NAME:

OUNDLE
School

2017 Junior Entrance Examinations

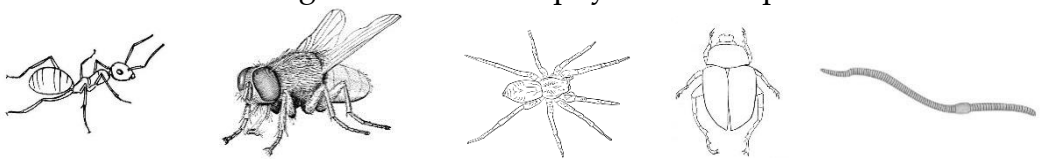
Science Theory Paper

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

1. This question is about **classification**.

   Below there are 5 organisms from the phylum arthropoda.

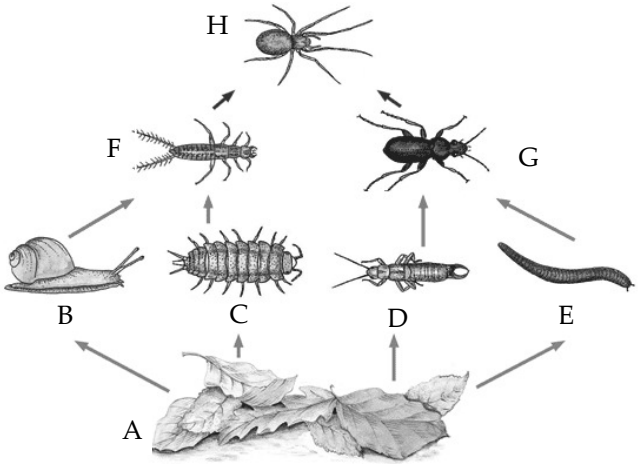


Ant Fly Spider Beetle Earthworm

a. Design a simple key to distinguish between them.

(3)

b. Below is a food web showing the feeding relationships between arthropods



Write the letter of an organism that would be placed in each of the following categories.

A secondary consumer: .....

A producer: .....

A herbivore: .....

(3)

c. Why are plants always found at the beginning of food chains?

.....

.....

.....

.....

(2)

d. What limits the length of food chains?

.....

.....

.....

.....

(2)

Total for question = 10 marks

2. This question is about the **human body**.

a. Name two functions of the human skeleton.

.....

.....

.....

.....

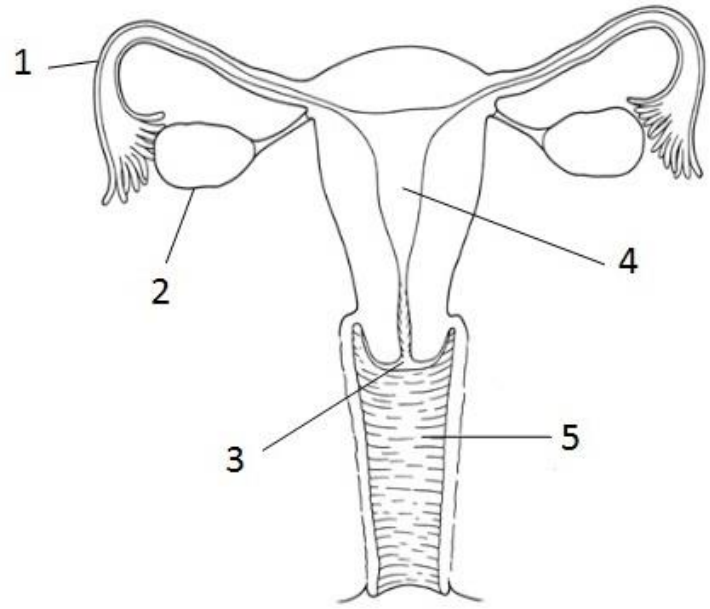
(2)

b. The diagram below shows the female reproductive system. Write the number of the structure where:

i. Fertilisation occurs: .....

ii. The embryo develops: .....

(2)



c. State a hormone which is involved in the development of sexual characteristics in males or females and describe one effect it has.

.....

.....

.....

.....

(2)

d. Name a specialised cell found in the human body and state two ways in which its structure is adapted to its function.

.....

.....

.....

.....

.....

.....

(3)

e. What is the name of an undifferentiated cell that can be found in embryos and in some adult tissues?

.....

(1)

Total for question = 10 marks

3. This question is about **states**.

There is plenty of chemistry in the kitchen as you make your breakfast in the morning. First, imagine you fill your kettle with cold water from the tap and bring it to the boil.

a. When you see steam coming out of the kettle, what is the change of state that has taken place?

.....

(1)

b. After pouring the hot water into a mug and leaving it to cool, you come back to find that that water level in your mug has gone down. Draw and label a diagram of your mug to describe what is happening to these water particles.

(2)

c. You like to take your tea with two sugars, but sometimes this leaves lumps that are not dissolved at the bottom of your mug.

i. Is dissolving sugar a reversible or irreversible change?

.....

(1)

ii. Name one way you could speed up the process of dissolving.

.....

(1)

d. You crack an egg into a pan to fry it.

i. Is frying an egg a reversible or irreversible change?

.....

(1)

ii. The pan you used to fry your egg is made of a metal called aluminium. Why was this pan a good choice for frying your egg?

.....

(1)

e. You also make some fresh squeezed orange juice with breakfast. However, you don't like pulp bits in your juice.

i. What device or method could you use to get pure orange juice?

.....

(1)

ii. After separating this mixture, what is the filtrate?

.....

(1)

iii. What becomes the residue?

.....

(1)

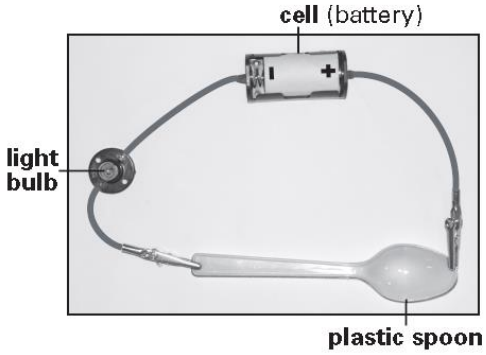
Total for question = 10 marks

4. This question is about **electricity**.

a. James builds the three circuits below. All the equipment works. The bulbs in the circuit are not lit up.

Complete each sentence to explain why the bulb has not lit in each circuit.

i. The bulb has not lit because the plastic spoon



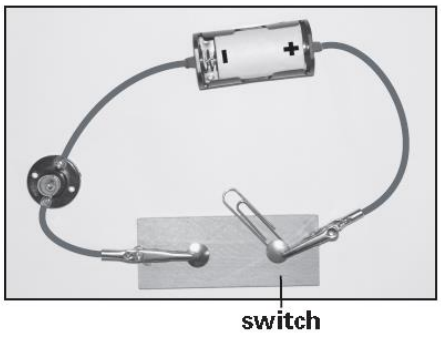
.....

.....

.....

(1)

ii. The bulb has not lit because



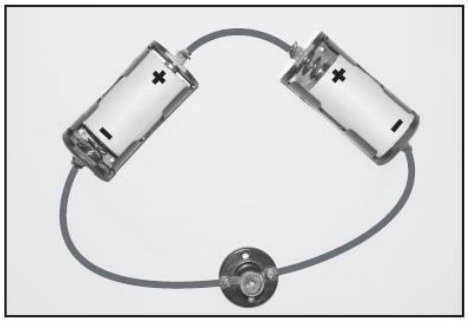
.....

.....

.....

(1)

iii. The bulb has not lit because



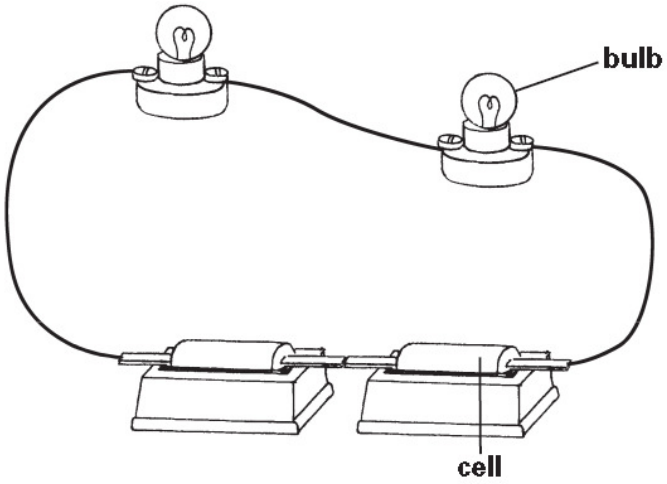
.....

.....

.....

(1)

b. Christopher builds the circuit below. The bulbs do light up.



i. Draw the circuit diagram for Christopher's circuit in the space below.

(3)

ii. What do you call this type of circuit?

.....

(1)

iii. Christopher wants to change his circuit so that the two bulbs are brighter. He can use any other equipment.

Suggest two ways he can make his two bulbs brighter.

1. .....

.....

2. .....

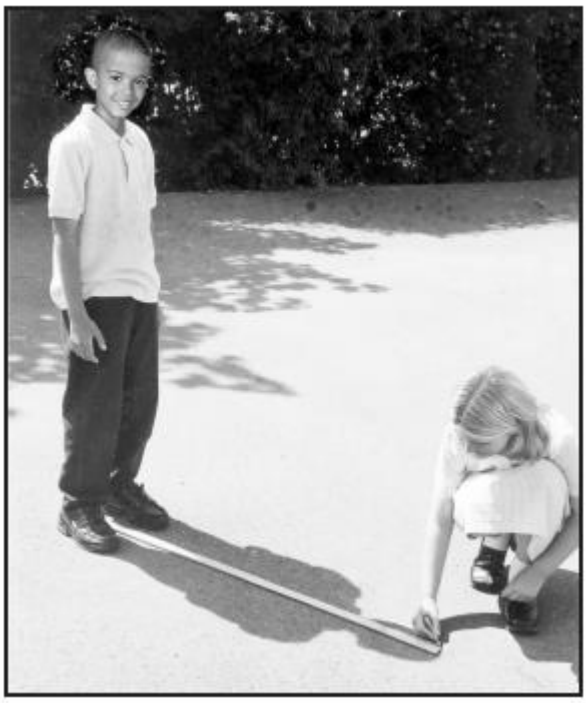
.....

(2)

Total for question = 9 marks

5. This question is about **Earth and Space**.

a. Sam and Tom are finding out about the Earth, Sun and Moon.
They decide to investigate how shadows change at different times of the day.
Sam measures the length of Tom's shadow. They repeat their test at two other times of the day.



i. Explain how the length of Tom's shadow will change between 10am and 7pm on a summer's day.

.....

.....

.....

.....

.....

.....

(3)

ii. Why does the length of Tom's shadow change during the day?

.....

.....

(1)

b. Planets, Moons and Stars make up a Solar System. Describe the position and motion of these objects in our Solar system in as much detail as possible. You can draw a diagram if you wish.

.....

.....

.....

.....

.....

.....

.....

.....

.....

(2)

Below is a picture of Toby bouncing on a trampoline.



c. When Toby is bouncing on a trampoline describe the forces acting on him and the direction that they are acting.

.....

.....

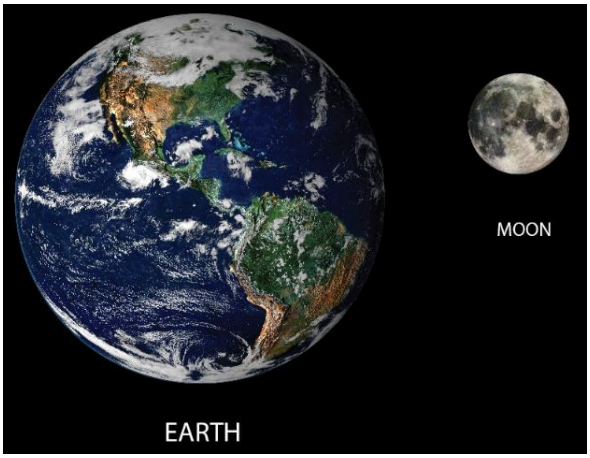
.....

.....

.....

(2)

The diagram below shows that the Moon is much smaller than the Earth.



d. If Toby took his trampoline to the moon and started to bounce how would his motion change? Please explain your answer.

.....

.....

.....

.....

.....

(2)

Total for question = 10 marks