Q1. Complete the following sentences by choosing the correct words from the box. Each word may be used once or not at all.

dwarf	**giant**	**neutron**	**proton**	**supernova**

If a red .....star is large enough, it may eventually blow up in an explosion called a ....., leaving behind a very dense ..... star.

(Total 3 marks)

Q2. This passage is from a science magazine.

A star forms when enough dust and gas are pulled together. Masses smaller than a star may also be formed when dust and gas are pulled together.

(a) What is the force which pulls the dust and gas together?

.....

(1)

(b) Complete the sentences.

(i) The smaller masses may be attracted by the star and become

..... .

(1)

(ii) Our nearest star, the Sun, is stable because the gravitational forces and the radiation pressure are ..... .

(1)

(iii) The Sun is one of billions of stars in the galaxy called the

..... .

(1)

(Total 4 marks)

Q3. Starting with the smallest, list the following in order of increasing size.

Universe **Earth** **Milky Way** **Sun**

Smallest .....

.....

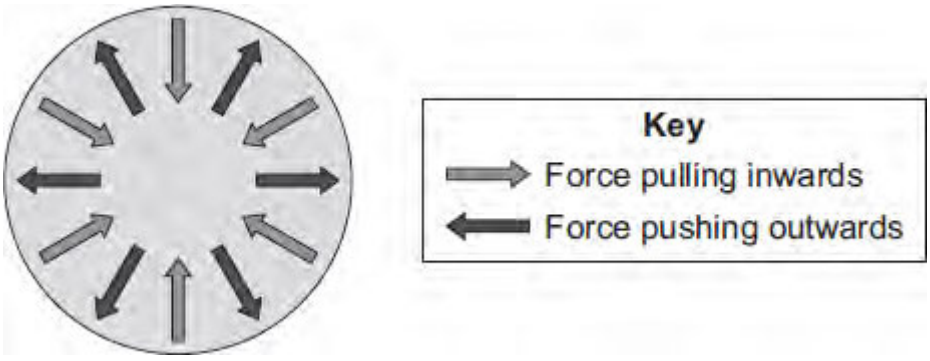
.....

Largest .....

(2)

(b) Stars pass through different stages during their life cycle.

The diagram shows the forces acting on the Sun during the stable stage of its life cycle.



Complete the following sentence by drawing a ring around the correct line in the box.

During the stable stage of the Sun's life cycle, the forces pulling inwards

are

smaller than
equal to
bigger than

the forces pushing outwards.

(1)

(c) During its life cycle, the Sun will never go through a *supernova* stage but the star

Mira will.

(i) What is a *supernova?*

.....

(1)

(ii) Explain why the Sun will not go through the *supernova* stage but the star Mira will.

.....

.....

.....

.....

(2)
(Total 6 marks)

Q4. (a) Choose the best words from the box to complete the following sentences.

billions	**fission**	**friction**	**fusion**	**gases**
gravity	**liquids**	**millions**	**thousands**	

(i) Stars form when enough dust and ..... from

space are pulled together by ..... .

(2)

(ii) Stars are able to give out energy for millions of years by the process of

.....

(1)

(iii) The Sun is one of many ..... of stars in our galaxy.

(1)

(b) What is the name of our galaxy?

.....

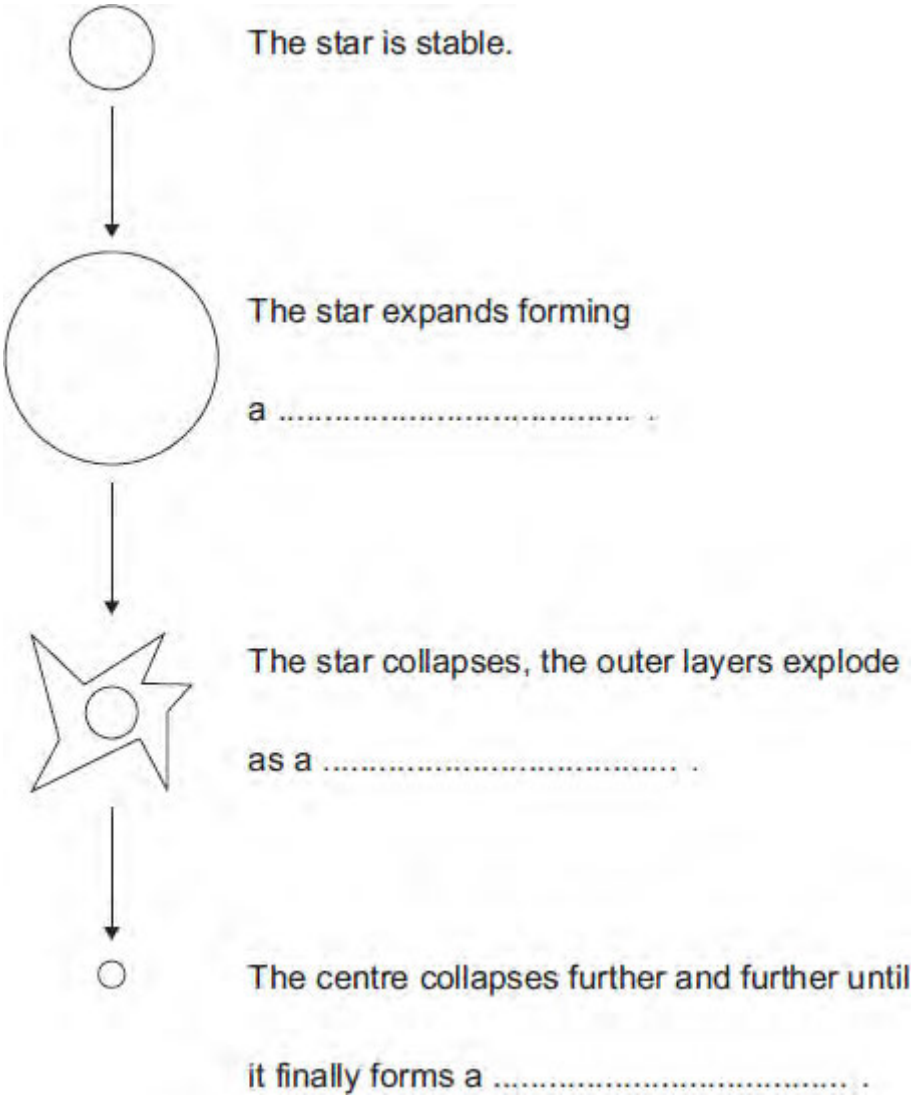
(1)

(Total 5 marks)

Q5. The diagram shows part of the lifecycle of a very large star.

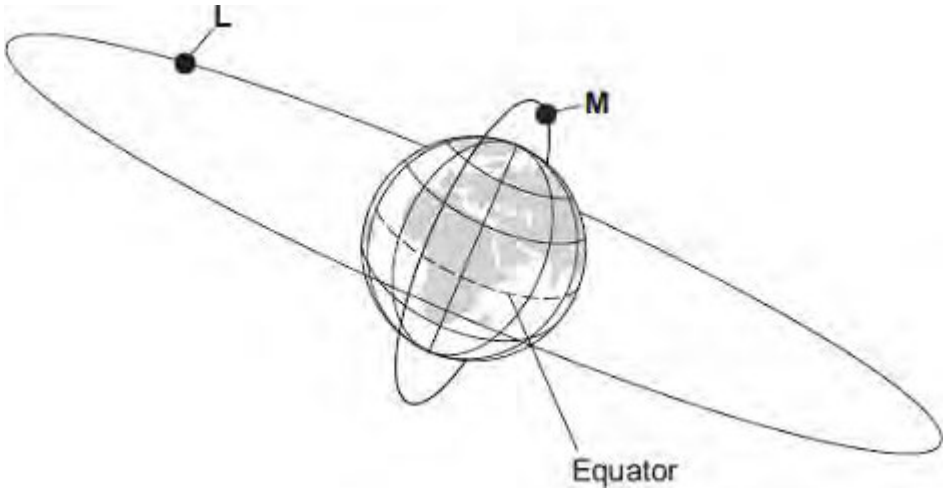
Use words or phrases from the box to complete the sentences contained in the diagram.

black hole	**red supergiant**	**supernova**	**white dwarf**



(Total 3 marks)

Q6. The diagram, which is not to scale, shows two satellites, **L** and **M**, orbiting the Earth.



(a) Complete the following table.

Each letter, **L** or **M**, may be used once, more than once, or not at all.

Statement about the satellite	**Letter for the satellite**
It is used as a monitoring satellite.	
It is a geostationary satellite.	
It takes 24 hours to complete its orbit.	

(2)

(b) Complete the following sentence.

To stay in its present orbit around the Earth, each satellite must move at

a particular ..... .

(1)

(c) Thousands of satellites are now in orbit around the Earth. A student used the internet to collect information about some of them.

Name of satellite	**Average distance from the centre of the Earth in**	**Speed in kilometres per second**	**Time taken to orbit the Earth**

	kilometres		
The Moon	391 400	1.01	28 days
GEO	42 200	3.07	1 day
Navstar	26 600	3.87	12 hours
Lageos	12 300	5.70	3.8 hours
HST	7 000	7.56	97 mins
ISS	6 700	7.68	92 mins

(i) The Moon takes a longer time than any of the other satellites to orbit the Earth.

Give **one** other way in which the Moon is different from the other satellites in the table.

.....

.....

(1)

(ii) What conclusion on the relationship between the *average distance* and *speed* can the student come to on the basis of this data?

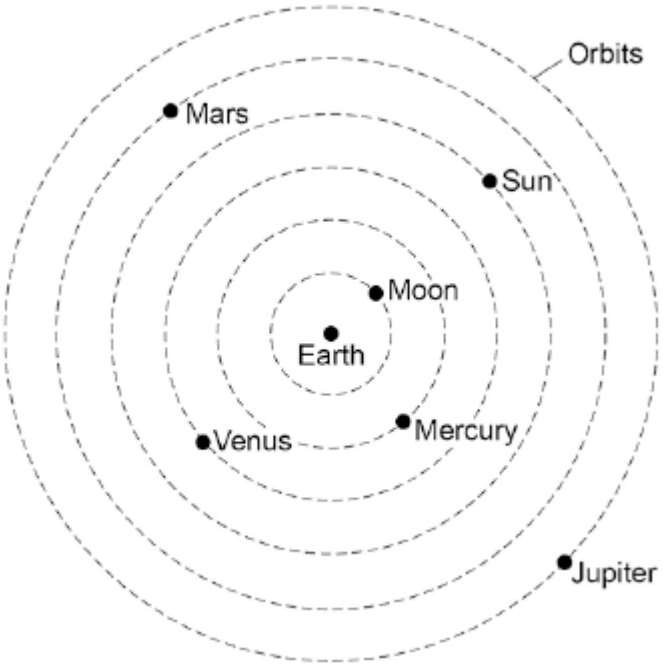
.....

.....

(1)

(Total 5 marks)

Q7. The figure below shows what scientists over 1000 years ago thought the solar system was like.



(a) Give **one** way that the historical model of the solar system shown in the figure above is different from what we now know about the solar system.

.....

.....

(1)

(b) Give **one** way that the solar system shown in the figure above is the same as what we now know about the solar system.

.....

.....

(1)

(c) The first artificial satellite to orbit the Earth was launched into space in 1957.

Describe the orbit of an artificial satellite.

.....

.....

(1)

(d) What provides the force needed to keep a satellite in its orbit?

Tick **one** box.

friction ☐

gravity ☐

tension ☐

(1)

(e) All stars go through a lifecycle.

The star Mira will go through a supernova stage in its lifecycle but the Sun will not.

How is the star Mira different to the Sun?

.....

.....

(1)

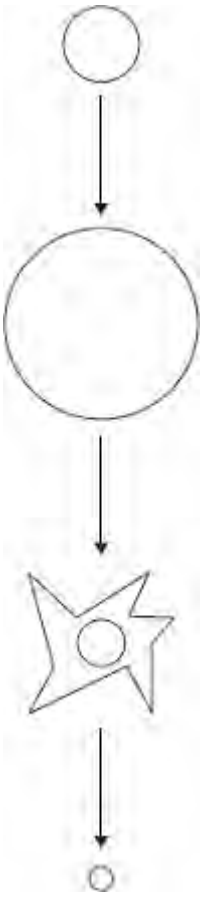
(Total 5 marks)

Q8. 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**

(3)



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 ..... .

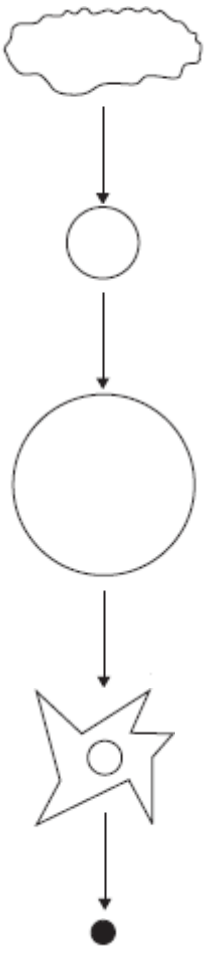
(Total 3 marks)

Q9.(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**

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.

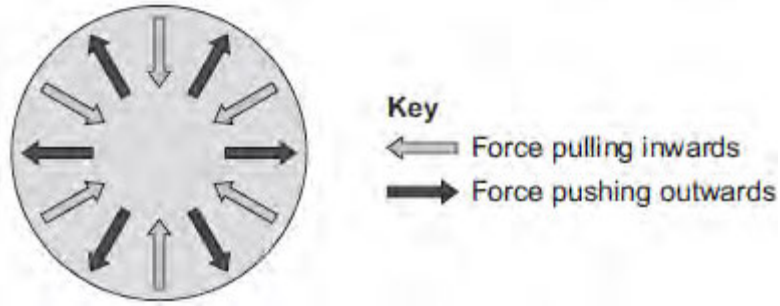
The outer layers of the star explode as a ..... .

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

bigger than
smaller than
balanced by

the forces pulling inwards.

(1)

(Total 3 marks)

Q10. Astronomers claim that there are about 300 billion stars in the Milky Way.

(a) Describe how stars are formed.

.....

.....

.....

.....

.....

.....

(3)

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

decay	**fission**	**fusion**

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.

.....

.....

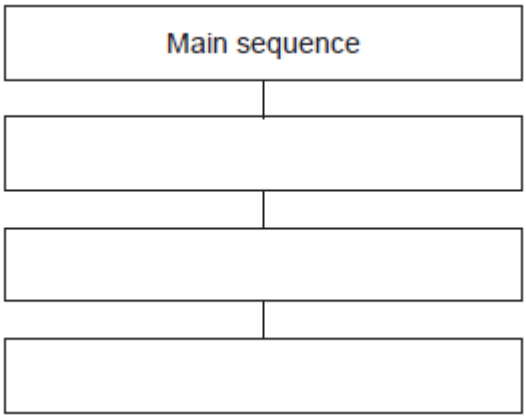
(1)

(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)