Paper Reference(s) 1AS0/02
Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Astronomy
PAPER 2: Telescopic Astronomy

Wednesday 21 June 2023 – Morning

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						

Y71933RA

Pearson

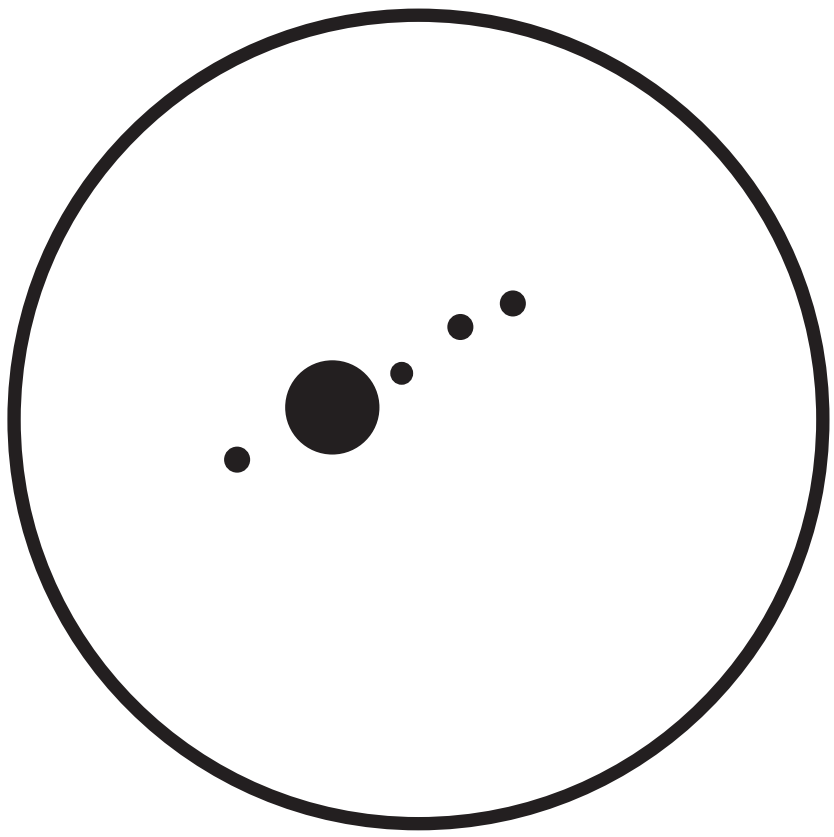
INSTRUCTIONS

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

Contents

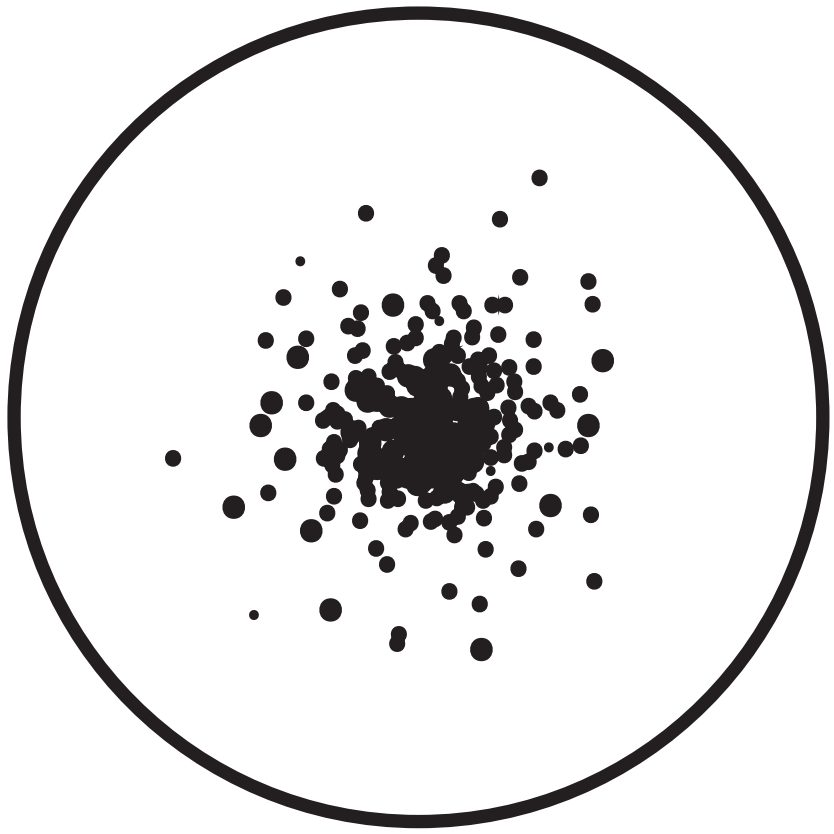
Question 1(a)(i)

FIGURE 1



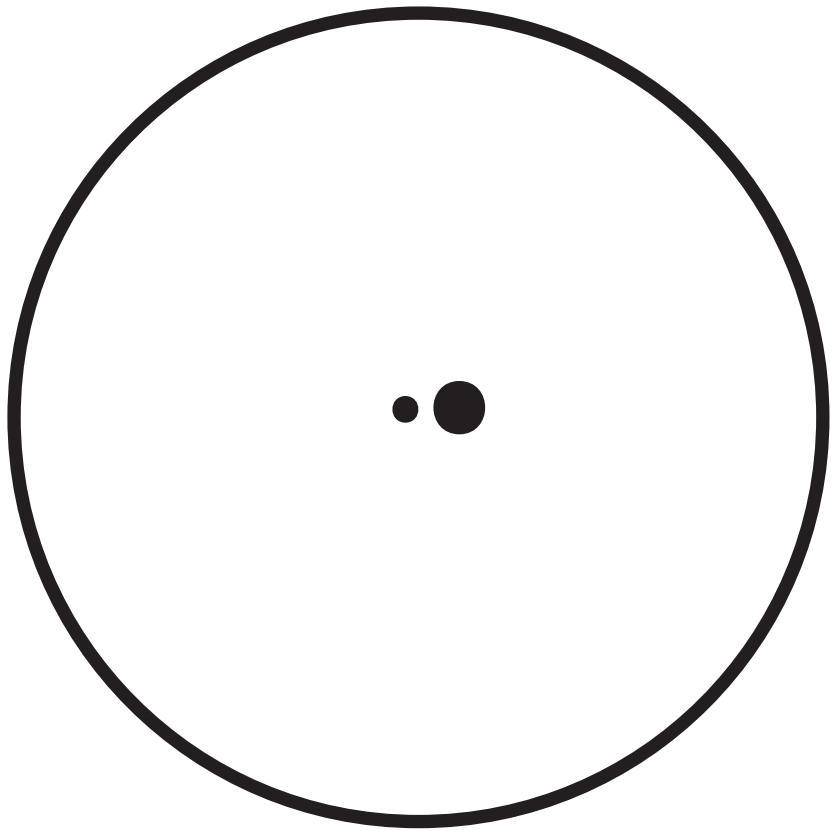
Question 1(a)(ii)

FIGURE 2



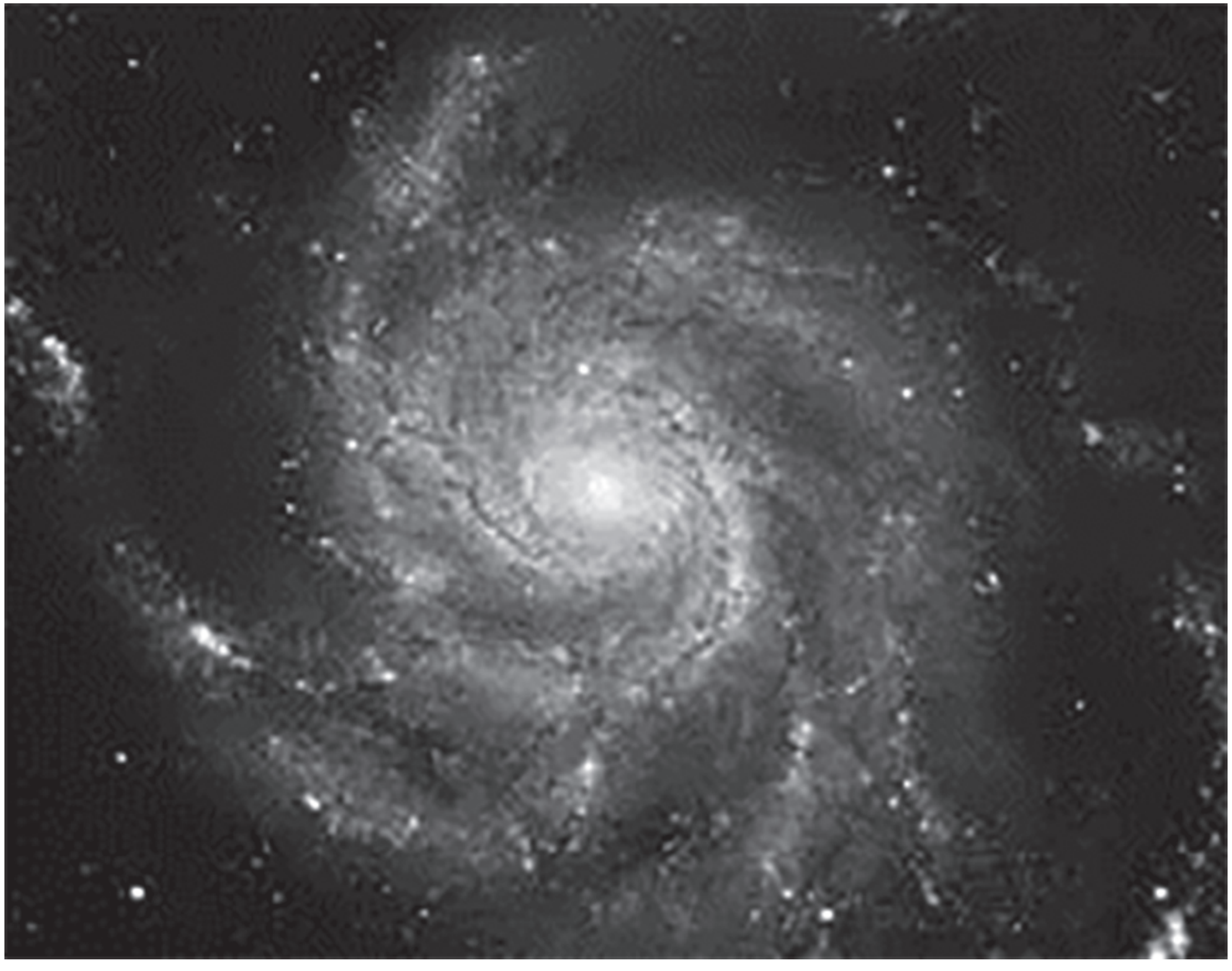
Question 1(a)(iii)

FIGURE 3



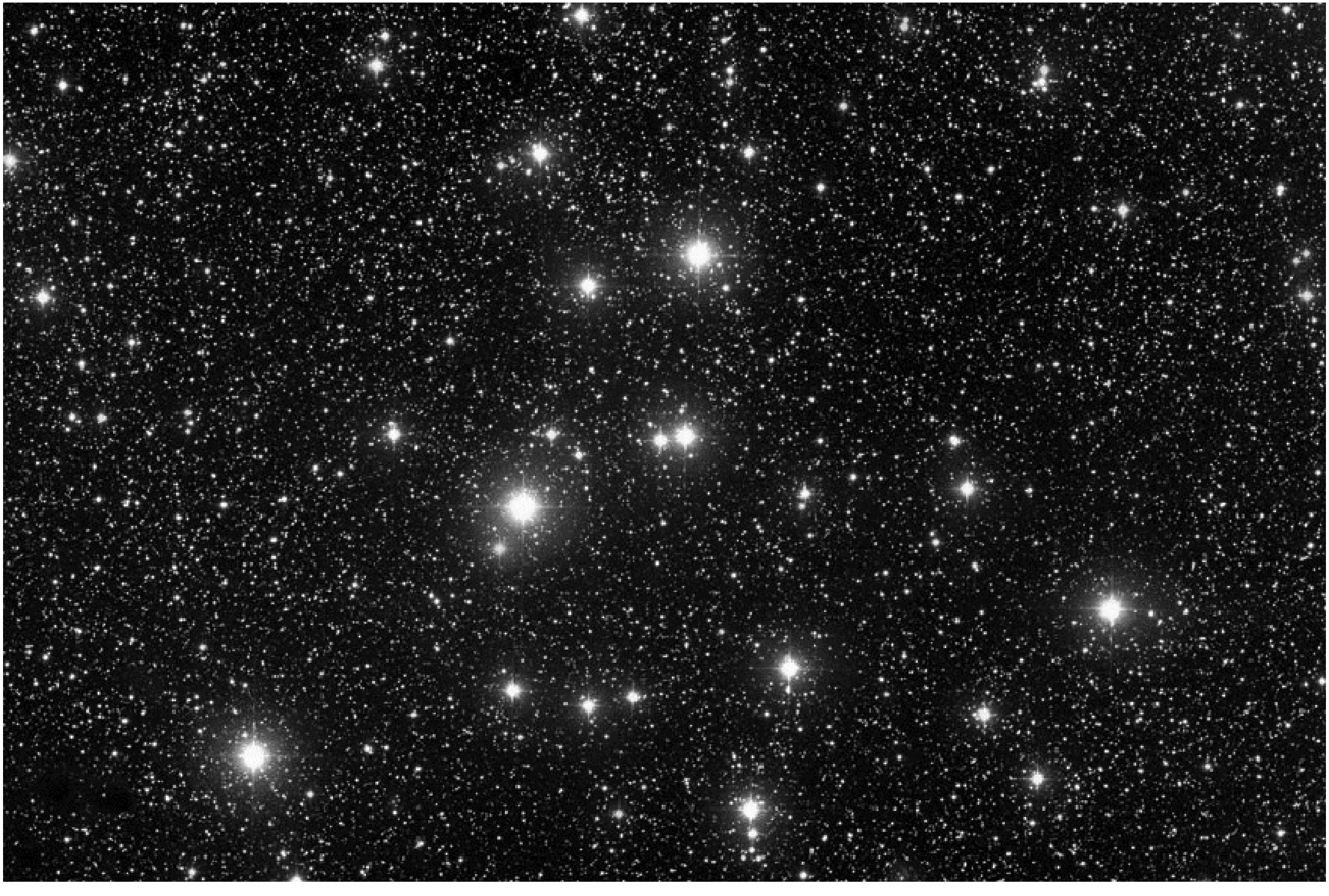
Question 1(b)(i)

FIGURE 4



Question 1(b)(ii)

FIGURE 5



Question 1(b)(iii)

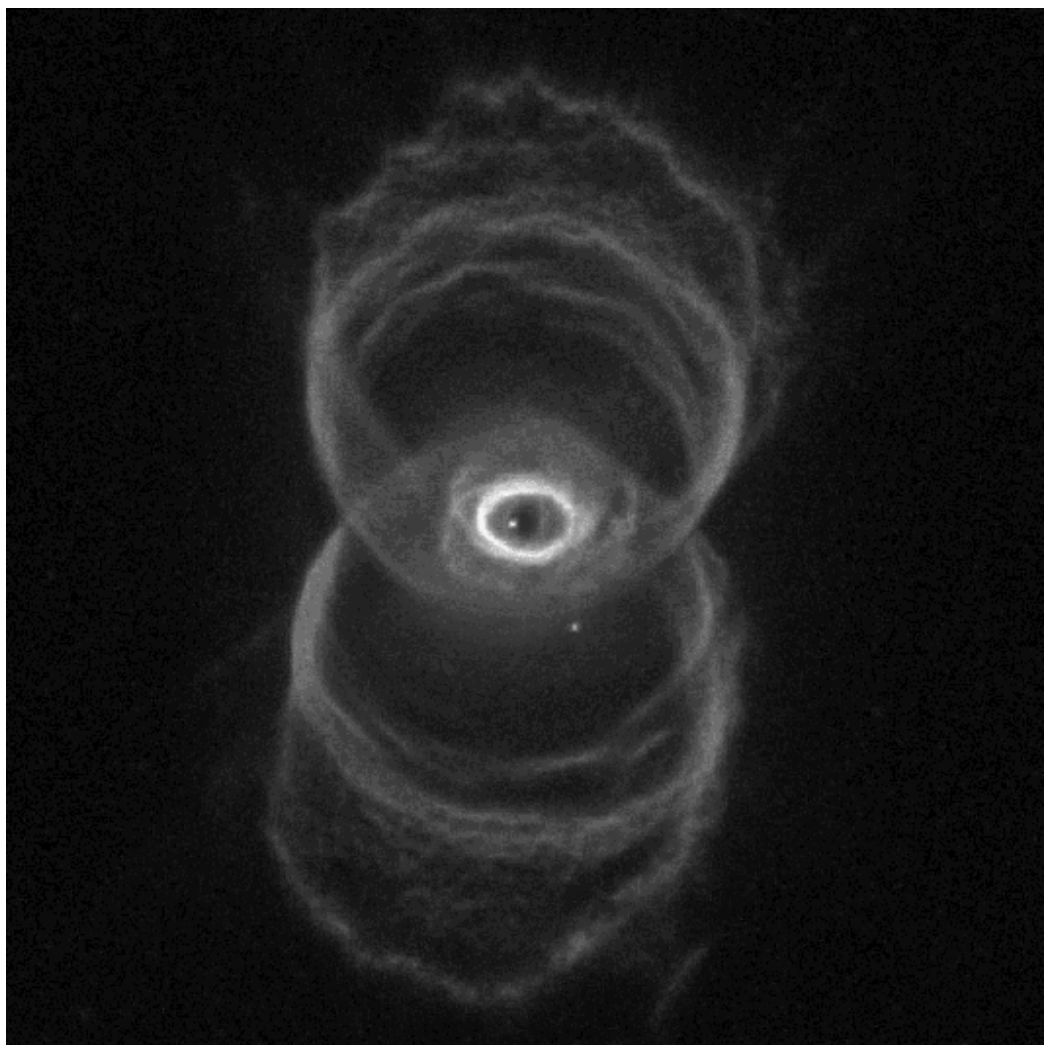
FIGURE 6

Question 2(d)

FIGURE 7

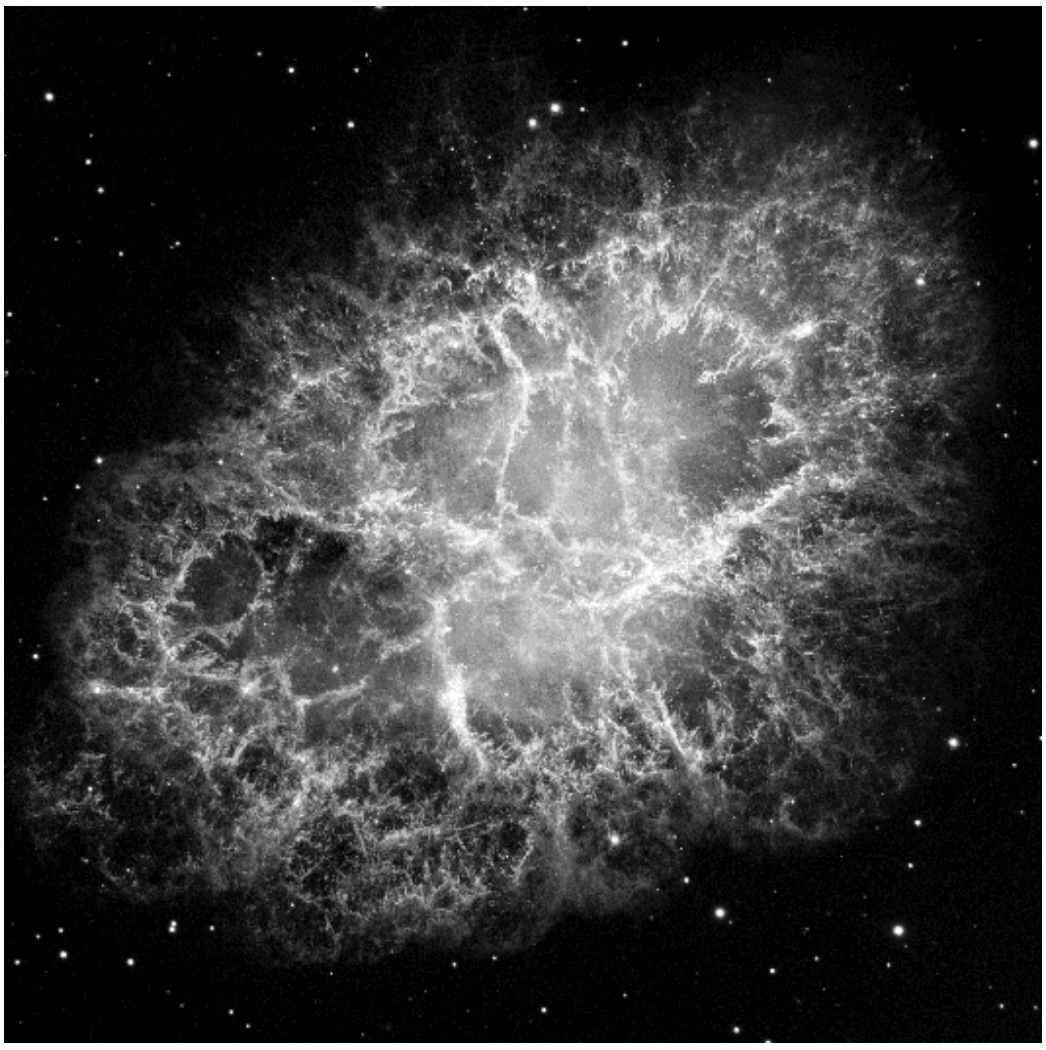
Question 4(a)

TABLE 1

Type of nebula	Image (taken with visible light)
planetary	
absorption	

(continued on the next page)

4(a) continued.

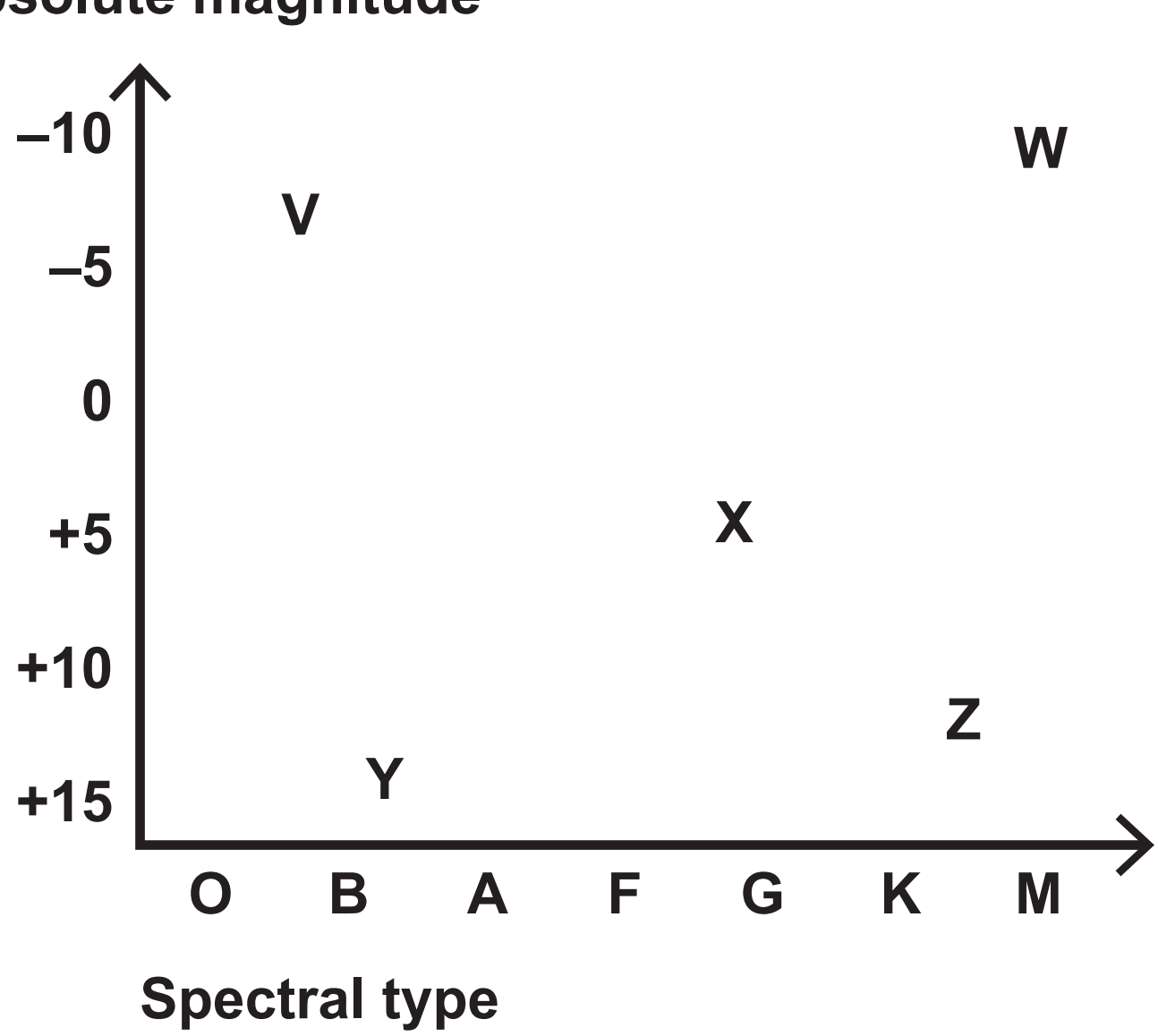
Type of nebula	Image (taken with visible light)
supernova remnant	
emission	

Question 4(a)(iv)

FIGURE 8

Question 4(b)

FIGURE 9

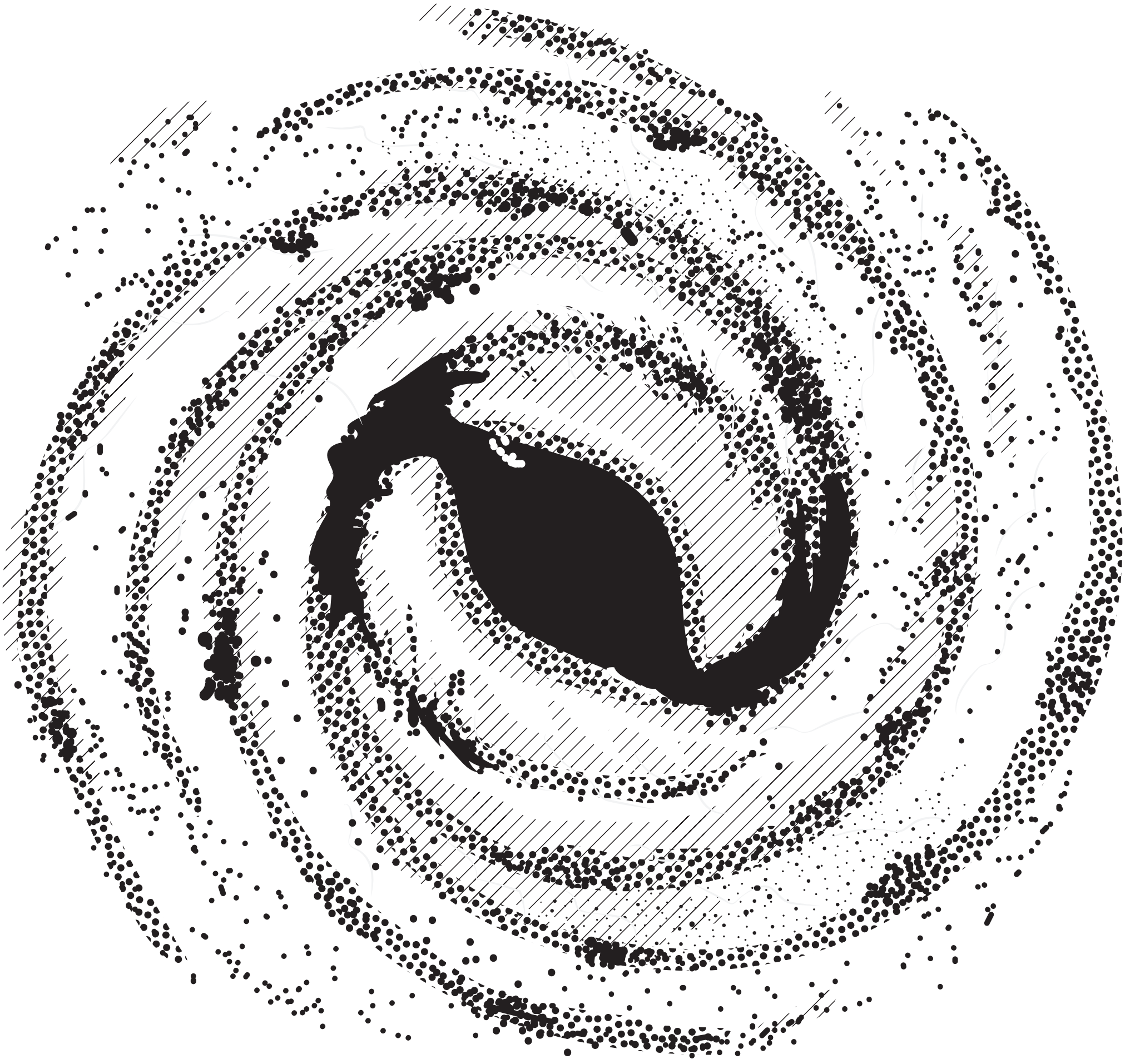


Question 5(b)(i)

FIGURE 10

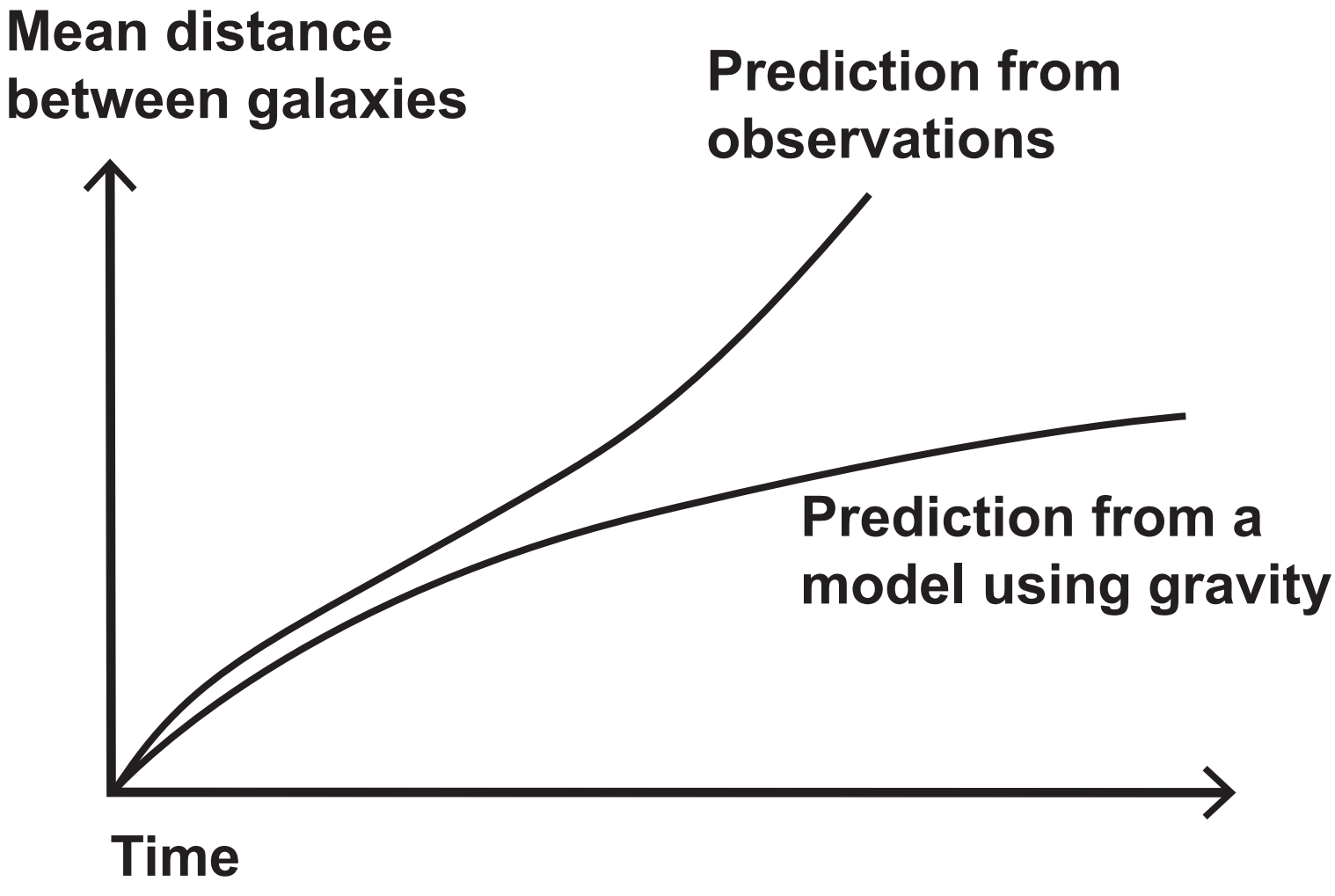
Question 5(b)(ii)

FIGURE 11



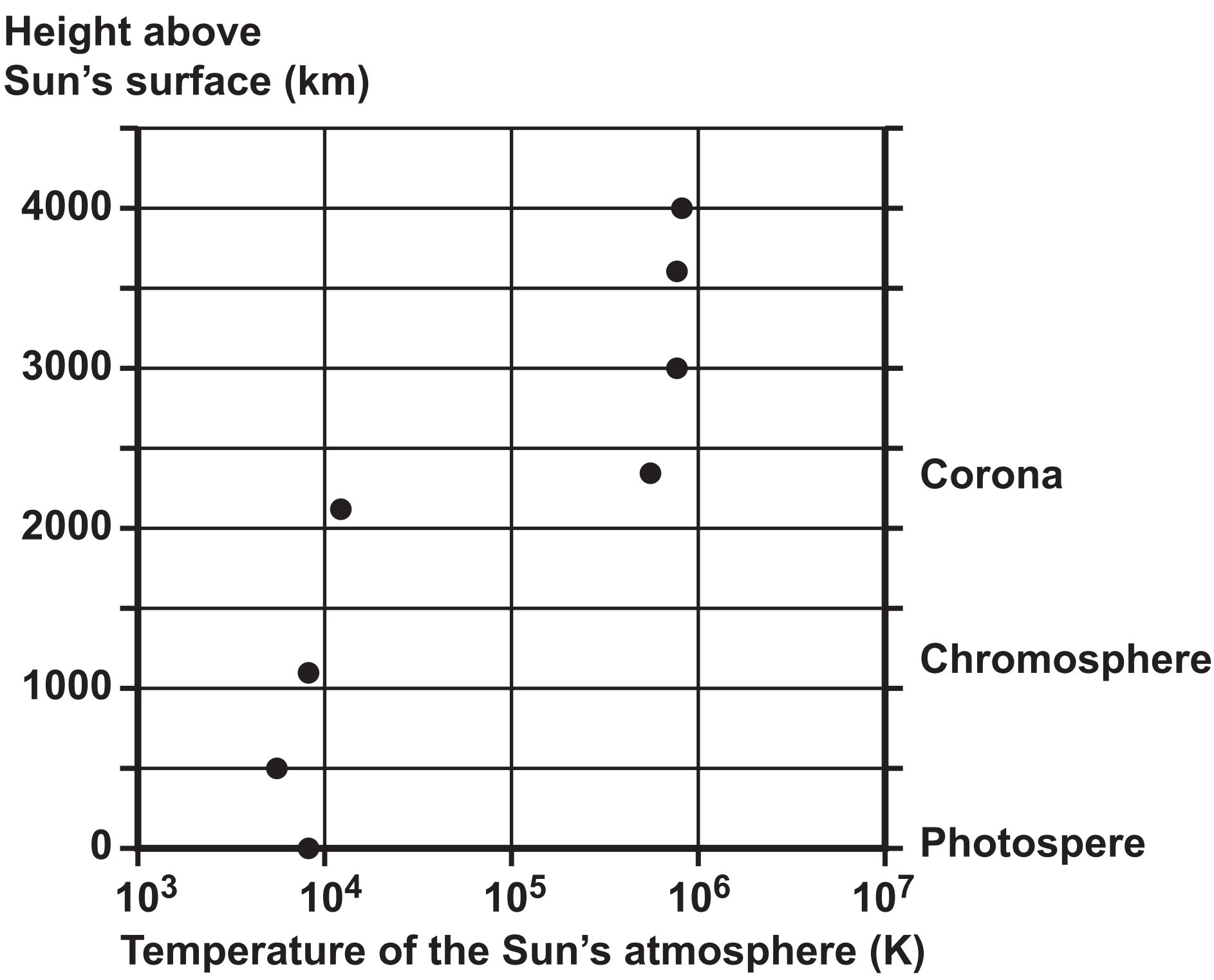
Question 5(c)

FIGURE 12



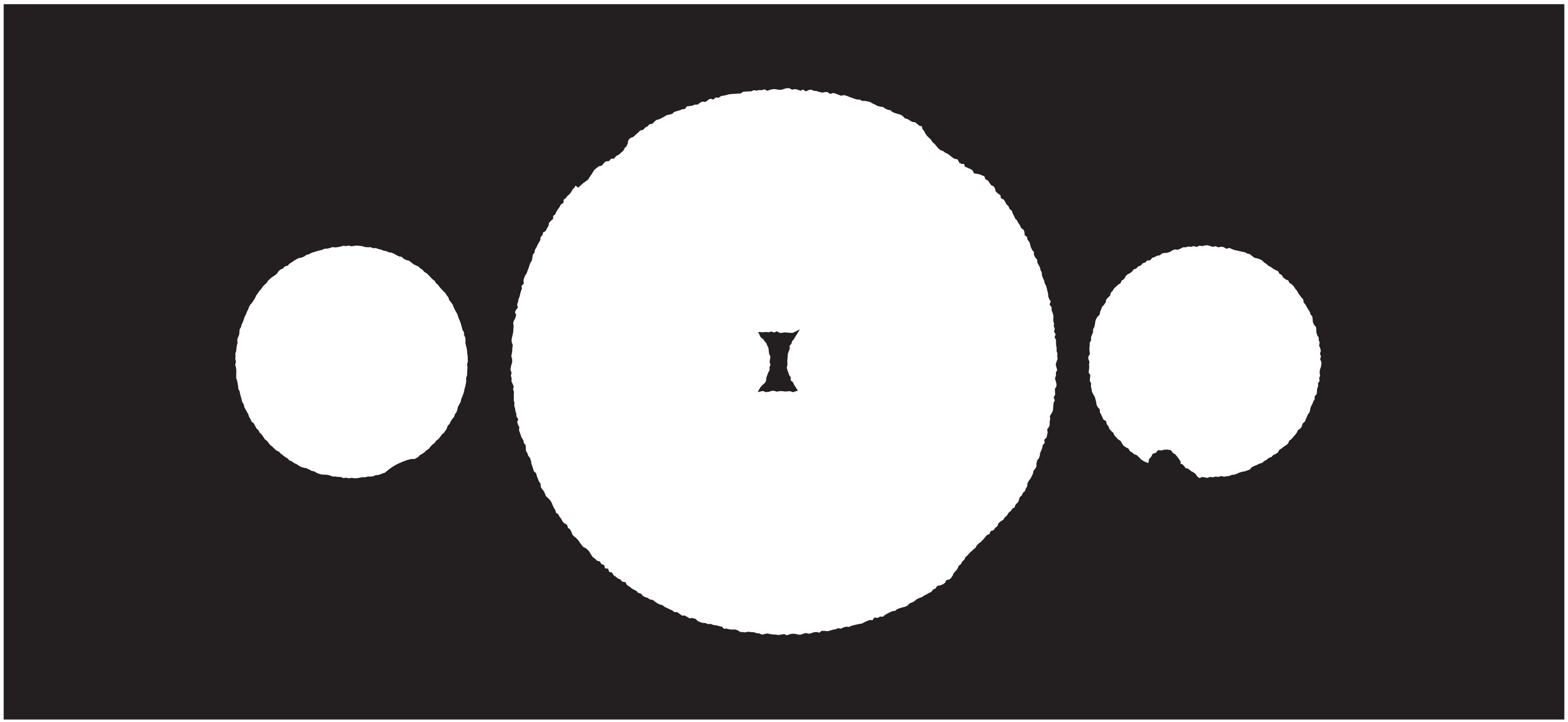
Question 6(b)

FIGURE 13



Question 7(b)

FIGURE 14



Question 7(c)

$$\text{diameter of Saturn's rings in km} = \frac{\text{wavelength of light}}{\text{diameter of telescope lens}} \times \text{minimum distance between Saturn and Earth in km}$$

Question 7(d)

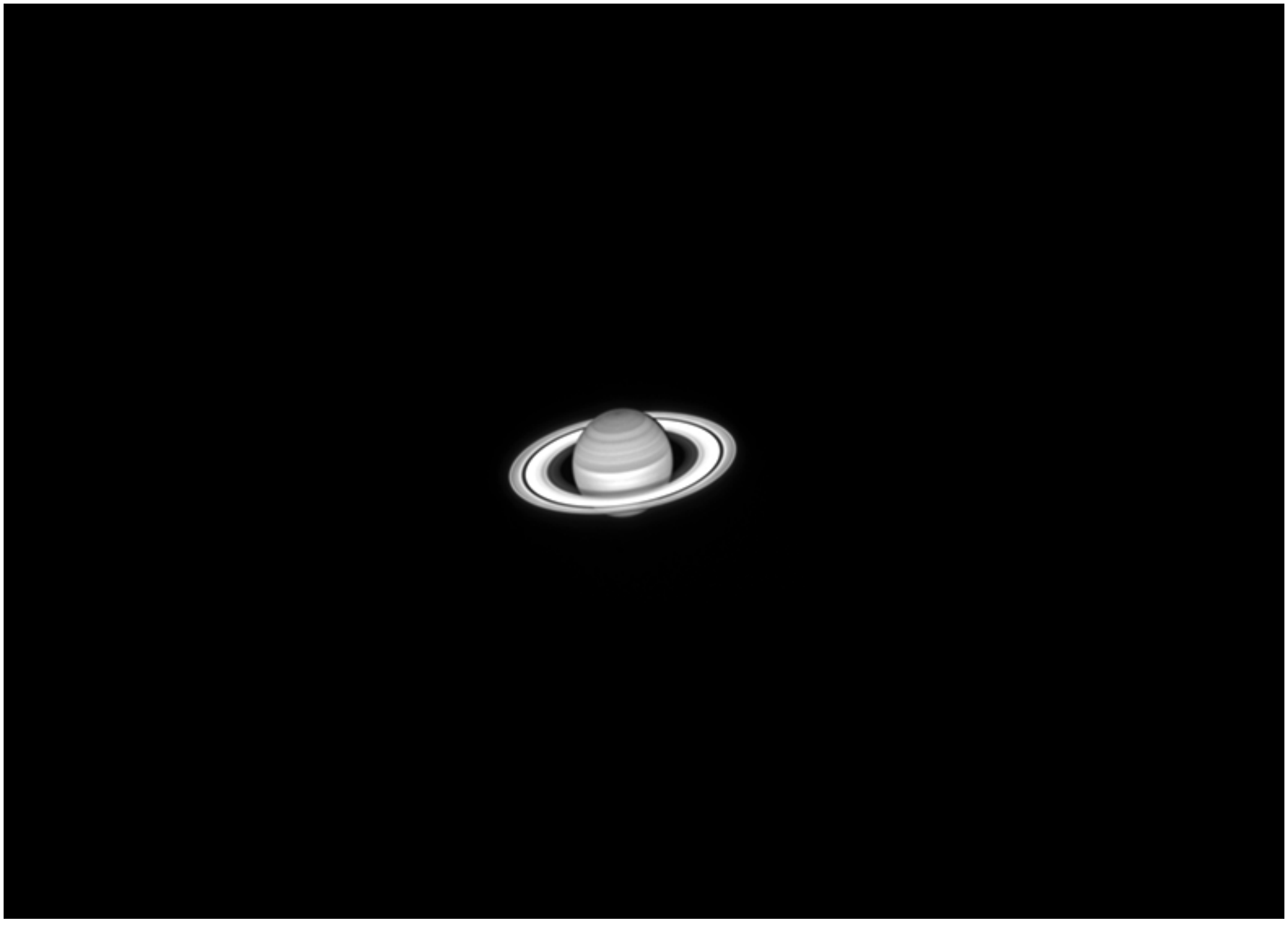
FIGURE 15

Photograph of Saturn taken by Telescope 1

(continued on the next page)

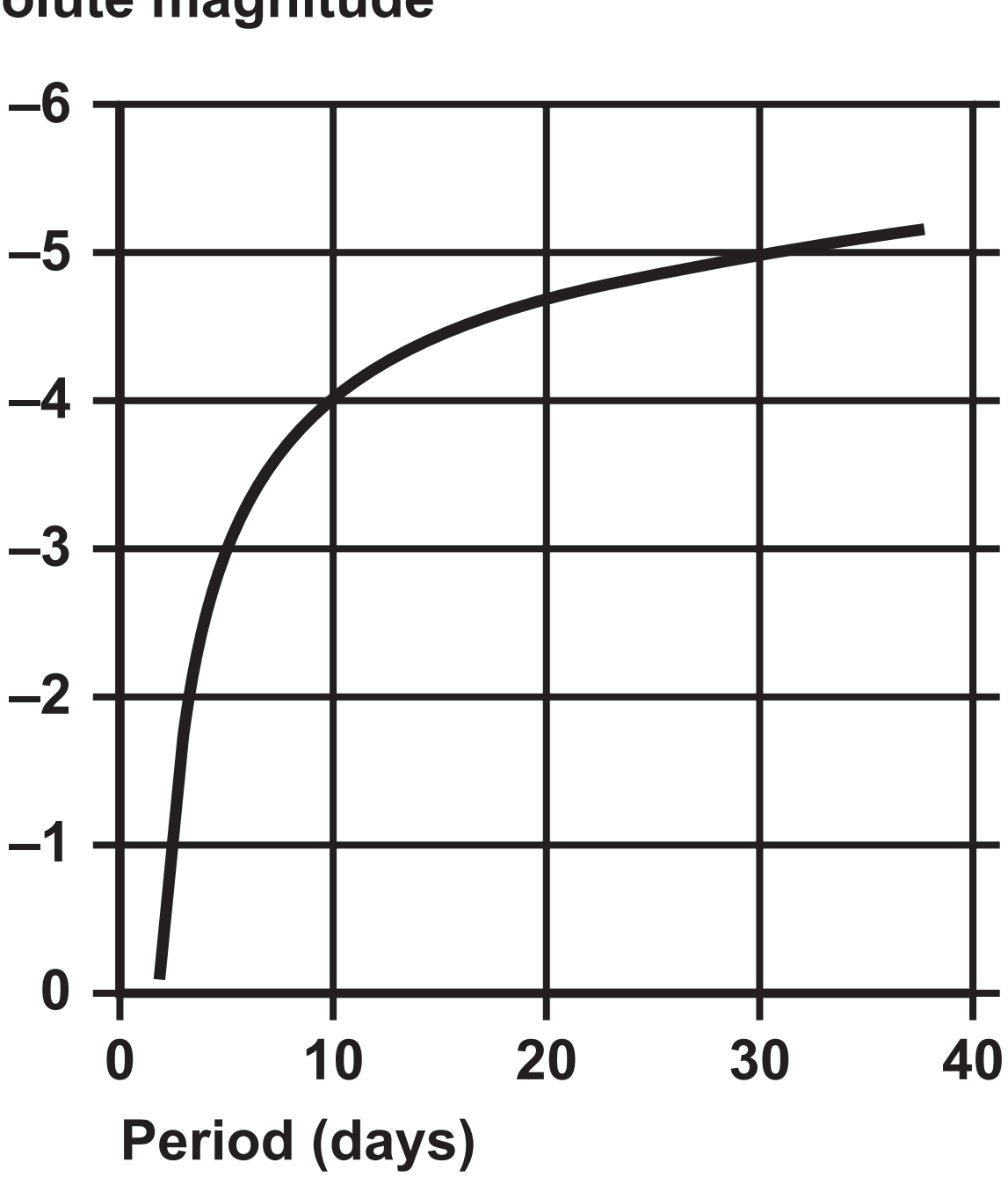
7(d) continued.

Photograph of Saturn taken by Telescope 2



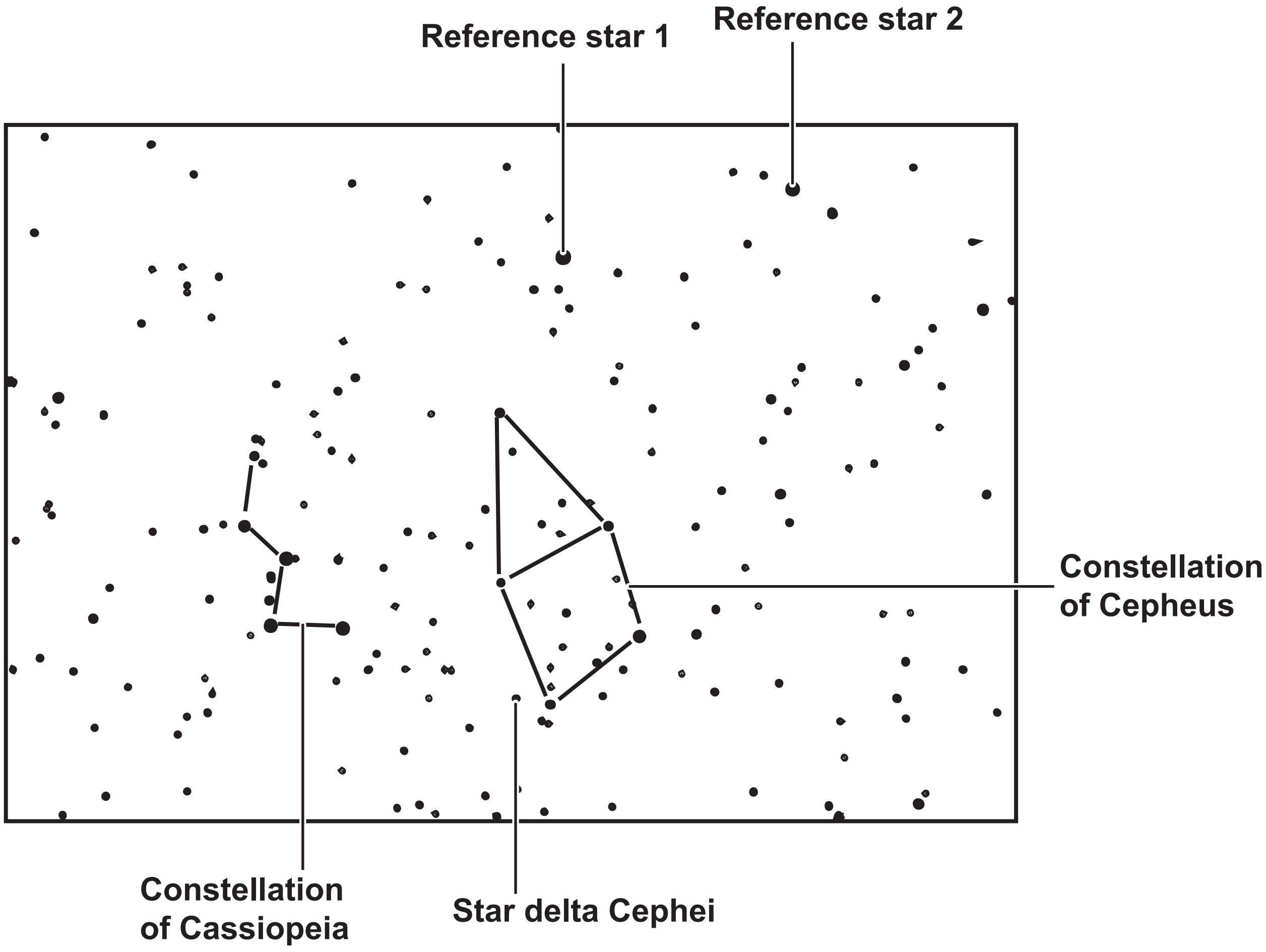
Question 8(b)

FIGURE 16



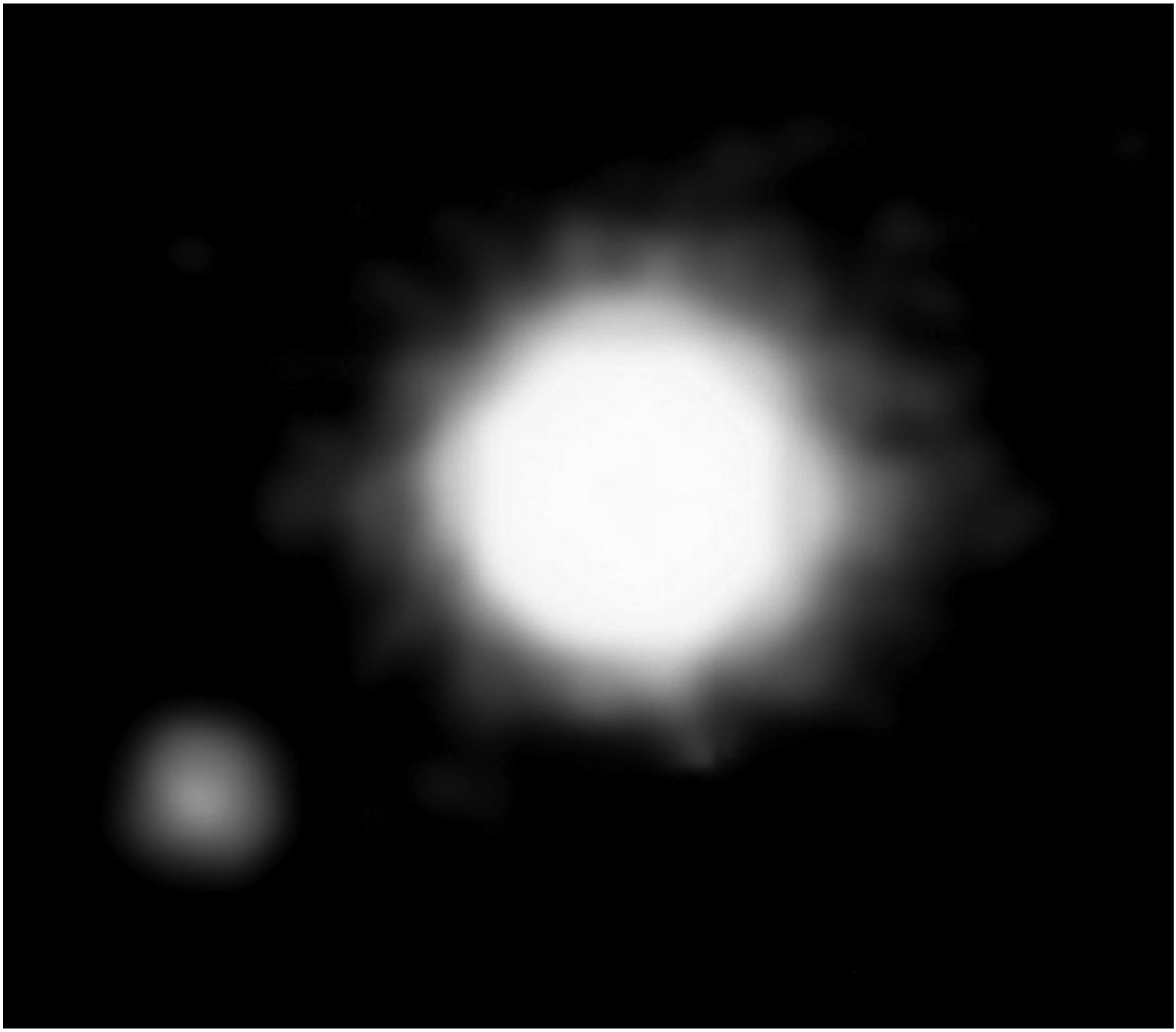
Question 8(c)

FIGURE 17



Question 9(b)

FIGURE 18



Question 9(d)

TABLE 4

Star	Apparent magnitude	Absolute magnitude	Spectral type	Orbital distance between star and planet (AU)
A	2	–5	G3	10
B	5	–8	O8	1
C	12	5	F9	1
D	8	13	B5	25

Question 10(b)

TABLE 5

Object	Redshift for close objects	Redshift for distant objects
galaxies	small	large
quasars	no quasars close to us	large

Question 10(d)

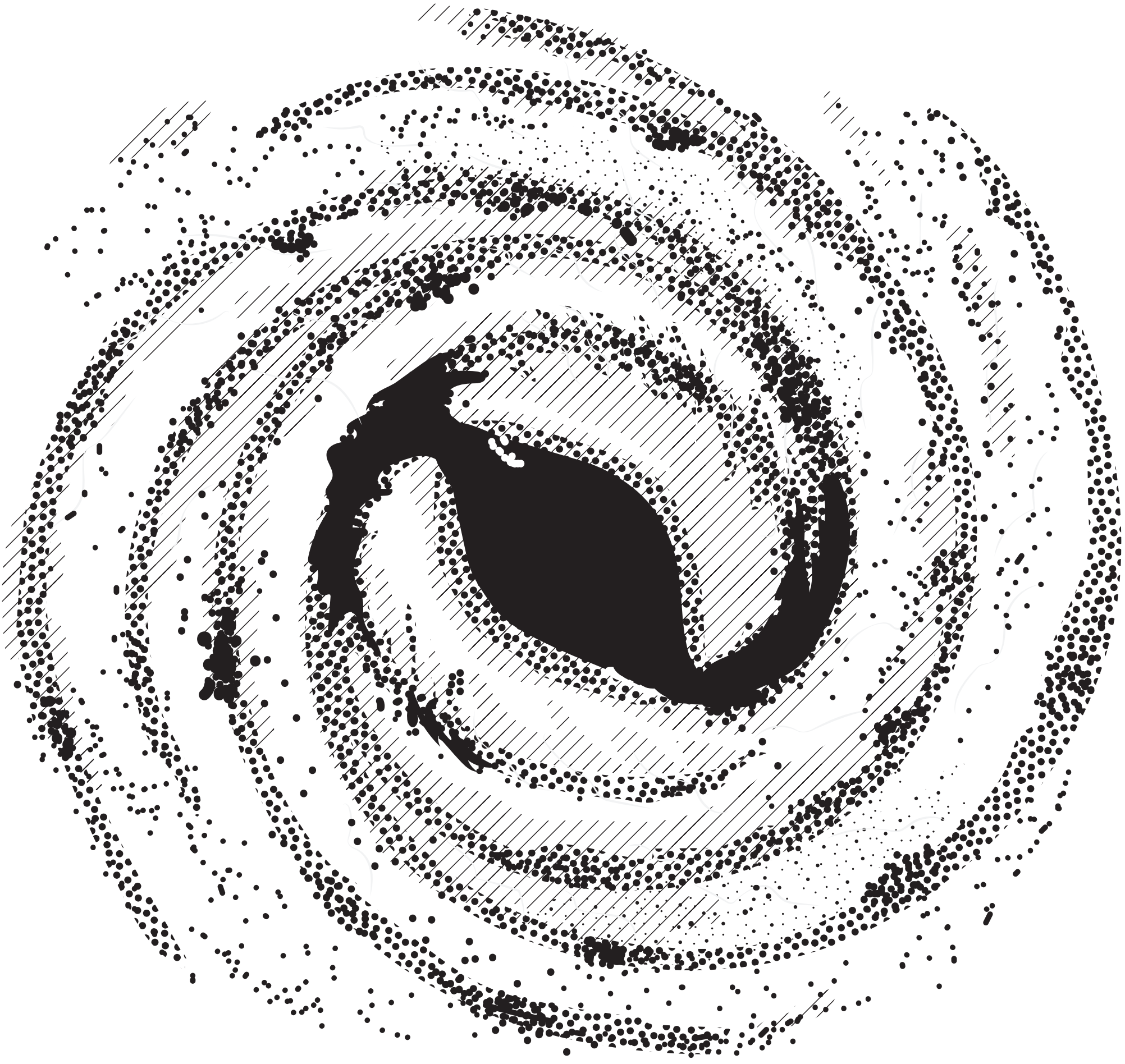
‘The first quasar was discovered using a radio telescope. However, astronomers could not pin-point which star-like object was emitting this radio signal. In 1962, the Moon passed through this region of the sky, causing an occultation and blocking the radio source. This fortunate event allowed astronomers to identify the quasar, using optical telescopes.’

Question 5(b)(i)

FIGURE 10

Question 5(b)(ii)

FIGURE 11



Question 6(b)

FIGURE 13