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

Q1.

This question is about light.

* Figure 11a shows refraction of light at a boundary between glass and air.
Figure 11b shows total internal reflection of light at a boundary between glass and air.

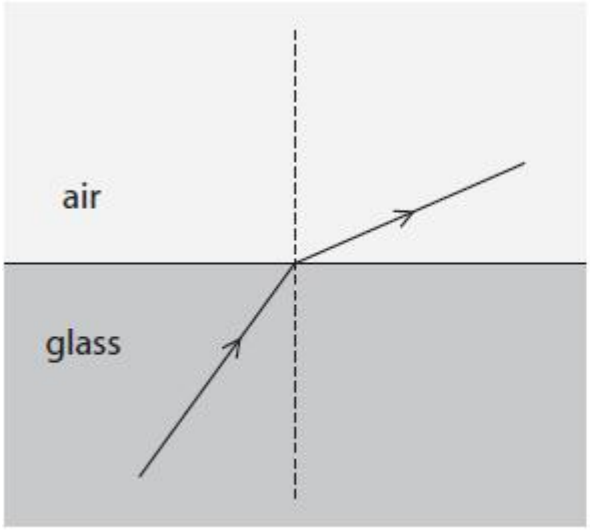

Figure 11a

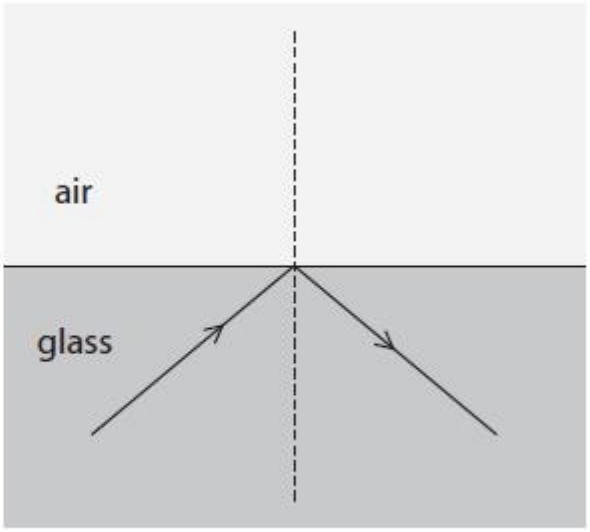

Figure 11b

Use Figure 11a and Figure 11b to explain refraction and total internal reflection.

You may add to Figure 11a and Figure 11b to help with your answer.

(6)

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(Total for question = 6 marks)

Q2.

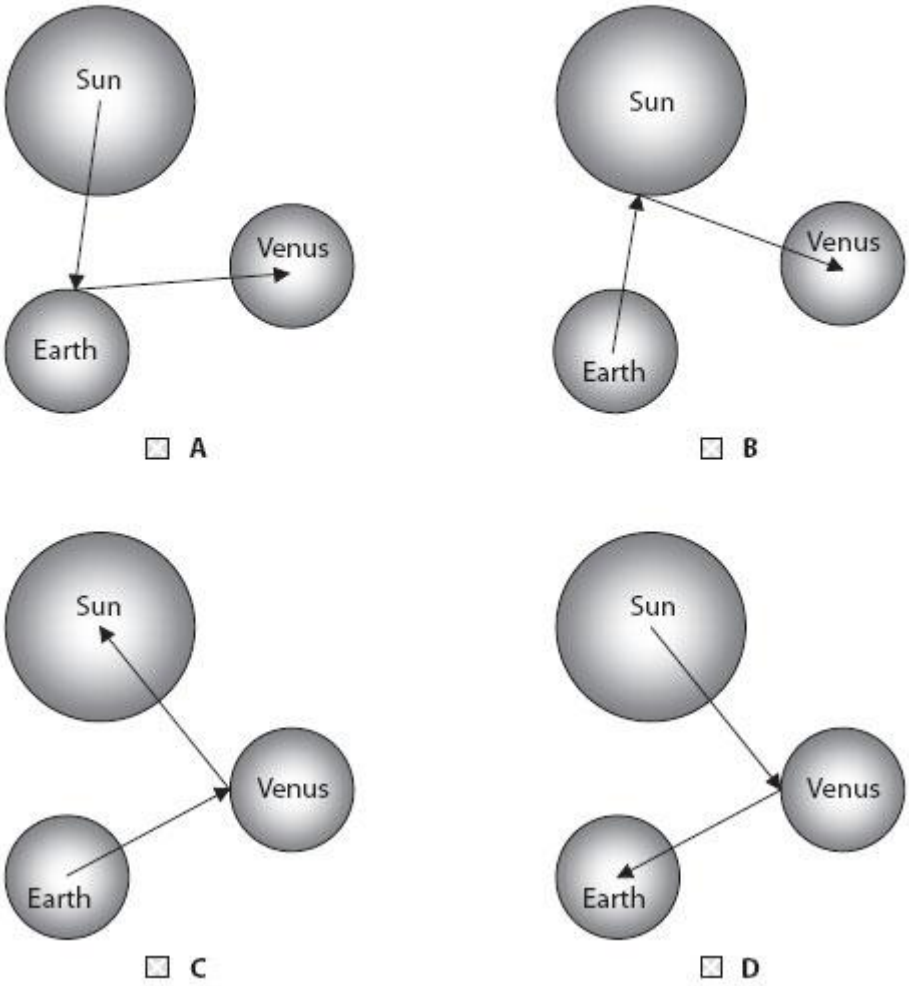
Galileo was one of the first scientists to use a telescope to study Venus.

(i) Which of these diagrams best shows how light waves enable us to see Venus?

Put a cross (☒) in the box next to your answer.

(1)

Not to scale



(ii) Use words from the box to complete the sentences.

(2)

asteroids	comets	geocentric	heliocentric
moons	particle	stars	

Galileo also used his telescope to observe the ..... of Jupiter.

His observations provided evidence to support the ..... model of the Solar System.

(iii) Describe how a reflecting telescope is different from the simple telescope which Galileo used.

(2)

.....

.....

.....

.....

Q3.

Some students repeat Herschel's experiment.

They place four identical thermometers, **P**, **Q**, **R** and **S**, in the shade.

The table shows some of the readings on the thermometers in the shade.

Complete the table to show the reading on thermometer **Q**.

(1)

	thermometers in the shade			
	P	**Q**	**R**	**S**
temperature / °C	18		18	18

Q4.

All objects emit electromagnetic radiation.

The intensity and wavelength of the emitted radiation vary with the temperature of the object.

Figure 8 shows this variation for an object at two different temperatures.

The visible region of the electromagnetic spectrum is also shown.

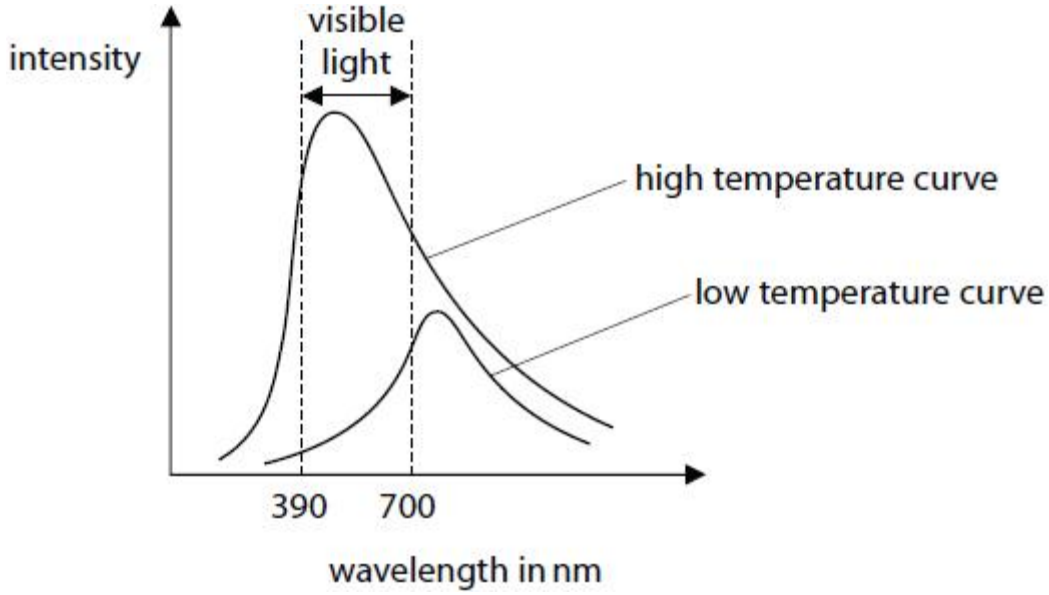


Figure 8

In which part of the electromagnetic spectrum is the peak of the low temperature curve?

(1)

- ☒ **A** gamma
- ☒ **B** infrared
- ☒ **C** radio
- ☒ **D** ultra violet

(Total for question = 1 mark)

Q5.

What do all waves in the electromagnetic spectrum have in common?

(1)

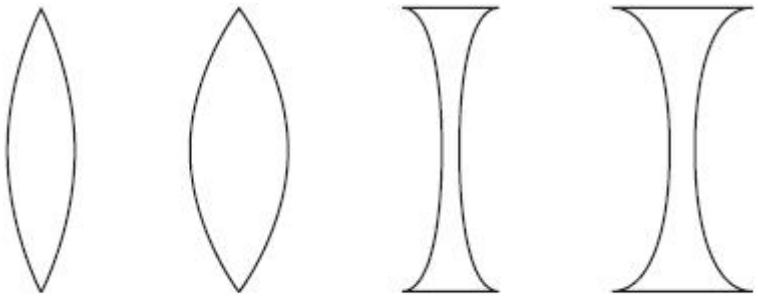
- ☒ **A** the same frequency in a vacuum
- ☒ **B** the same speed in a vacuum
- ☒ **C** the same colour in a vacuum
- ☒ **D** the same amplitude in a vacuum

(Total for question = 1 mark)

Q6.

(i) Which lens is a converging lens with the greatest power?

(1)



☐ **A** ☐ **B** ☐ **C** ☐ **D**

(ii) The equation that relates the power of a lens to the focal length of the lens is

$$\text{power (in dioptres)} = \frac{1}{\text{focal length (in metres)}}$$

The power of a lens is 5 dioptres.
Use the equation to calculate the focal length of the lens in cm.

(2)

focal length = ... cm

(Total for question = 3 marks)