
Paper 2
Telescopic Astronomy

Tuesday 18 June 2024 – Afternoon
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					
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Candidate Number					

INSTRUCTIONS

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

CONTENTS

Page

4	Question 1(a)(i) – photograph and outline version
5	Question 1(a)(ii) – photograph and outline version
6	Question 1(c) – Blank page
7	Question 3(a)
8	Question 3(a)(ii)
9	Question 4(a)
10	Question 4(b)
11	Question 4(b)(i) – Blank page
12	Question 4(b)(ii) – Blank page
13	Question 5(a)
14	Question 5(b)(i) – Blank page
15	Question 6(a) – photograph and outline version
16	Question 6(b) – photograph and outline version
17	Question 7(a)
18	Question 7(b)
19	Question 8(a) – photograph and outline version
20	Question 8(a) – Blank page

(continued on the next page)

Turn over

CONTENTS continued.

21	Question 8(b) – photograph and outline version
22	Question 8(c)
23	Question 8(d)
24–26	Question 9(a) – image, outline and table
27	Question 9(c) – Blank page
28	Question 10(b)
29	Question 10(b)(ii)
30	Question 10(c) – photograph and outline version

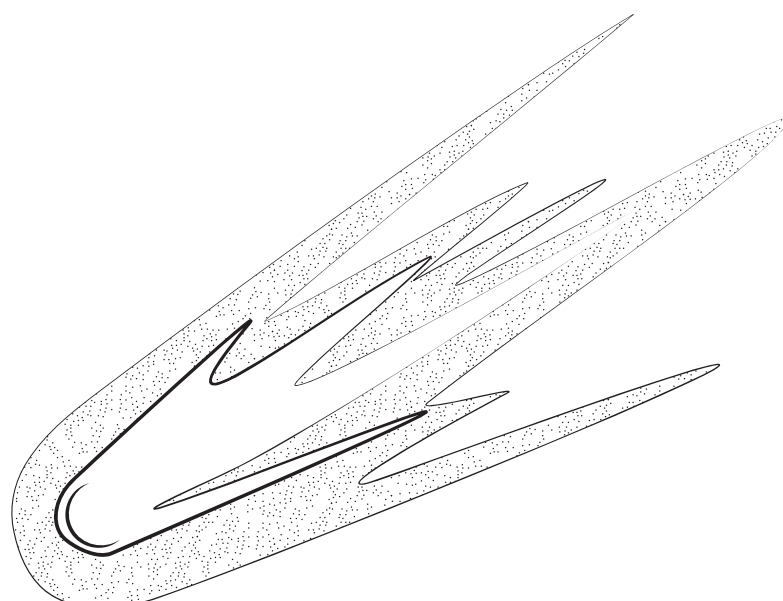
Spare Copies

31	Question 1(c) – Blank page
32	Question 4(b)(i) – Blank page
33	Question 4(b)(ii) – Blank page
34	Question 5(a)
35	Question 5(b)(i) – Blank page
36	Question 8(a) – Blank page
37	Question 9(c) – Blank page

FIGURE 1



FIGURE 1 (outline)



Question 1(a)(ii)

FIGURE 2

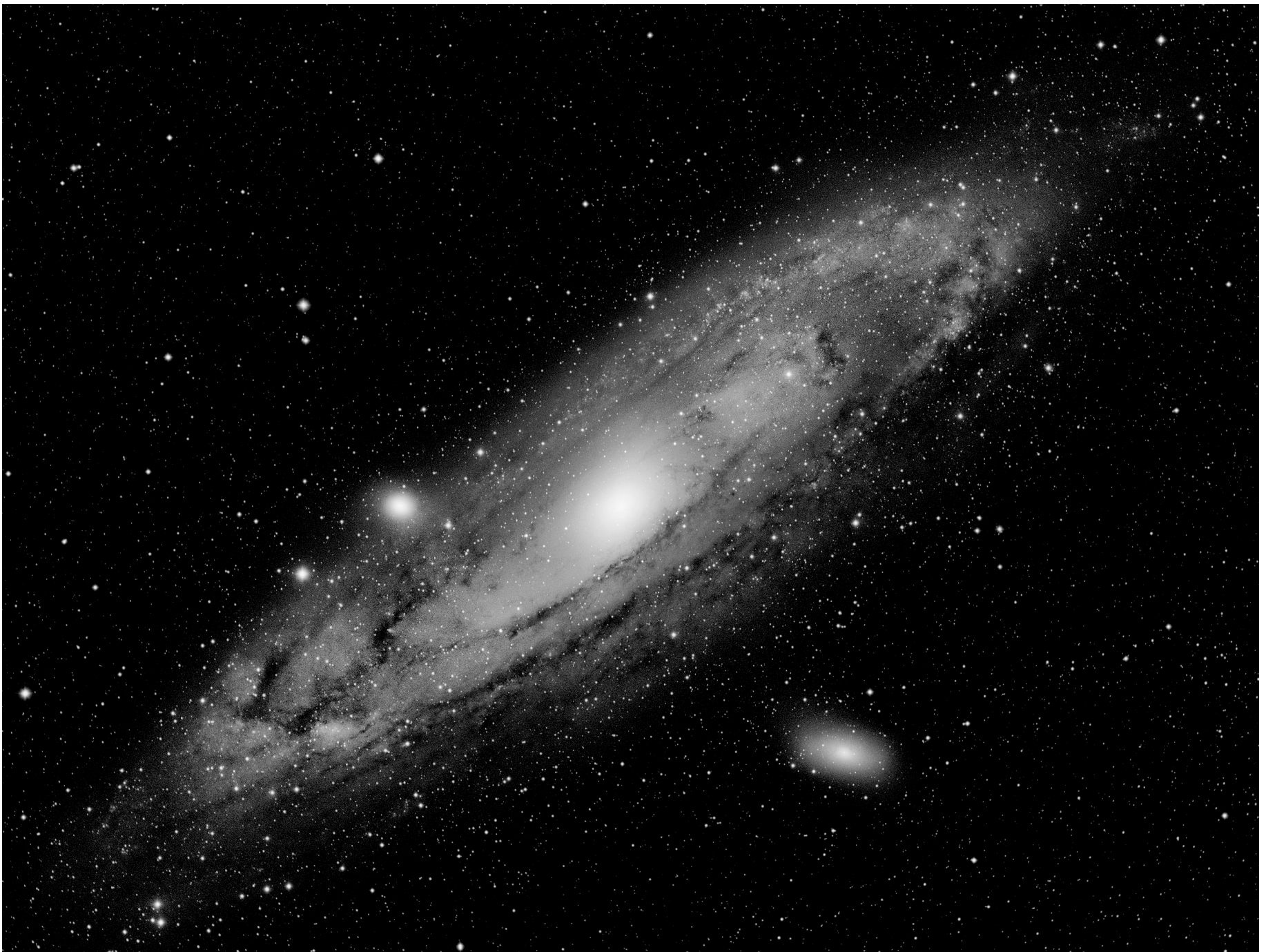
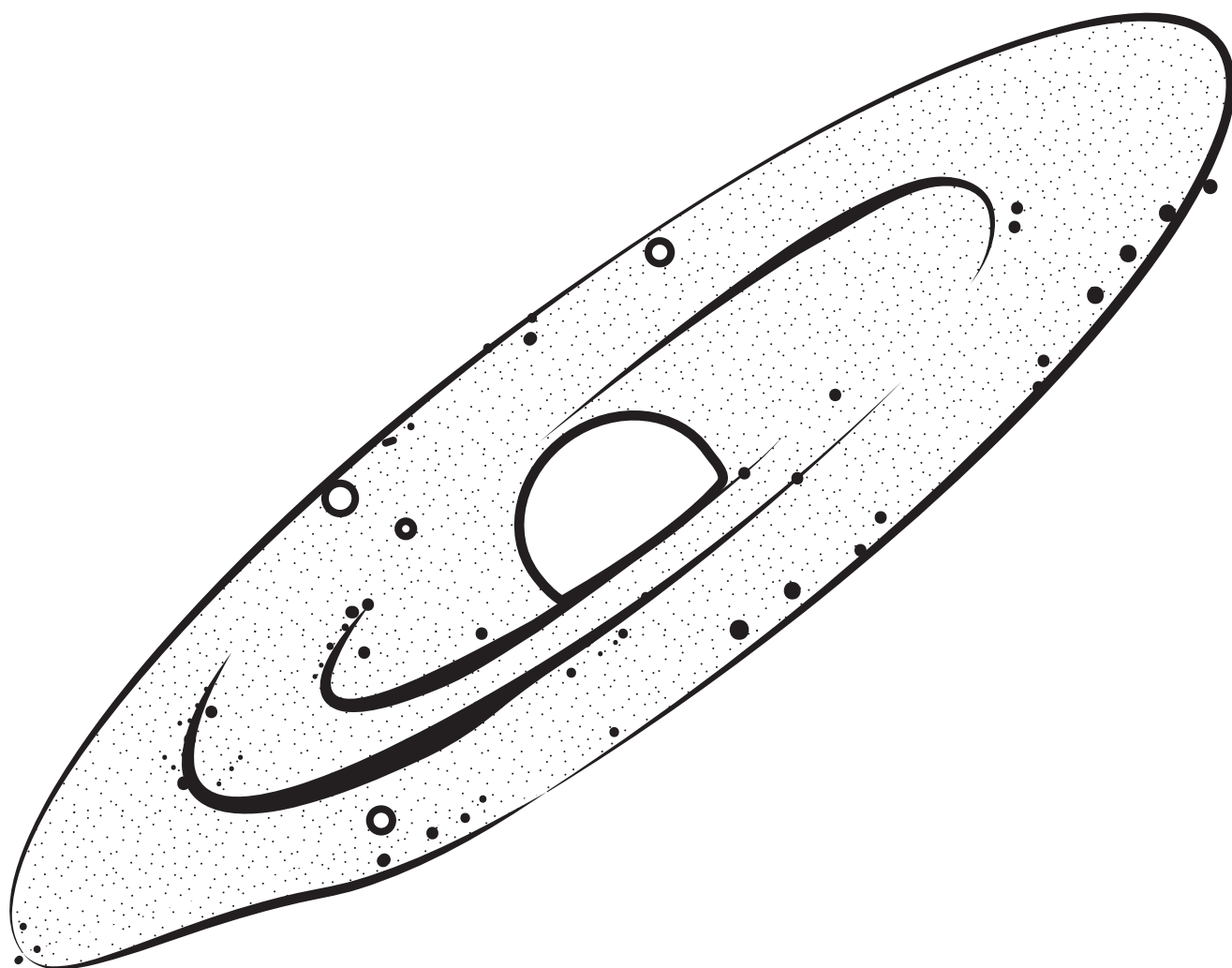


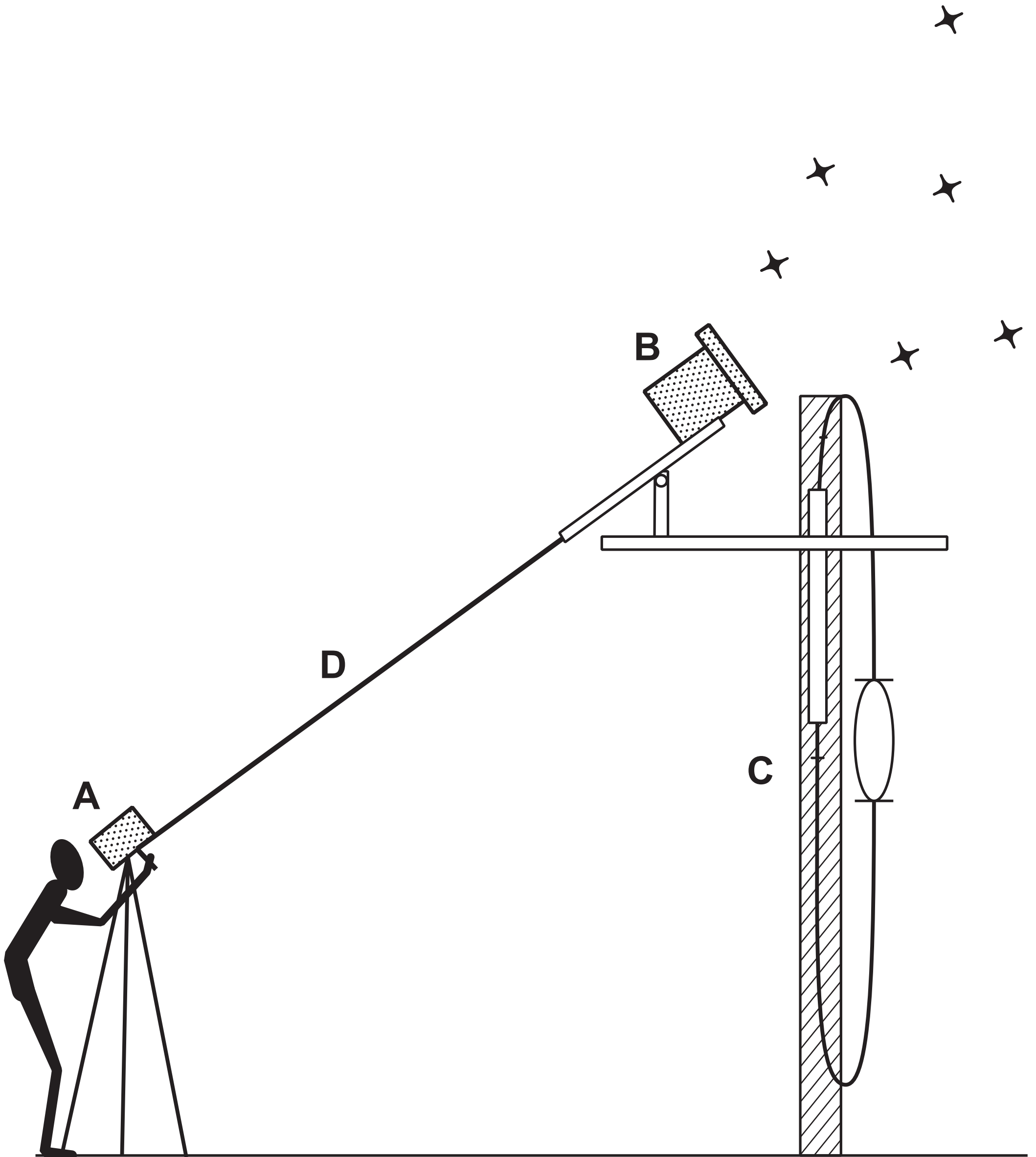
FIGURE 2 (outline)



Question 1(c) – Blank page

Question 3(a)

FIGURE 3



Question 3(a)(ii)

TABLE 1

Aperture	20 cm
Focal length of objective lens	64 m
Focal length of eyepiece lens	130 cm

Question 4(a)

FIGURE 4

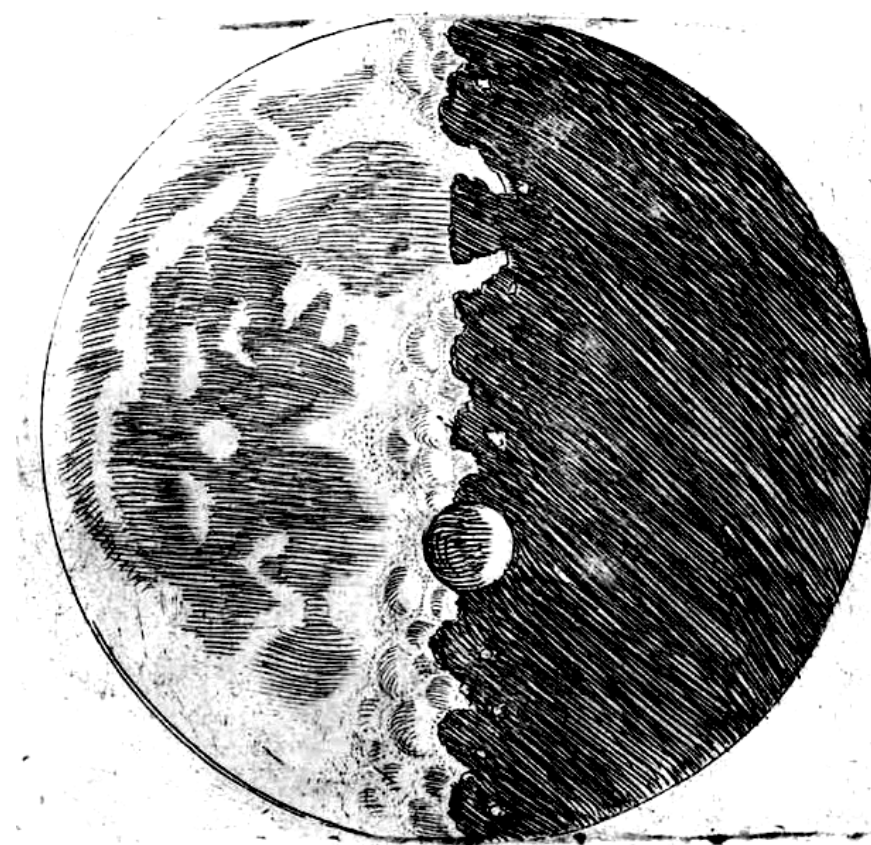
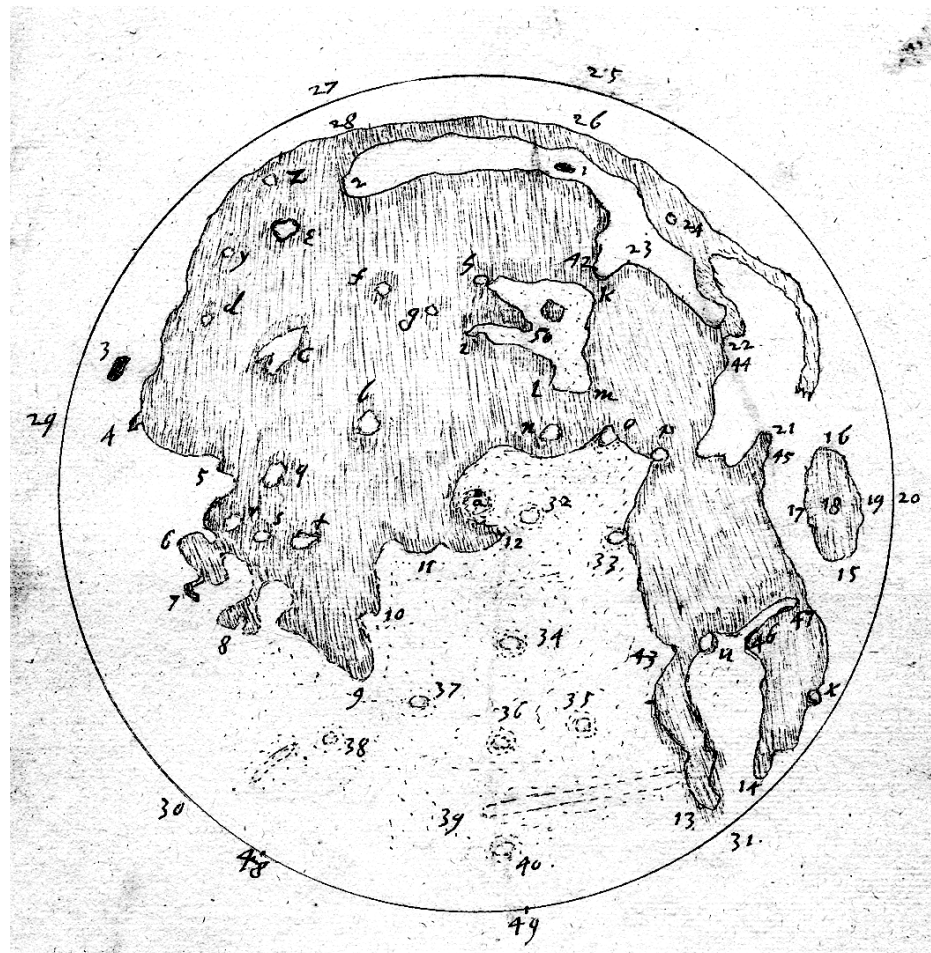
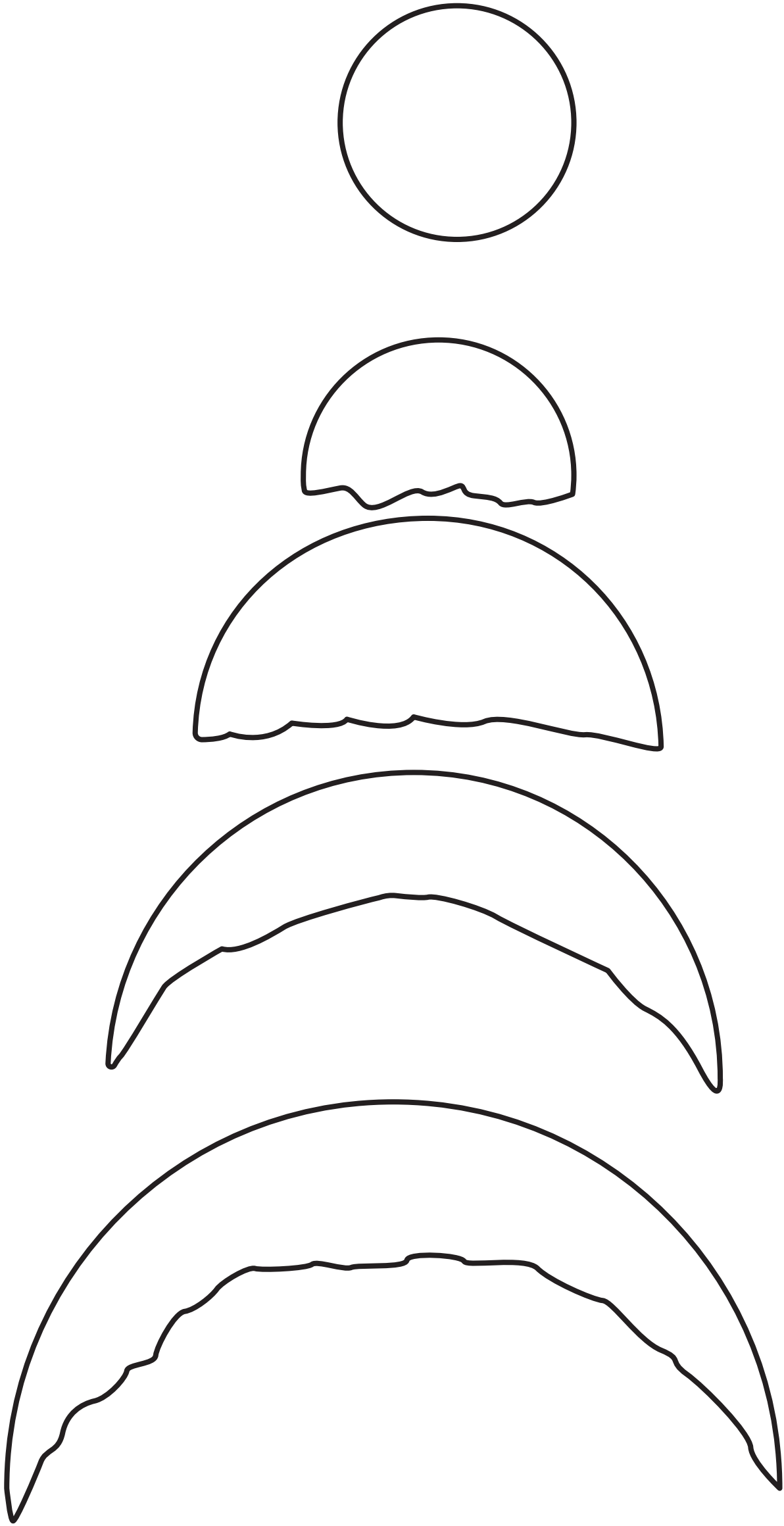


FIGURE 5



Question 5(a)

FIGURE 6

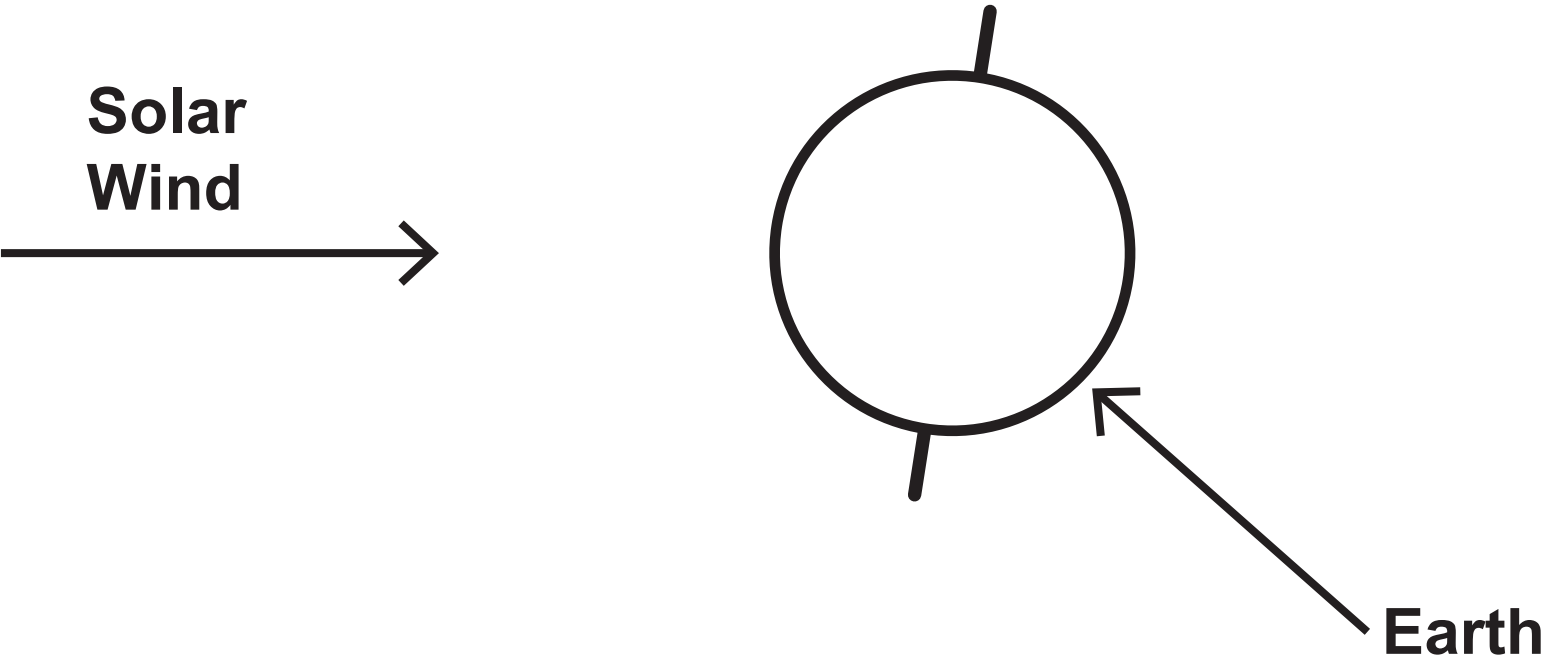
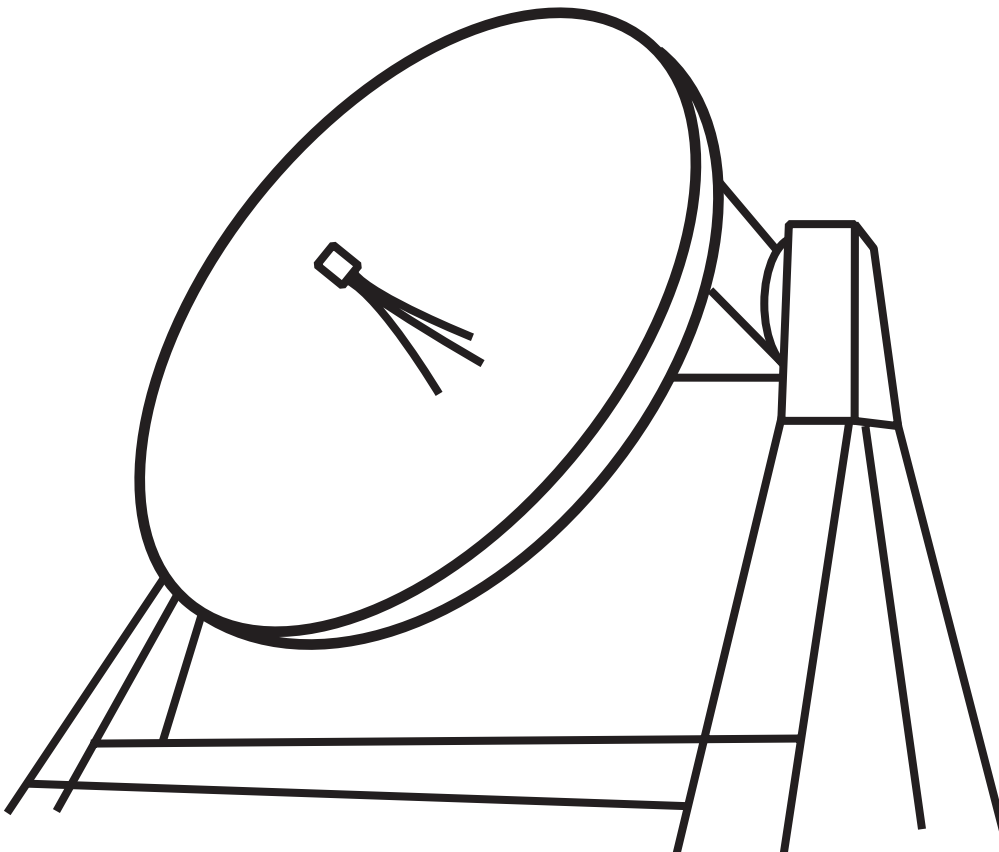


FIGURE 7



FIGURE 7 (outline)



Question 6(b)

FIGURE 8



FIGURE 8 (outline)

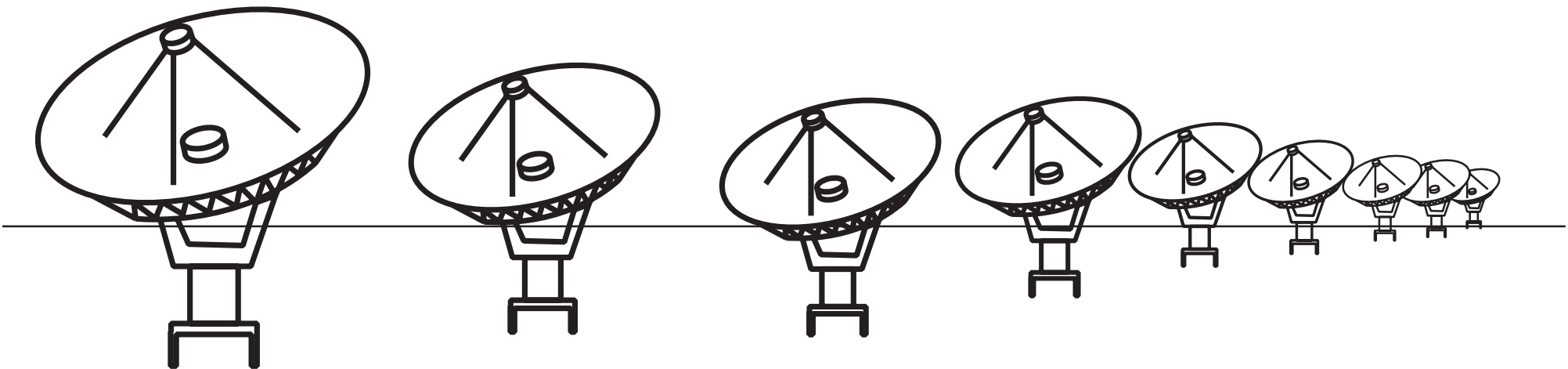


TABLE 2

Star	Apparent magnitude	Absolute magnitude	Spectral class	Mass (Sun = 1)
61 Virginis	4.74	5.07	G7	0.93
Proxima Centauri	10.5	15.6	M5	0.12
Rigel	0.12	−7.84	B8	18
Aldebaran	0.85	−0.64	K5	1.16
Sirius A	−1.46	1.43	A0	2.1

Question 7(b)

FIGURE 9

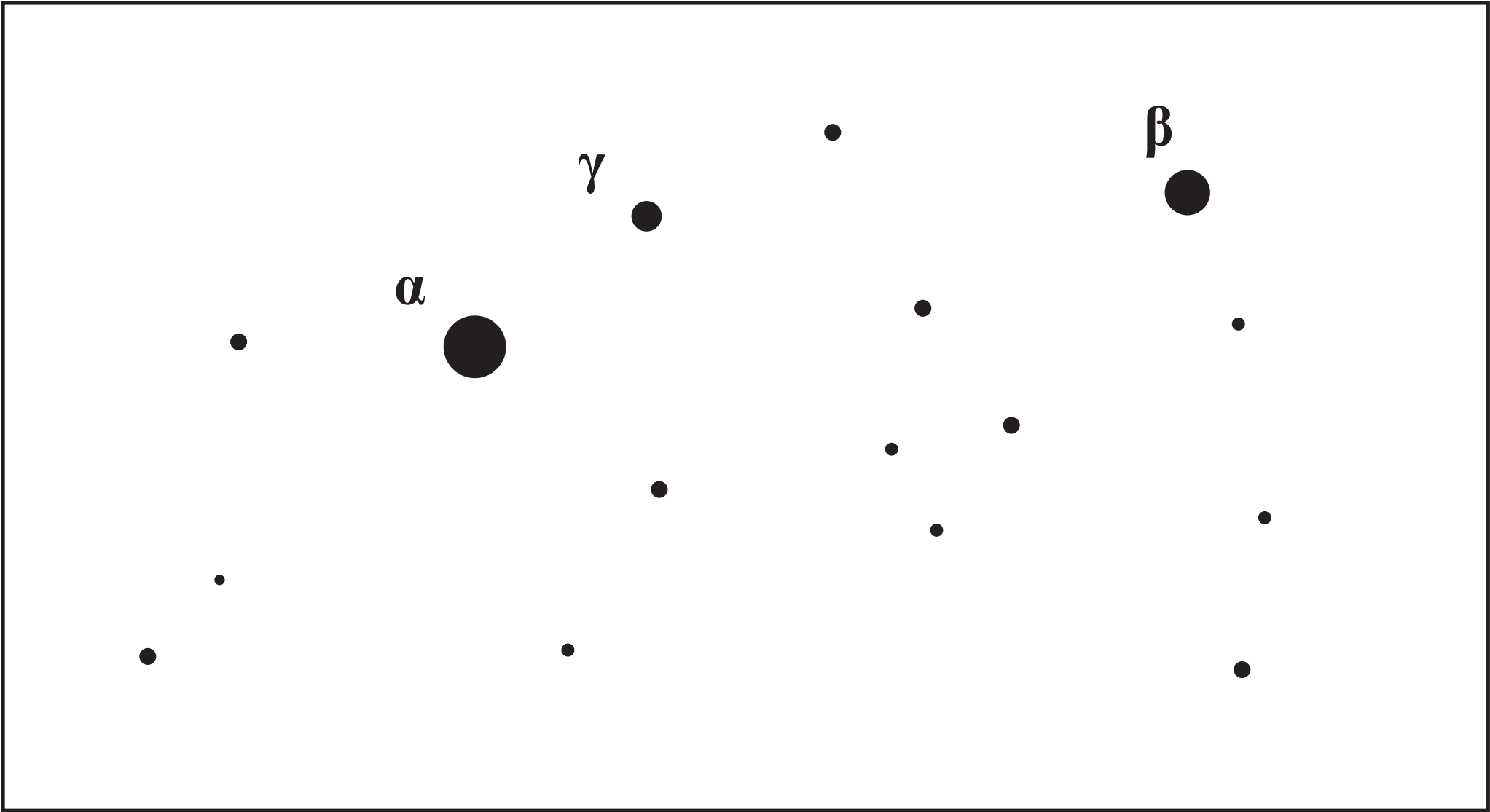


FIGURE 10

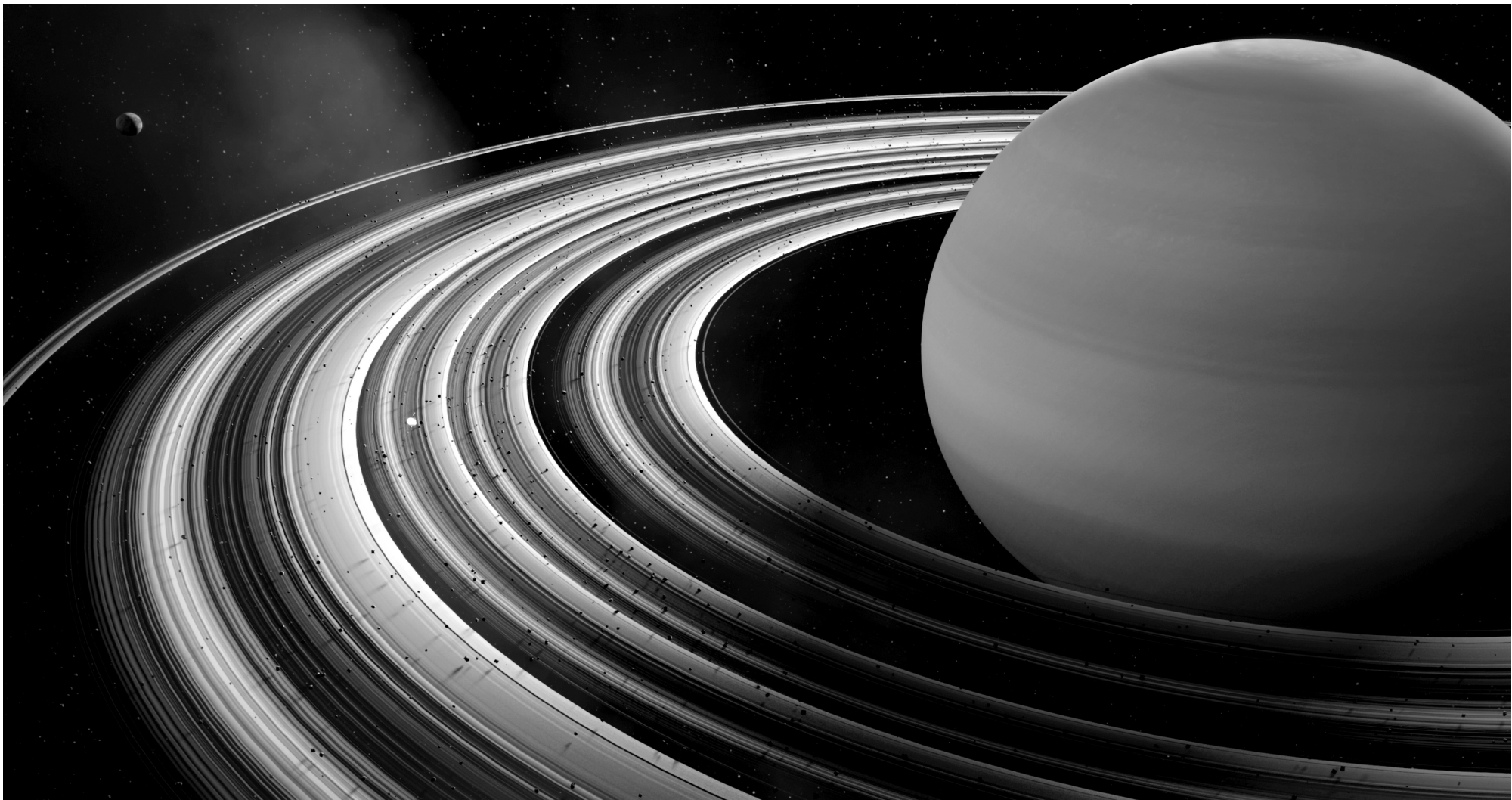
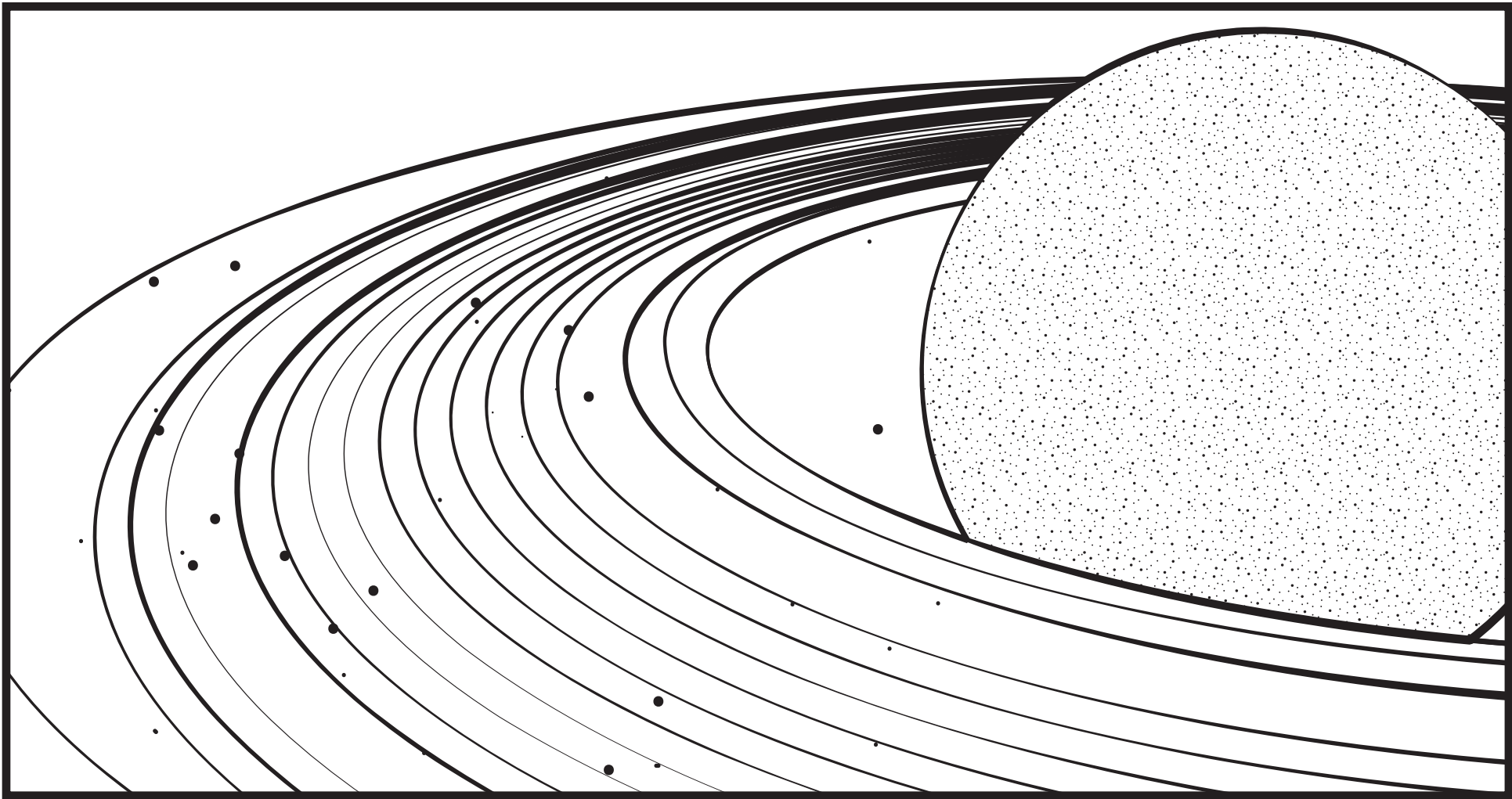


FIGURE 10 (outline)



Question 8(a) – Blank page

FIGURE 11

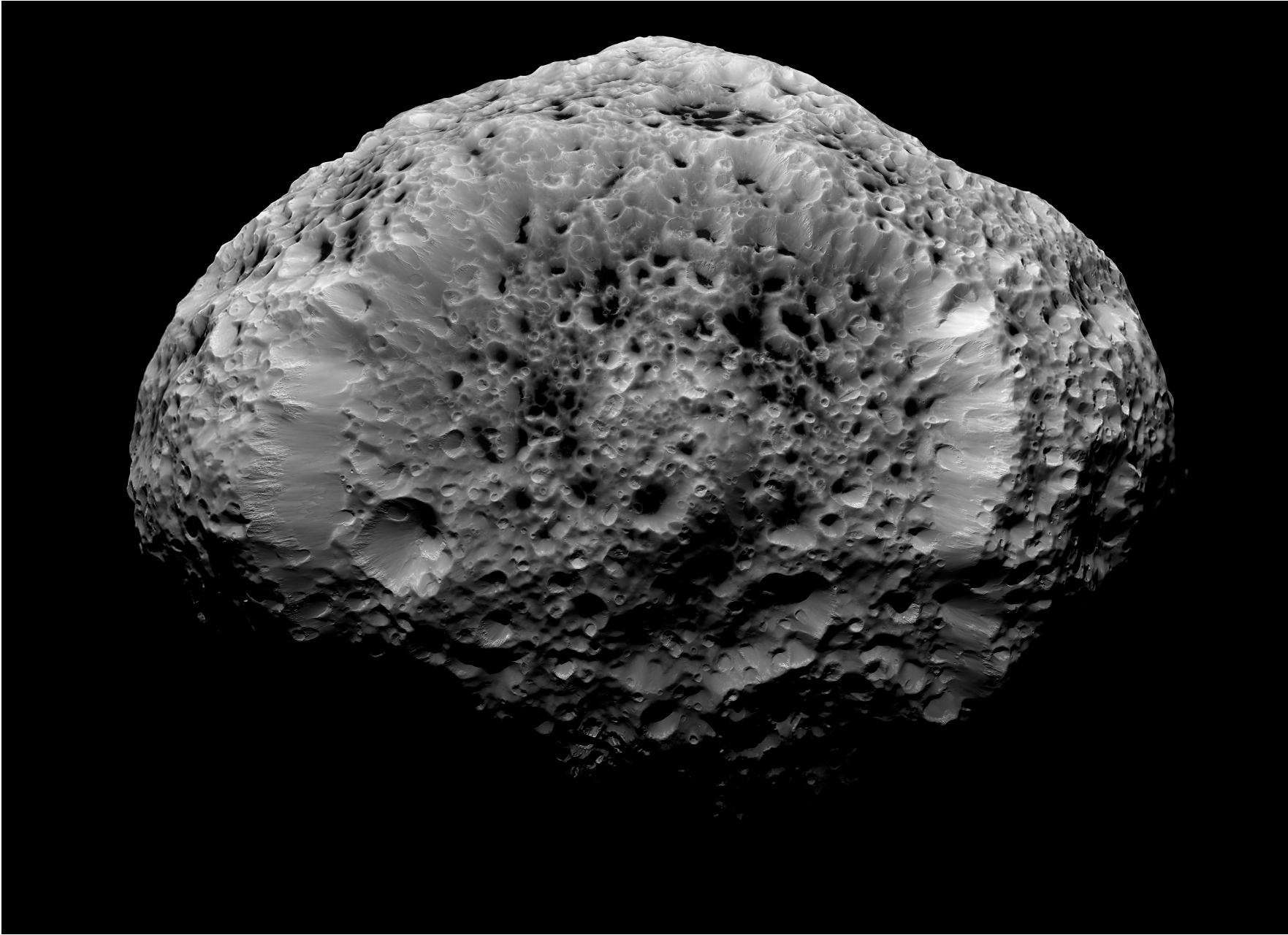


FIGURE 11 (outline)

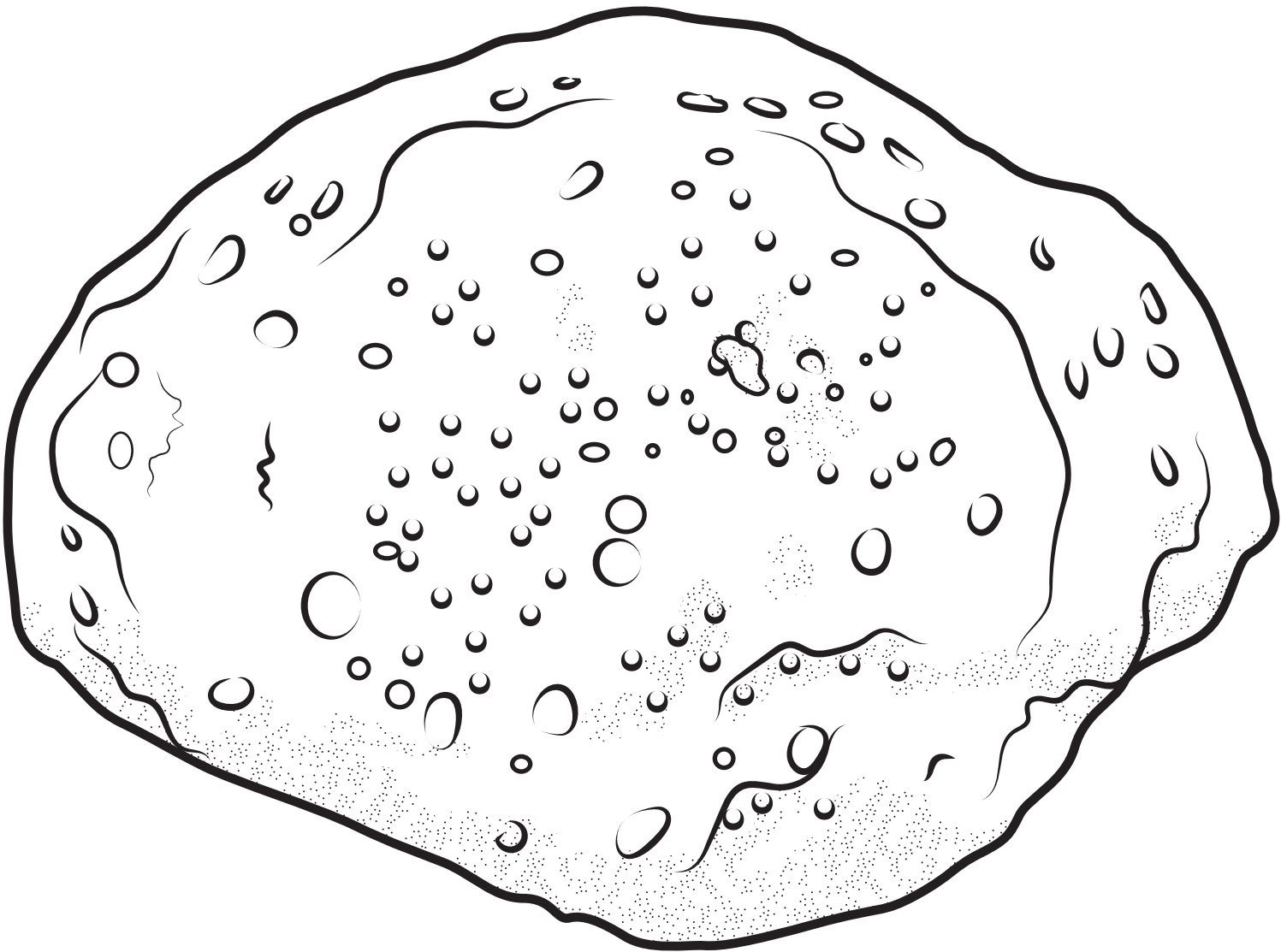


FIGURE 12

Number of
asteroids

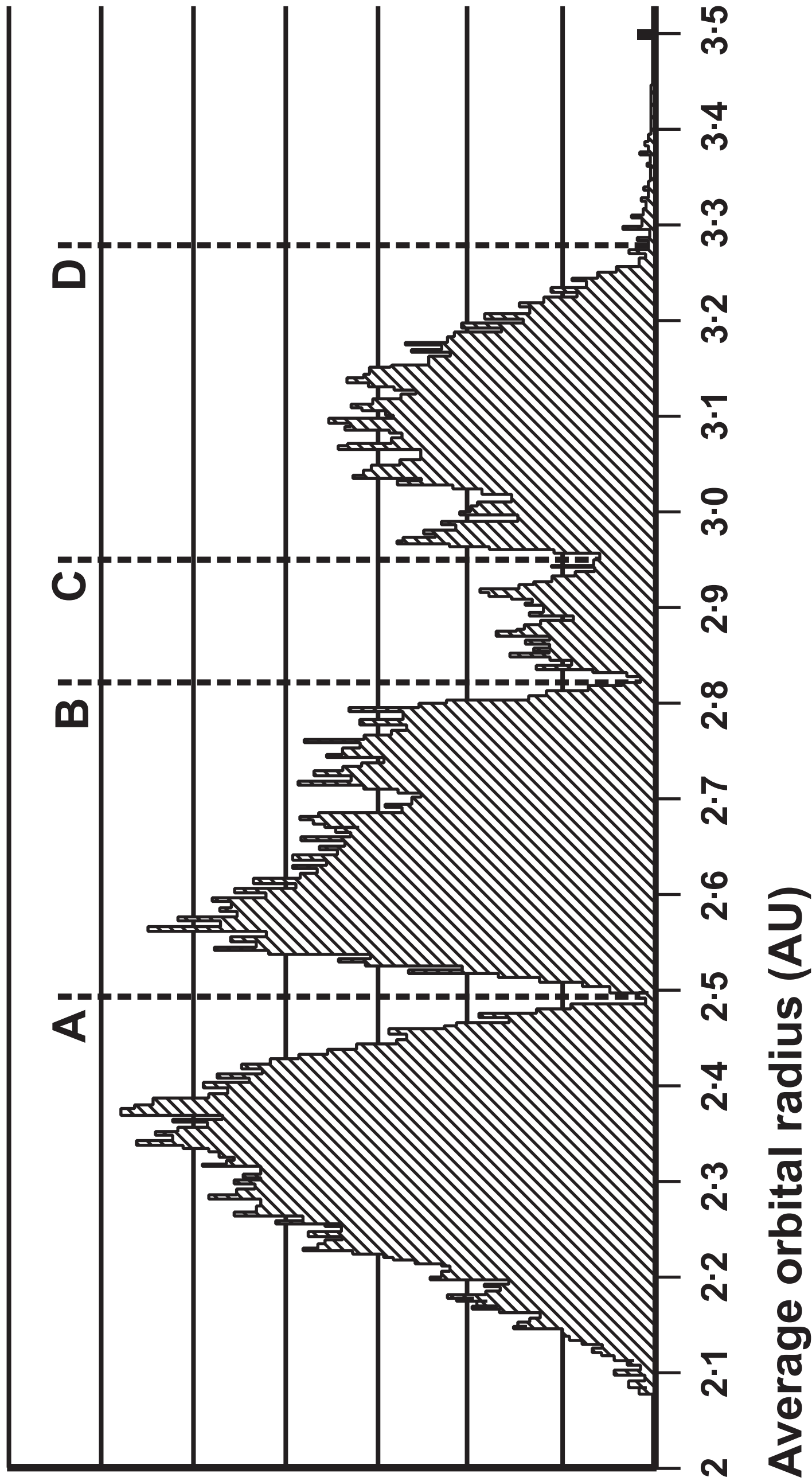
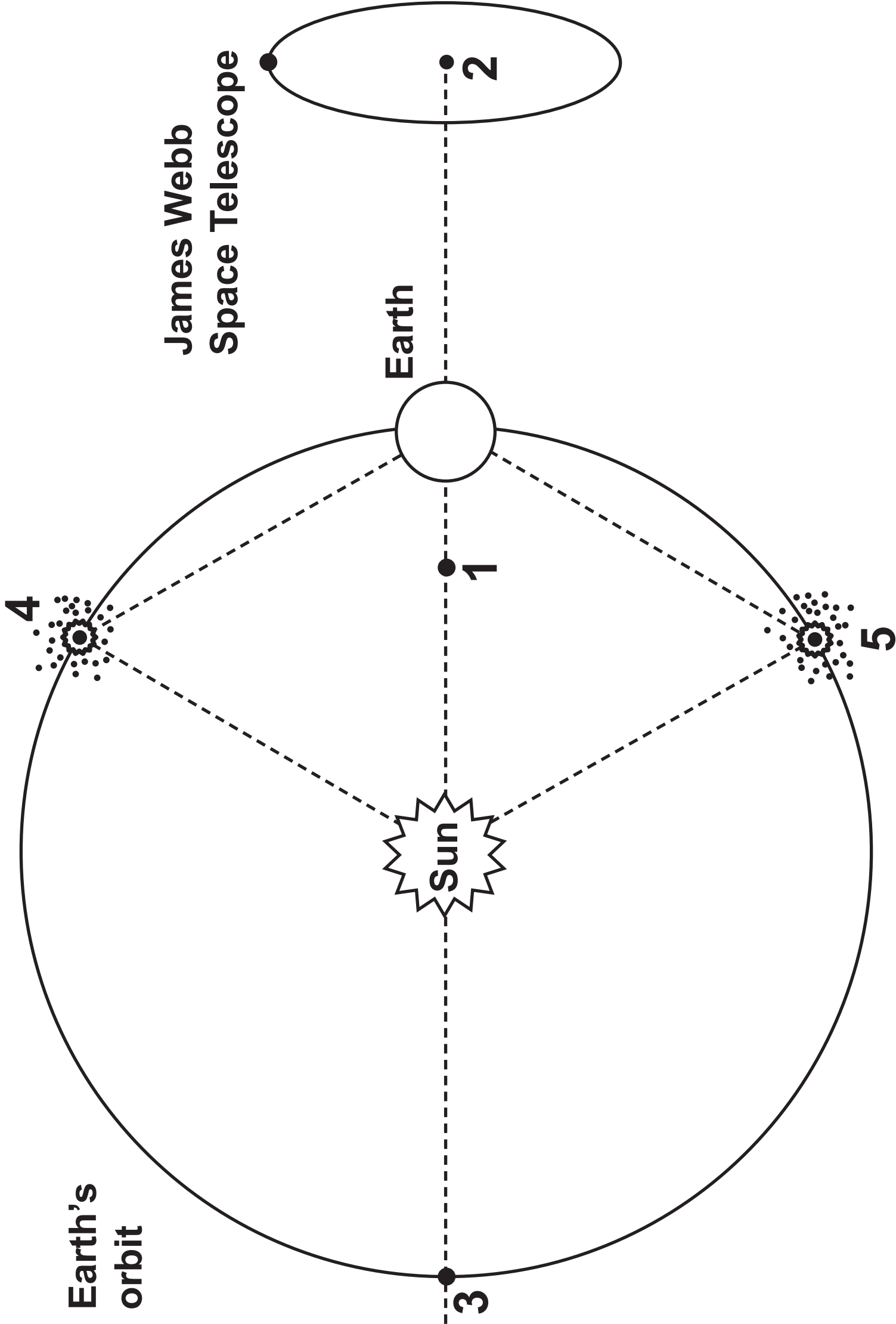


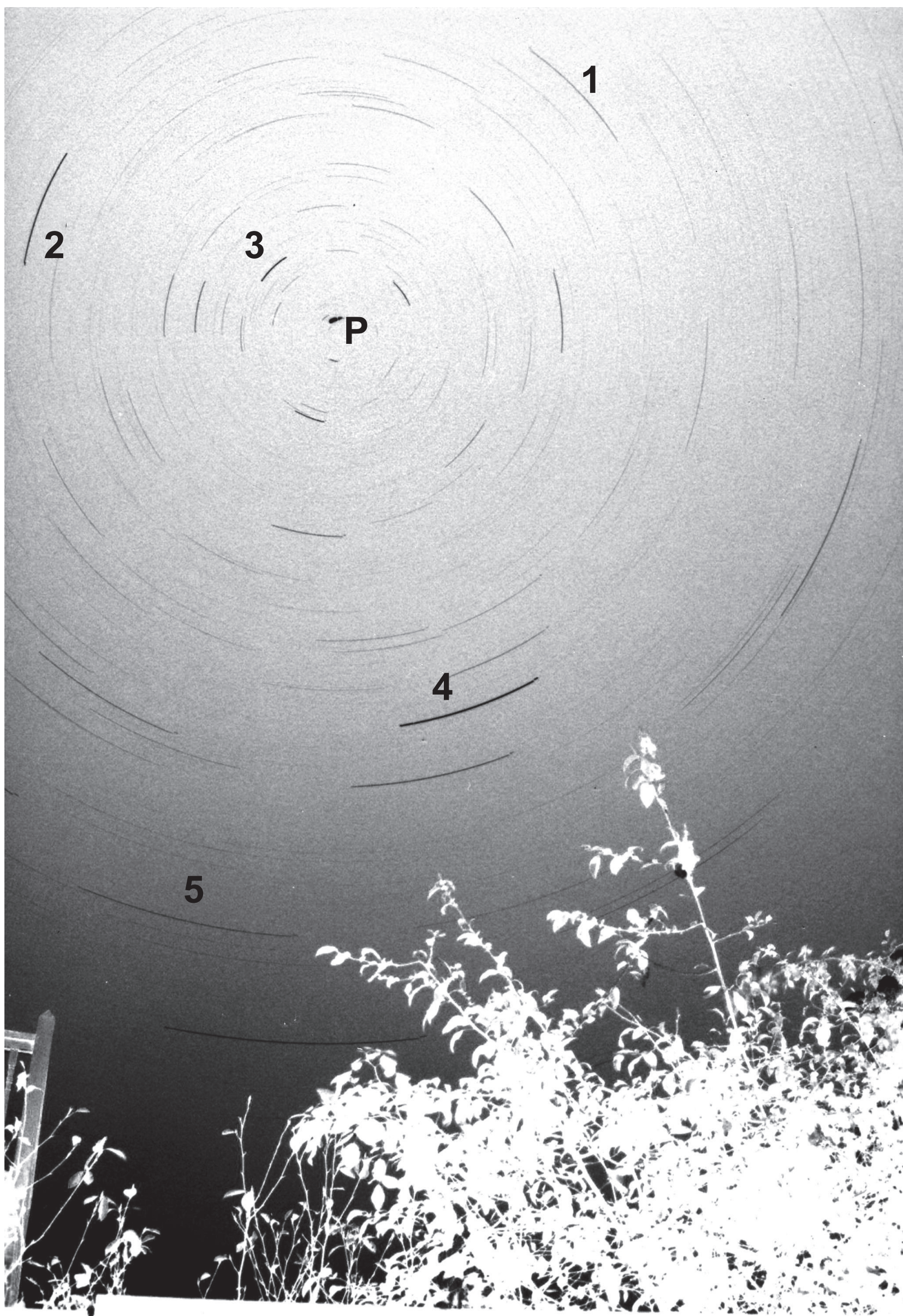
FIGURE 13

NOT TO SCALE



Question 9(a)

FIGURE 14

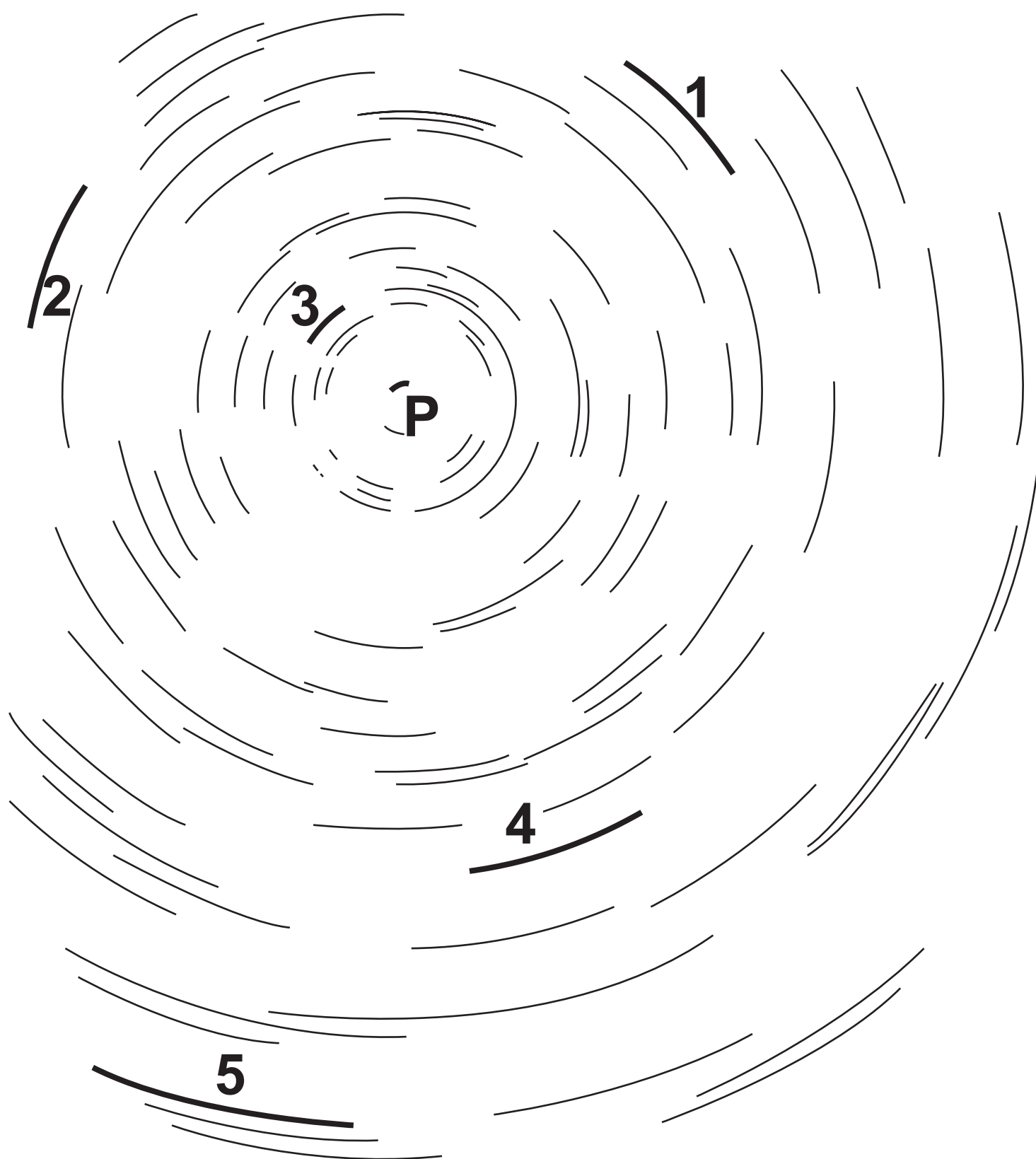


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Question 9(a) continued.

FIGURE 14 (outline)



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Question 9(a) continued.

TABLE 3

Star Trail	Angle (°)
1	23
2	26
3	28
4	24
5	25

Question 9(c) – Blank page

Question 10(b)

TABLE 4

Quantity	Estimate
Rate of star formation in the Milky Way galaxy	1·1 per year
Fraction of these stars WITHOUT planets	0·6
Average number of habitable planets orbiting each star with planets	2

Question 10(b)(ii)

TABLE 5

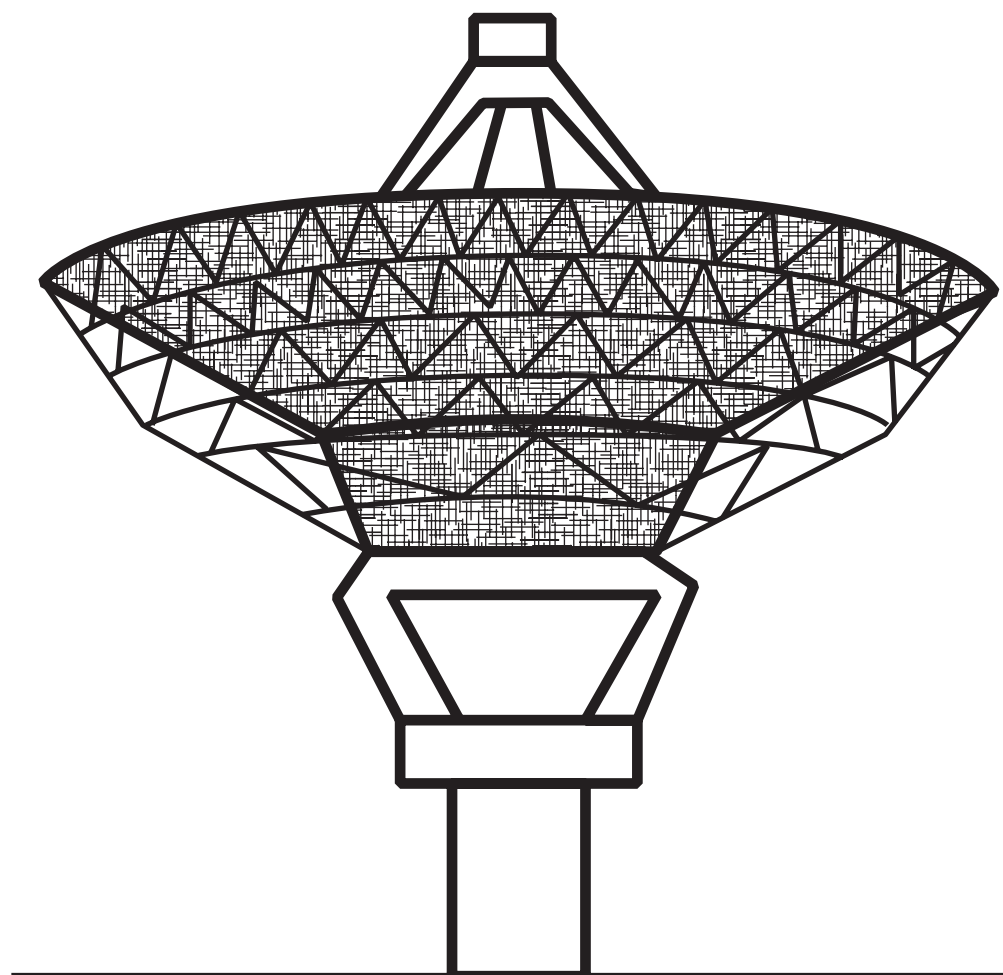
Quantity	Estimate
f_l	1·0
f_i	1·0
f_c	0·15
L	50 000 000

Question 10(c)

FIGURE 15



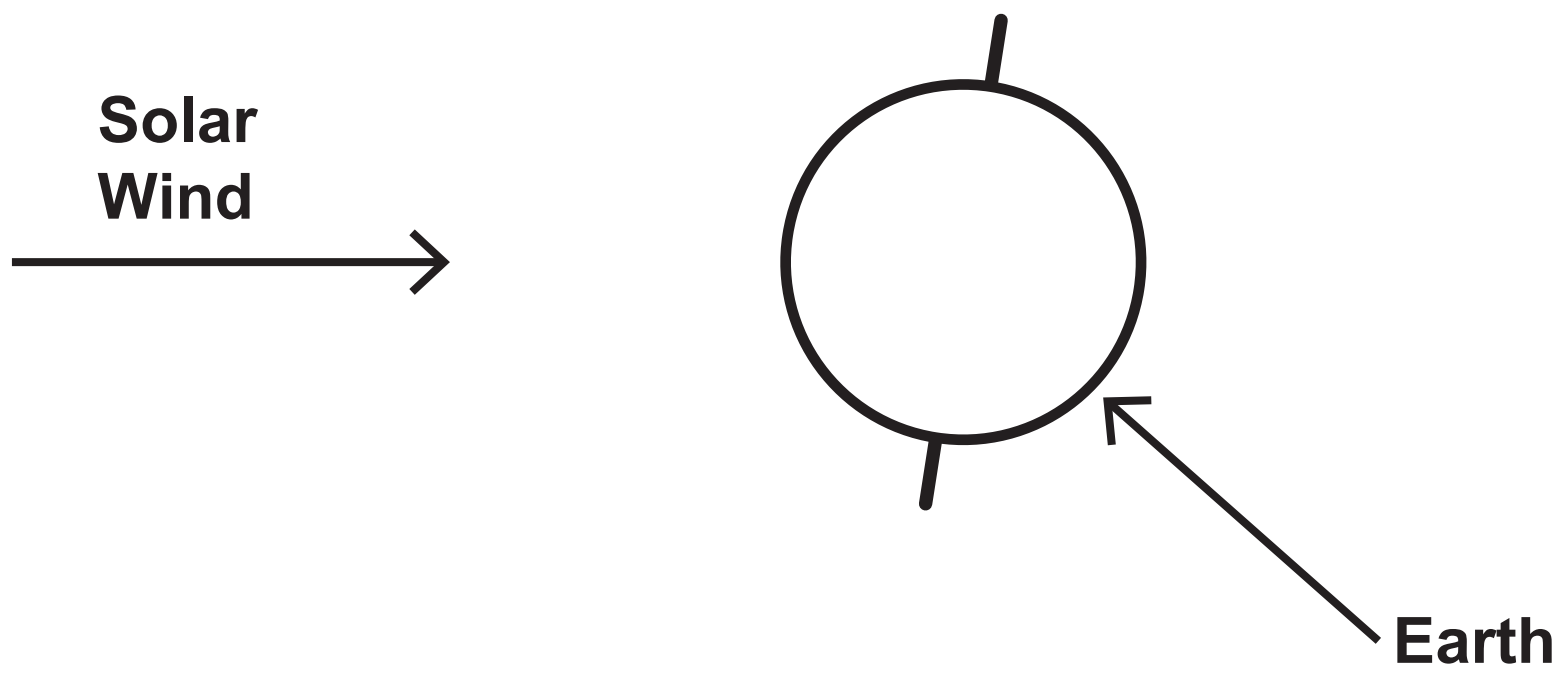
FIGURE 15 (outline)



Question 4(b)(ii) – Blank page

Question 5(a)

FIGURE 6



Question 5(b)(i) – Blank page

IMAGE CREDITS

Figure 1

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Figure 2

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Figure 7

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Figure 8

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Figure 10

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Figure 11

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Figure 15

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