Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Q1.

Most galaxies are moving away from the Earth. Scientists can determine the speed of a galaxy by observing the light from the galaxy.

(a) Complete the sentence.

Choose the answer from the box.

frequency	**speed**	**wavelength**

When scientists observe the light from distant galaxies, they observe an increase in

the _____ of light from those galaxies.

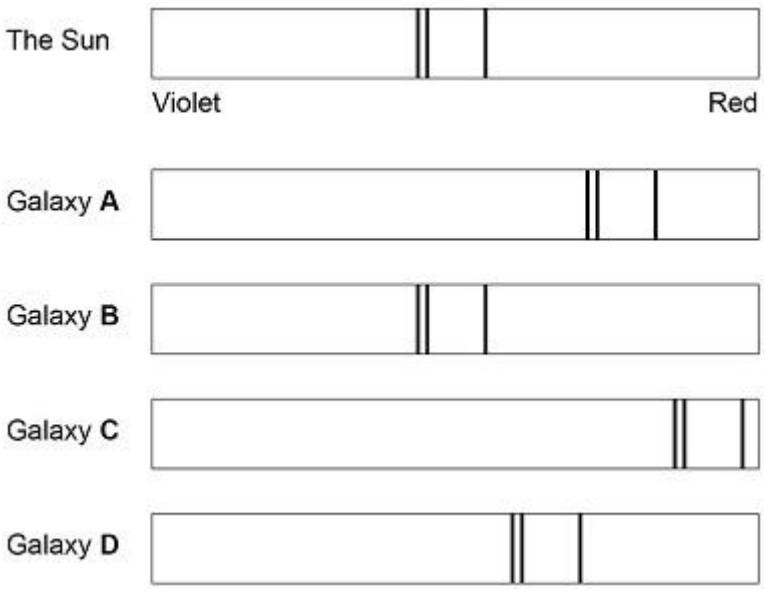
(1)

The light spectra from stars and galaxies include dark lines.

The lines have the same pattern.

Figure 1 shows the light spectrum from the Sun and from four galaxies.

Figure 1



(b) Which galaxy is moving the fastest away from the Earth?

Tick (✓) **one** box.

A ☐ B ☐ C ☐ D ☐

(1)

(c) Which galaxy is the furthest away from the Earth?

Tick (✓) **one** box.

A ☐ B ☐ C ☐ D ☐

(1)

(d) The Big Bang theory is one way to explain the origin of the universe.

How does the Big Bang theory describe the universe when it began?

Tick (✓) **one** box.

Very big and very dense ☐

Very big and extremely hot ☐

Very dense and extremely hot ☐

Very small and extremely cold ☐

(1)

(e) Which statement about the Big Bang theory is correct?

Tick (✓) **one** box.

Scientists have proved that the theory is correct. ☐

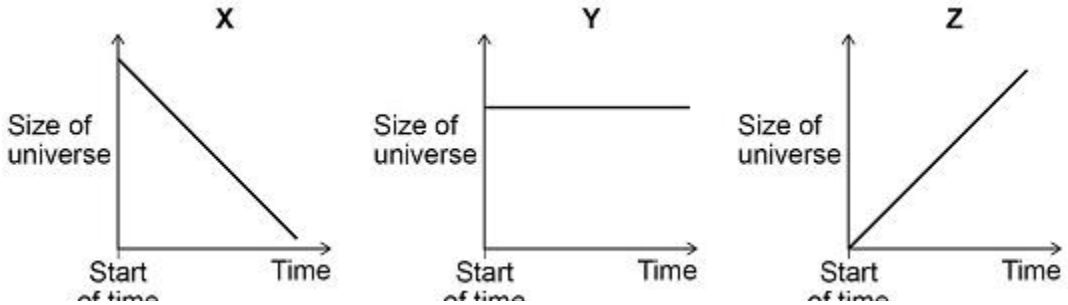
Scientific evidence supports the theory. ☐

There is no other way to explain the origin of the universe. ☐

(1)

(f) **Figure 2** shows three ways that the size of the universe may have changed with time.

Figure 2



Which graph would the Big Bang theory suggest is correct?

Tick (✓) **one** box.

X ☐ **Y** ☐ **Z** ☐

Give a reason for your answer.

_____

_____

(2)

(Total 7 marks)

Q2.

Our solar system includes the Sun, planets and moons.

(a) Complete the sentence.

Choose the answer from the box.

Andromeda	**Milky Way**	**Pinwheel**	**Whirlpool**

Our solar system is part of the _____ galaxy.

(1)

(b) Planets orbit the Sun.

What force causes planets to orbit the Sun?

_____

(1)

The table below shows data about five planets.

Planet	**Mean distance from the Sun in millions of kilometres**	**Mean surface temperature in °C**
Earth	150	+22
Mars	228	–48
Jupiter	778	**X**

Saturn	1430	–178
Uranus	2870	–200

(c) How does the mean surface temperature of the planets in the table change as the mean distance from the Sun increases?

_____

_____

(1)

(d) Predict the mean surface temperature of Jupiter (**X**) in the table above.

Mean surface temperature of Jupiter = _____ °C

(1)

(e) Five of the planets in the solar system are given in the table above.

How many other planets are there in the solar system?

Tick (✓) **one** box.

Two ☐

Three ☐

Four ☐

Five ☐

(1)

(f) Our Moon is a natural satellite.

Why is the Moon classified as a satellite?

Tick (✓) **one** box.

It has no atmosphere. ☐

It has no gravitational field. ☐

It is too small to be a planet. ☐

It orbits a planet. ☐

(1)

(g) How are planets and moons similar?

Tick (✓) **two** boxes.

Their mass is about the same.	☐
Their orbits are circular.	☐
Their surfaces are the same colour.	☐
They are similar in diameter.	☐
They do not emit visible light.	☐

(2)

(h) The diameter of the Earth is 13 000 km.

The diameter of the Sun is 110 times greater than the diameter of the Earth.

Calculate the diameter of the Sun.

_____

_____

Diameter of the Sun = _____ km

(2)

(Total 10 marks)