

AQA – Organism exchange substances with their environment – AS Biology P1

1. June/2021/Paper_1/No.6

0 6 . 1

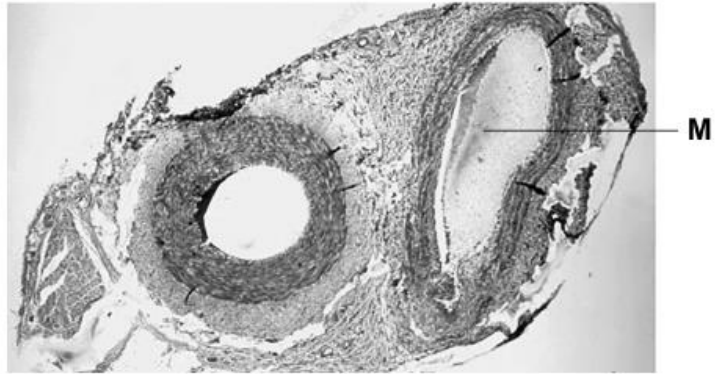
Give the pathway a red blood cell takes when travelling in the human circulatory system from a kidney to the lungs.

Do **not** include descriptions of pressure changes in the heart or the role of heart valves in your answer.

[3 marks]

Figure 6 shows a section through two types of blood vessels observed using an optical microscope.

Figure 6



0 6 . 2 Identify the type of blood vessel labelled **M** in **Figure 6**.

Explain your answer.

[2 marks]

Type of blood vessel _____

Explanation _____

2. June/2021/Paper_1/No.8

0 8

An unfertilised chicken egg is a single cell surrounded by a shell.

A student investigated osmosis in chicken eggs. She dissolved the shells of two eggs without damaging the cell contained inside the shells. She then:

- measured the mass of each egg without its shell
- covered one egg with vinegar and covered the other egg with a sugar solution
- kept both eggs covered at 30 °C for 24 hours.

After 24 hours, she measured the mass of each egg.

The student designed **Table 2** and added her results to this table.

Table 2

Initial mass of egg / g	Final mass of egg / g	Name of solution covering egg	Ratio of final mass to initial mass
66	85	Vinegar	1.29:1
60	43	Sugar	0.7:1

0 8 . 1

Suggest **one** improvement to the design of **Table 2** and **one** improvement to the way she presented the data contained in **Table 2**.

[2 marks]

Improvement to design of table _____

Improvement to presentation of data _____

0 8 . 2

Suggest and explain an advantage of carrying out this investigation at 30 °C rather than at 20 °C.

[2 marks]

0 8 . 3

The student concluded from the information in **Table 2** that the water potential of the solution inside the egg is higher than the water potential of the vinegar.

Is the student's conclusion correct? Justify your answer.

[3 marks]

0 8 . 4 The student wanted to determine the water potential of chicken eggs. She:

- produced a dilution series of sugar solution
- followed the procedure described on page 20.

She calculated the final mass to initial mass ratio of the egg covered in each sugar solution.

How would you advise the student to use her calculated ratios to determine the water potential of the eggs?

In your answer state the independent variable in the student's investigation.

[4 marks]
