

**Name of the Student:** \_\_\_\_\_

**Max. Marks : 18 Marks**

**Time : 18 Minutes**

**Q1.**

Astronomers claim that there are about 300 billion stars in the Milky Way.

- (a) Describe how stars are formed.

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**(3)**

- (b) Use the correct answer from the box to complete the sentence.

<b>decay</b>	<b>fission</b>	<b>fusion</b>
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Energy is released in stars by the process of nuclear \_\_\_\_\_ .

**(1)**

- (c) State why a star is stable during the 'main sequence' period of its life cycle.

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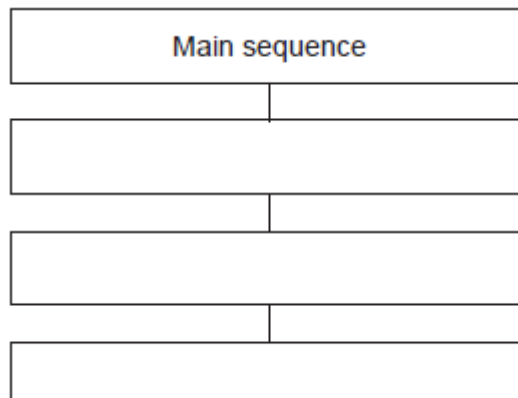
**(1)**

- (d) The life cycle of a star after the 'main sequence' period depends on the size of the star.

A particular star is the same size as the Sun.

What are the stages, after the main sequence, in the life cycle of this star?

State them in order by writing in the boxes.



(3)  
(Total 8 marks)

**Q2.**

- (a) **Figure 1** shows the life cycle of a very large star.

Use the correct answers from the box to complete the sentences in **Figure 1**.

main sequence star	neutron star	supernova	white dwarf
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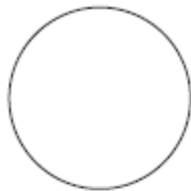
**Figure 1**



Gas and dust join together to become a protostar.

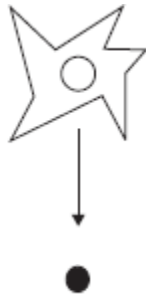


The star is stable as a \_\_\_\_\_.



The star expands to become a red super giant.





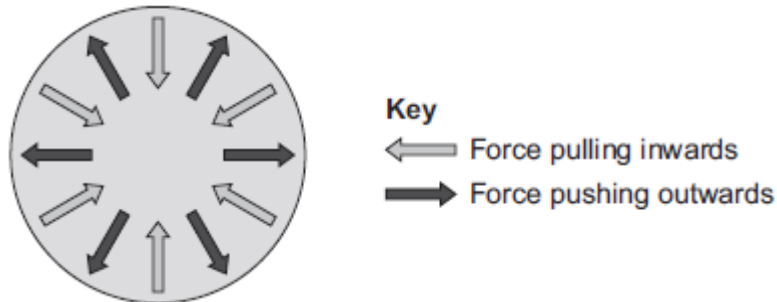
The outer layers of the star explode as a \_\_\_\_\_ .

The core of the star shrinks and a black hole is formed.

(2)

- (b) **Figure 2** shows the forces acting on a star when the star is stable.

**Figure 2**



Draw a ring around the correct answer to complete the sentence.

When a star is stable, the forces pushing outwards are  
the forces pulling inwards.

bigger than  
smaller than  
balanced by

(1)

(Total 3 marks)

### Q3.

- (a) Scientists have observed that the wavelengths of the light from galaxies moving away from the Earth are longer than expected.

- (i) What name is given to this observation?

\_\_\_\_\_

(1)

- (ii) Draw a ring around the correct answer to complete each sentence.

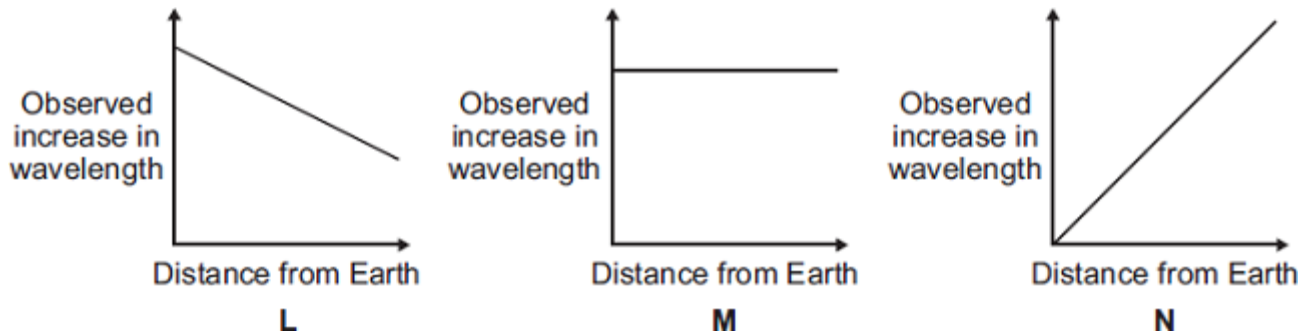
This observation gives scientists evidence that

light can be stretched.  
galaxies are changing colour.  
the Universe is expanding.

(1)

- (iii) There is a pattern linking the size of the observed increase in the wavelengths of light

from a galaxy and the distance the galaxy is from the Earth.



Which **one** of the graphs, **L**, **M** or **N**, shows the correct pattern?

Write the correct answer in the box.

(1)

(b) Observations help scientists answer questions about the Universe.

Scientists **cannot** answer every question.

Which **one** of the following questions **cannot** be answered by scientists?

Tick (✓) **one** box.

How old is the Universe?

☐

Why was the Universe created?

☐

How fast does light travel through the Universe?

☐

(1)

(Total 4 marks)

#### Q4.

The diagram shows part of the lifecycle of a very large star.

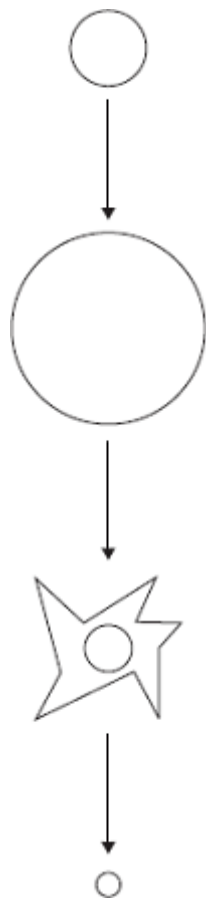
Use words or phrases from the box to complete the sentences contained in the diagram.

black hole

red supergiant

supernova

white dwarf



The star is stable.

The star expands forming  
a \_\_\_\_\_ .

The star collapses, the outer layers explode  
as a \_\_\_\_\_ .

The centre collapses further and further until  
it finally forms a \_\_\_\_\_ .

**(Total 3 marks)**