

Name:

Date:

P8 - Test 2
SPACE PHYSICS
Beginner

GCSE

PHYSICS

AQA - Triple Science

Mark

Grade

Materials

For this paper you must have:

- Ruler
- Pencil and Rubber
- Scientific calculator, which you are expected to use when appropriate

Instructions

- Answer all questions
- Answer questions in the space provided
- All working must be shown

Information

- The marks for the questions are shown in brackets

1.

(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)

2.

(a) Starting with the smallest, list the following in order of increasing size.

Universe	Earth	Milky Way	Sun
-----------------	--------------	------------------	------------

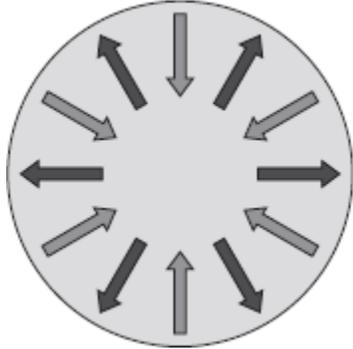
Smallest _____

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.



Key	
	Force pulling inwards
	Force pushing outwards

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)

3.

(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)

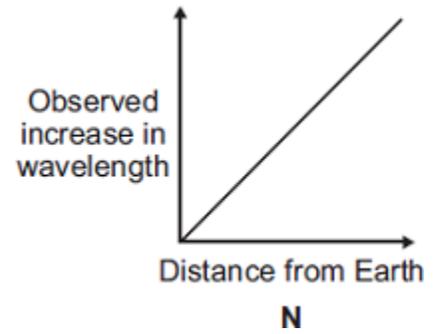
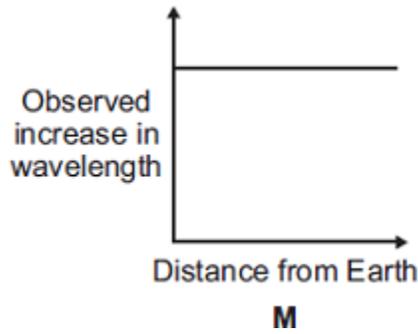
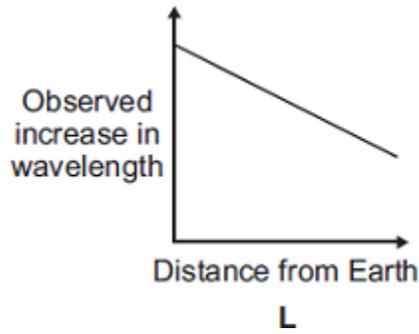
(ii) Draw a ring around the correct answer to complete each sentence.

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)

4.

(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
--------------------	--------------	-----------	-------------

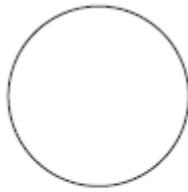
Figure 1



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 _____.

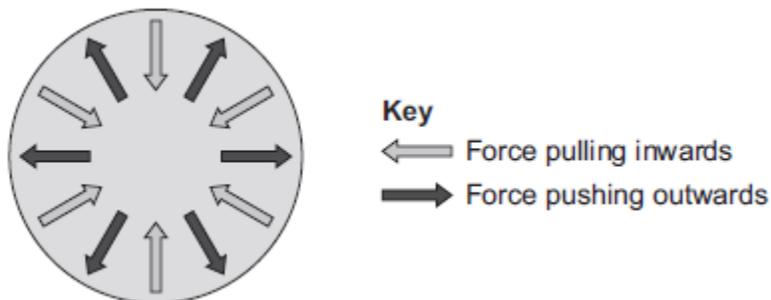


The core of the star shrinks and a black hole is formed.

(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
the forces pulling inwards.

bigger than
smaller than
balanced by

(1)

(Total 3 marks)

5.

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)

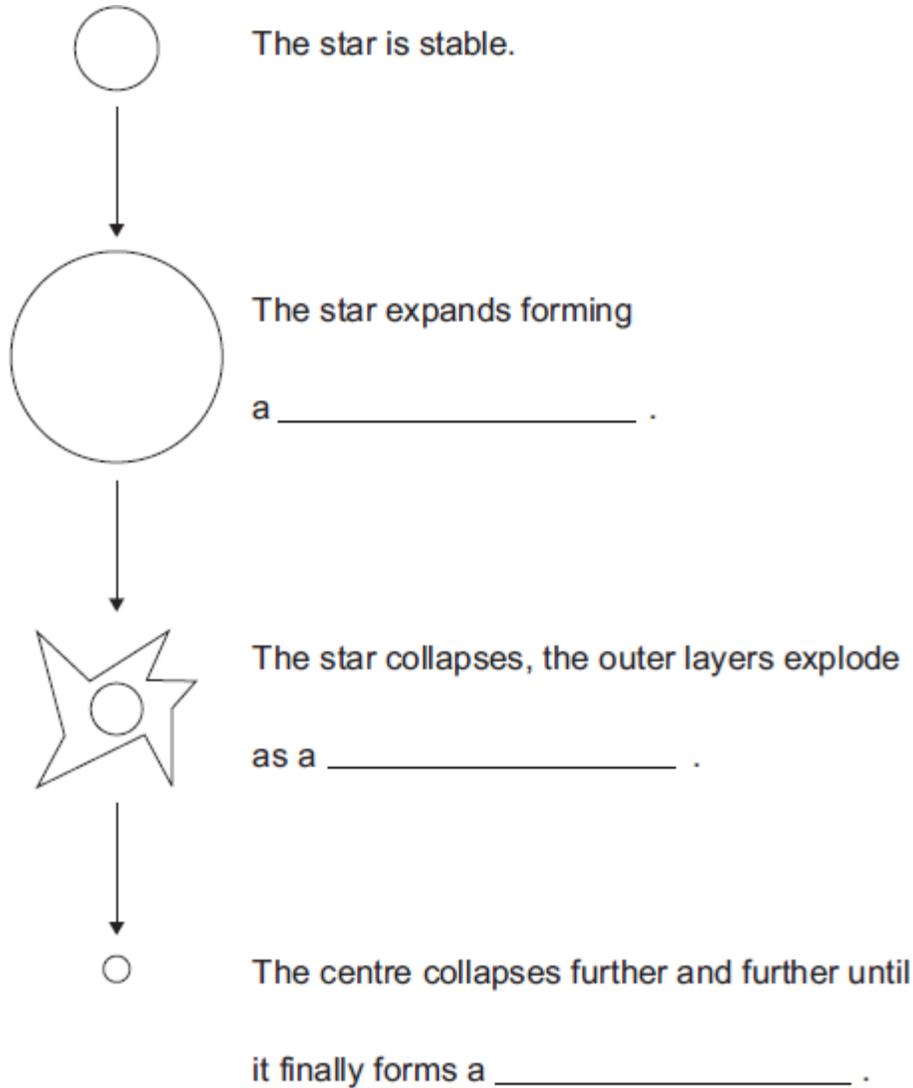
(Total 4 marks)

6.

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)

7.

- (a) Scientists use telescopes to observe stars and galaxies. Some telescopes are on Earth, but some are on satellites in space.

Why do telescopes in space give better images than telescopes on the Earth?

(1)

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

(i) What name is given to this observation?

Put a tick (✓) in the box next to your answer.

blue-shift

green-shift

red-shift

(1)

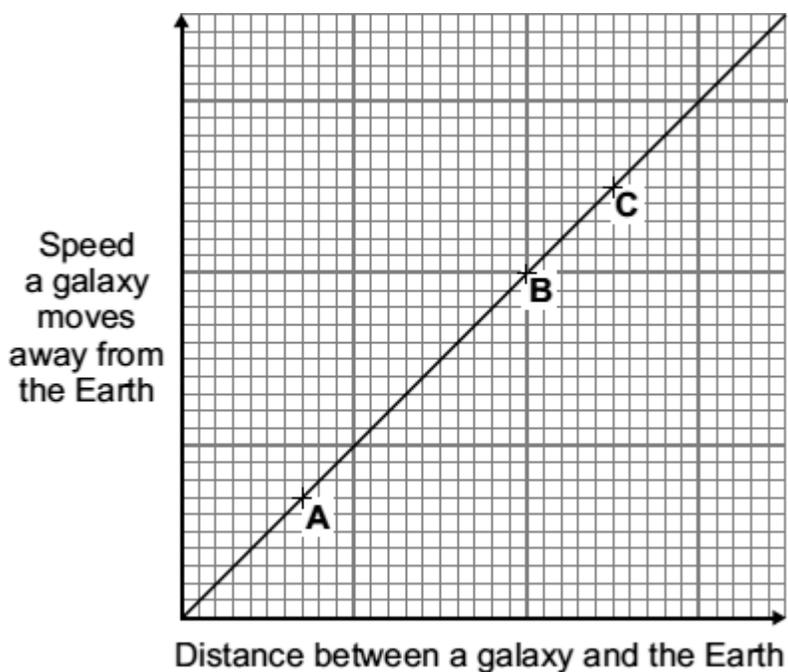
(ii) Complete the following sentence by drawing a ring around the correct line in the box.

This observation gives evidence for the idea that the universe is

shrinking.
not changing.
expanding.

(1)

(c) Use the graph to answer the following questions.



- (i) What is the link between the speed that a galaxy moves away from the Earth and the distance between the galaxy and the Earth?

(1)

- (ii) The positions of three galaxies, **A**, **B** and **C**, are marked on the graph.

From which galaxy, **A**, **B** or **C**, would the wavelength of the light reaching the Earth seem to have changed the most?

Galaxy _____

Give a reason for your answer.

(2)

(Total 6 marks)

8.

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

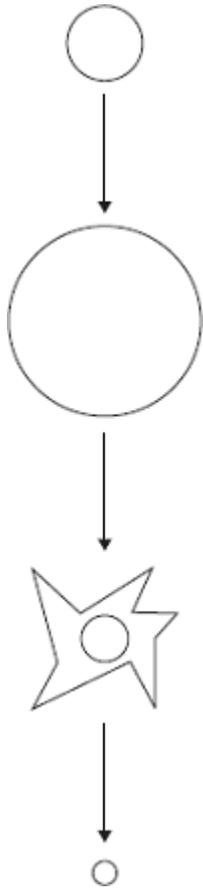
Use words or phrases from the box to complete the sentences contained in the diagram.

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)