NAME:

OUNDLE
School

2016 Junior Entrance Examinations

Science Theory Paper

Time allowed: **60 minutes**

- You have **10 minutes reading time**. In this time, you should look at the questions in the paper and choose which to do.
- **Answer only 3** of the 5 questions in the paper, the choice is totally up to you.
- You have **50 minutes to answer your 3 questions.**
- You will need a pen, pencil, ruler and calculator

This question is about states

1a) Water freezes at 0°C and boils at 100°C. What is the process called when water is cooled from a vapour to a liquid?

.....

(1)

b) Alcohol freezes at -114°C and boils at 78°C.

What state is the substance in at the following temperatures?

Temperature (°C)	State
120	
-10	
35	

(3)

c) Three mugs of tea were left to sit for one hour. The temperature of the tea was measured at the beginning and end of the hour and recorded in the table below:

Mug	Temperature of tea at start (°C)	Temperature of tea after 1 hour (°C)
1	96	25
2	95	33
3	97	28

Which mug is the best heat insulator? Explain your choice.

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.....

.....

(2)

d) Complete the following sentence using one of the words in the box below.

solutions soluble insoluble

Substances that can dissolve in a solution are called .....

(1)

e) Tick the box next to the statement below that correctly describes how to separate a mixture of sand and salt.

Mix with water, filter, and then evaporate	
Mix with water, evaporate, and then filter	
Filter and then mix with water	

(1)

f) You dissolve sugar in your tea. Is this a reversible or irreversible change and why?

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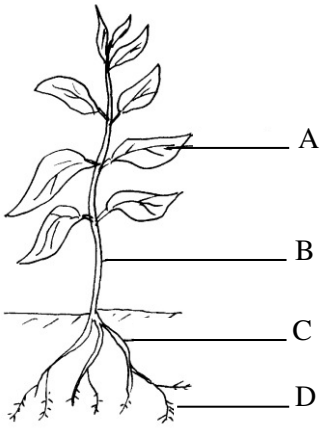
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(2)

(Total 10 marks)

This question is about plants

2. The diagram shows a flowering plant.



a) Name the parts labelled A, B, and C.

A. .....

B. .....

C. .....

(3)

b) The table lists some functions of parts of a plant.

Match the part of the plant (A, B, C or D) to its function by writing the letters in the table.

Function of part of plant	Part of plant
Carries water to other plant organs	
Makes food using light energy	
Anchors plant in ground	
Supports the flowers	
Absorbs water and mineral salts	

(5)

c) Which part of the plant contains chlorophyll?

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(1)

d) What does chlorophyll do?

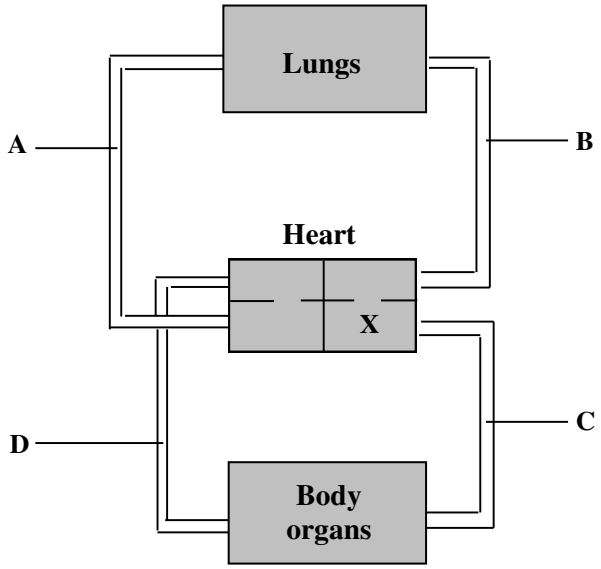
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(1)

[Total 10 marks]

This question is about the human body

3. The diagram shows a plan of part of the circulation



a) Name the type of blood vessel labelled

i) C. .....

(1)

ii) D .....

(1)

b) In which direction does blood in vessel A travel: towards or away from the heart

.....

(1)

c) Which of the four blood vessels A, B, C, D contains most oxygen?

.....

(1)

d) What happens to the amount of oxygen in the blood as it passes through the body organs?

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(1)

e) During exercise the pulse has to increase, why is this necessary?

.....

.....

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(2)

f) Two 30 year old men are both 180cm tall, man 1 has a resting pulse rate of 62 beats per minute and man 2 has a resting pulse of 85 beats per minute:

i) Which man most likely does regular exercise? Circle the correct answer.

Man 1 Man 2

(1)

ii) Which man is most likely to be obese? Circle the correct answer.

Man 1 Man 2

(1)

iii) Name one other factor that might cause the difference in resting pulse rate?

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(1)

[Total 10 marks]

This question is about Forces

4 The picture below shows a mass hanging on a spring. The mass is not moving.



a) Name the two forces acting on the mass

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(2)

b) What can you say about the size of the two forces compared to each other?

.....

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(1)

c) Another mass, of the same size as the first, is added and the masses are released. After a while it settles down and stops moving.

State what you would observe and explain your answer.

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(2)

d) The mass is pulled down and released. What happens immediately after it is released? Explain your answer using ideas about the forces acting on the mass.

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(2)

e) The picture below shows a parachutist falling at a steady speed towards the ground.



Name the forces acting on the parachutist:

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(2)

f) What can you say about the size of the two forces compared to each other?

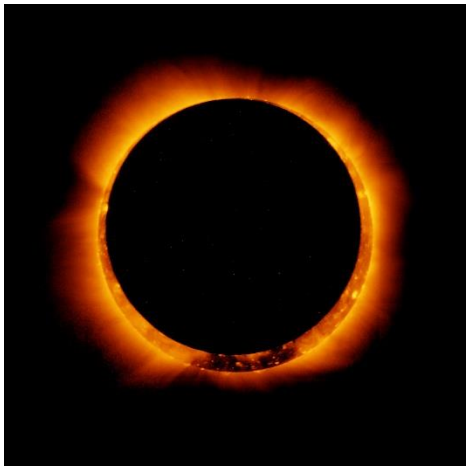
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(1)

[Total 10 marks]

This question is about the Solar System.

5 This picture shows a total eclipse of the Sun:



a) Explain why we cannot see the Sun except for its corona (the hot gas surrounding it).

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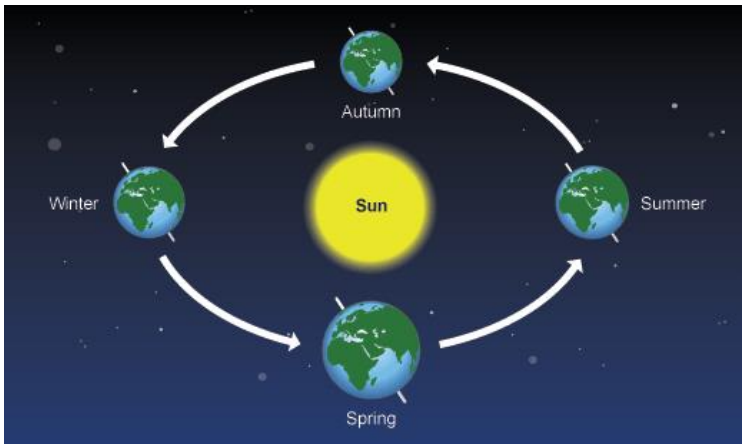
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(2)

This picture is used to explain why we have seasons:



b) How long does it take for the Earth to orbit the Sun?

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(1)

c) Why is it so cold at the North Pole in winter?

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(2)

This is a picture taken in winter.



d) Look at the picture above.

What do you notice about the shadows?

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(1)

e) Use the above picture used to explain seasons to explain why the shadows are like this in winter. Draw a diagram to illustrate your answer.

(2)

f) Every year there are two equinoxes. They are usually on September 21st and March 21st.

i) What is meant by equinox?

.....

(1)

ii) Where is the Sun, in relation to the Earth's equator on an equinox?

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(1)

[Total 10 marks]