

SURNAME ..... FIRST NAME .....

JUNIOR SCHOOL ..... SENIOR SCHOOL .....



SupaScience

# **COMMON ENTRANCE EXAMINATION AT 13+**

## **SCIENCE**

### **LEVEL 2**

### **BIOLOGY**

#### **Practice Paper 1**

Please read this information before the examination starts

- This examination is 40 minutes long.
- The answers should be written on the question paper.
- Answer all the questions.
- A protractor may be helpful.
- Calculators may be required.

1. In each of these questions, underline the word or phrase which you think makes the best answer (1 mark each)

a) All living cells will contain a

cell wall      nucleus      chloroplast      vacuole

b) An organ responsible for excreting waste is the

kidney      stomach      bladder      heart

c) During a person's sleep the heart rate will

increases      decrease      stay the same      stop

d) Plasma, the liquid part of the blood, carries

oxygen      starch      urine      dissolved food

e) The first organism in a food chain is known as a

herbivore      producer      consumer      predator

f) The release of energy from food is known as

respiration      photosynthesis      transpiration      combustion

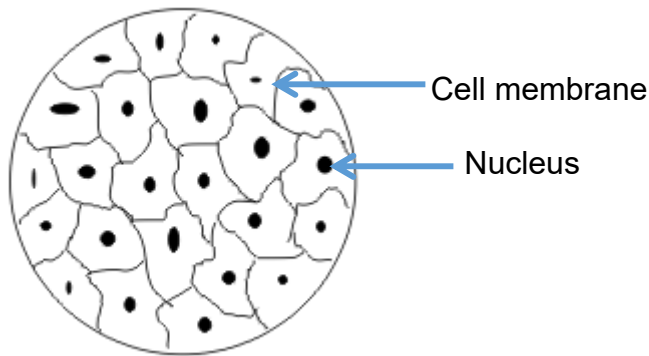
g) Cheese is a good source of

iron      carbohydrate      fibre      calcium

h) An egg cell and sperm join together to form a

gamete      vacuole      zygote      spiracle

2 Here is a drawing of some human tissue as seen under a microscope.



a. Clearly label on the drawing a *nucleus* and a *cell membrane* (2 marks)

b. If you looked at a slide of some cells from inside a leaf, you would see certain structures which are not present in human cells.

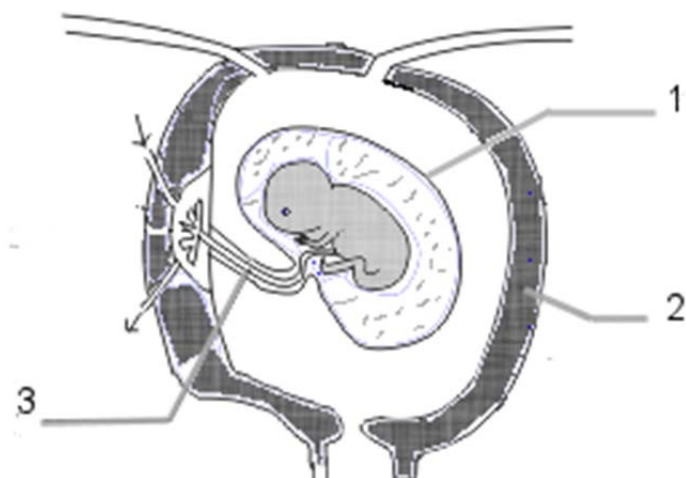
Name two such structures

***Chloroplast, cell wall or large vacuole***

b) If you were preparing a slide of some cells for viewing through a microscope explain how you could make the structures show up more easily

.....***Add a drop of stain or Add a drop of methylene blue***..... (1)

3. The diagram shows a human foetus at 3 months gestation.



a. Name the parts numbered 1, 2 and 3 in the diagram

1 . . . . . **Amnion or amniotic sac** . . . . .

2 . . . . . **Uterus wall. . . or Uterus** . . . . .

3. . . . . **Umbilical cord** . . . . . (3)

b. How does the foetus obtain its food?

. . . . . Food passes from the mothers blood to the embryo's blood at the placenta. The placenta is connected to the embryo by the umbilical cord

. . . . . (1 mark each for mentioning words blood, placenta and umbilical cord in the correct context)

. . . . . (3)

c. Name one substance that passes from the mother to the embryo during pregnancy .

**Food or oxygen . You can also have a mark for saying medicines or drugs but not waste products as waste passes in the other direction**

d. Explain what is meant by the word *gestation*?

. . . . . **The time the embryo is inside the uterus before being born**

**Or The time between fertilization pf the egg and birth. . . . .**

4. A teacher asked one of his students to blow into some limewater which went cloudy.

The student was then required to run around the school running track.

When he returned, now slightly out of breath and breathing more deeply, he was asked to blow into the limewater again. This time the limewater went cloudy more quickly than the first.

a. What gas was being tested for by blowing into limewater?

..... **Carbon dioxide** .....(1)

b. Name the process that was being carried out by the cells in the boy's body that was producing this gas

..... **Respiration** ..... (1)

c. Name two substances needed by the cells to enable them to carry out this process:

i ... **Glucose (or sugar)** .....

ii ..... **Oxygen.** ..... (2)

d. Why did the limewater turn cloudy more quickly the second time he blew into it?

..... **Because he had been running his body needed more energy (1) so was carrying out respiration quicker (1). This made him produce more carbon dioxide.** .....

e. Why was the boy breathing more deeply when he returned from the run?

**. He was breathing more deeply because the cells in his body needed more oxygen** ....

f. Describe one other change (as well as being out of breath) that the teacher might have noticed in the boy's body when he returned:

**He was sweating or his face looked red**

g. Complete the word equation for the process which releases energy from sugar in our cells

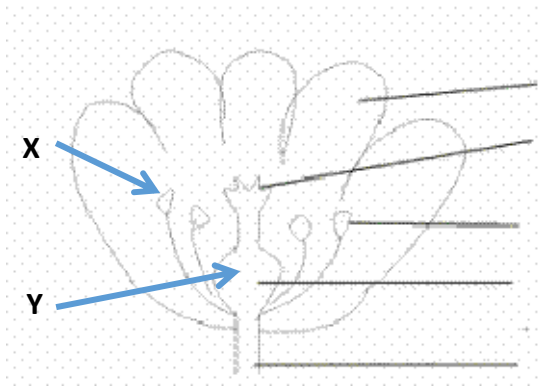
Glucose + oxygen → carbon dioxide + water + energy (2)

h. Write down 2 ways our body uses the energy it releases from sugar

**Keeping warm, movement, growth, repairing cells**

*(no marks should be awarded for 'to keep alive' as this, although essentially accurate, does not give enough detail)*

5. Look at the cross section of the flower below, which comes from an apple tree.



- i.....Petal  
 ii.....Stigma  
 iii.....Anther (or Stamen)  
 iv.....Ovary  
 v..... Stem

- a) Chose words from the list given below the question to complete the labels shown on the diagram (chose just 5 words and ignore the rest)

*Stamen stigma style ovary petal stem anther sepal bud (3)*

- b) Mark an arrow (and label it X) to show where the pollen is formed. (1)  
**(Pollen is formed on the anther. An arrow to any one of the four anthers will be correct)**

- c) Mark an arrow (and label it Y) to show where the ovules would be found.(1)

- d) Is the plant above WIND or INSECT pollinated?.....Insect...(1)

Give a reason for your answer.

...Because it has petals (1) to attract animals which spread the pollen (1)

- e) which part of the flower turns into a fruit? .....Ovary.....(1)

- f) which part of the flower turns into seeds? .....ovules.....(1)

- g). Where in a plant would the genetic information be found?

.....**.In the nucleus of any cell.**..... (1)

In plants the pollen and ovules contain the male and female gametes.

- h) Which cells in animals contain the male and female gametes?

Animals: Male gamete = **Sperm**

Female gamete = **Egg (or Ovum)** (1 mark)

6. How do you think the apple plant spreads its seeds.

Wind      Animals      or      explosions      ...**Animals.....**(1)

What feature of an apple fruit made you choose the answer you wrote above?

.....**The apple has a tasty fleshy coat to make it nice to eat.....** (1)

Describe one **other** way that a plant you know spreads its seeds

**Dandelion or sycamore: wind.    Burdock: Hooks.    Pea: explosions**

7. Explain *why* it is a good idea for the plant to scatter its seeds around, rather than just let them fall to the ground

.....**To prevent overcrowding. To stop competition for food, light and water.....**

8. The top layer of soil of a wood is often very rich in humus and yet there are few plants growing there.

a. What is humus?.....**Decaying leaves and roots.....** (1)

b. Why is humus important for the soil?

**The Humus provides nutrients for the plants**

c. What causes humus to be formed?

**Bacteria and fungi living in the soil make the leaves rot**

9. Why are there so few plants on the floor of a forest or wood?

.....**Not enough sunlight / not enough nutrients in the soil / soil too dry**

10. How are the plants that you do find on the floor of a wood adapted to help them survive?

**Plants could flower in spring before the tree foliage is fully developed. (Like the bluebell)**

**Some plants, like the primrose have bigger leaves to help them catch the light.**

**Plants could have long roots to help them get water.**

**The plants could have tubers to help them store food**

(Total Marks= 60)