

Smart Edu Hub / Smart Exam Resources

9700 / CAIE A level Biology / Paper-1/ Multiple Choice
Questions

1.1.0-Convert-Between-Units-Set-1-qp

Total Questions: 12

Questions

Question 1:

Visking tubing is an artificial partially permeable membrane used to demonstrate diffusion. Glucose molecules can pass through the pores in the membrane which are approximately 2.4 nm in diameter.

Which of the following could pass through the pores?

- 1 bacteria
- 2 haemoglobin
- 3 ribosomes
- 4 glycogen

A 2 only B 1 and 3 only C 2 and 4 only D none of these

Question 2:

The diameter of living cells varies considerably.

The diameter of a typical eukaryotic cell is $1.5 \times 10^1 \mu\text{m}$.

The diameter of a typical prokaryotic cell is $7.5 \times 10^2 \text{ nm}$.

Using these measurements, what is the maximum number of each cell type which could fit along a line 1 cm long?

	number of white blood cells	number of <i>Streptococcus</i> cells
A	6.7×10^4	1.3×10^2
B	6.7×10^3	1.3×10^5
C	6.7×10^2	1.3×10^4
D	6.7×10^1	1.3×10^3

Question 3:

A human aorta has a lumen width of 2 cm.

A human red blood cell has a diameter of $7 \mu\text{m}$.

How many red blood cells could be laid end to end across the diameter of the aorta lumen?

A 2.9×10^{-3} B 2.9×10^{-2} C 2.9×10^2 D 2.9×10^3

Questions (Continued)

Question 4:

A cell organelle measures 4×10^{-1} mm in diameter.

What is the diameter in μm ?

- A** $4 \times 10^1 \mu\text{m}$ **B** $4 \times 10^2 \mu\text{m}$ **C** $4 \times 10^3 \mu\text{m}$ **D** $4 \times 10^4 \mu\text{m}$

Question 5:

A potometer was used to measure the transpiration rate of a leafy shoot.

What could be the correct units?

- A** cm min **B** $\text{cm}^2 \text{min}^{-1}$ **C** $\text{cm}^3 \text{g}^{-1} \text{min}$ **D** $\text{cm}^3 \text{min}^{-1}$

Question 6:

Which lengths are equivalent to $1 \mu\text{m}$?

- 1 1000 mm
- 2 0.001 nm
- 3 0.001 mm
- 4 1 000 000 nm
- 5 0.01 mm
- 6 1000 nm

- A** 1 and 4 **B** 2 and 5 **C** 3 and 4 **D** 3 and 6

Questions (Continued)

Question 7:

Different units are used when measuring biological specimens.

Which measurement in mm has **not** been correctly converted into **both** μm and nm?

	mm	μm	nm
A	1.0	1.0×10^3	1.0×10^6
B	2.5	2.5×10^3	2.5×10^6
C	5.0	5.0×10^4	5.0×10^7
D	25.0	2.5×10^4	2.5×10^7

Question 8:

Different units are used when measuring biological specimens.

In which rows are the same measurements correctly expressed in each of the units shown in the column headings?

	mm	μm	nm
1	1.0	1.0×10^3	1.0×10^6
2	2.5	2.5×10^3	2.5×10^6
3	5.0	5.0×10^4	5.0×10^7
4	25.0	2.5×10^4	2.5×10^7

- A 1, 2, 3 and 4
- B 1, 2 and 4 only
- C 1 and 2 only
- D 3 and 4 only

Questions (Continued)

Question 9:

Pancreatic cells have a diameter of $35\mu\text{m}$.

Red blood cells have a diameter of 7000nm .

Which statement is correct?

- A Pancreatic cells are 5 times larger than red blood cells.
- B Pancreatic cells are 50 times larger than red blood cells.
- C Pancreatic cells are 5 times smaller than red blood cells.
- D Pancreatic cells are 50 times smaller than red blood cells.

Question 10:

Red blood cells have a diameter of 7000nm .

Pancreatic cells have a diameter of $35\mu\text{m}$.

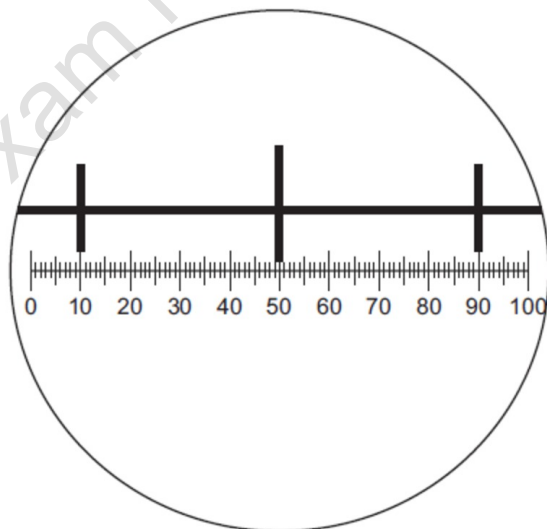
What is correct about the relative sizes of these cells?

- A The red blood cells are 5 times larger.
- B The red blood cells are 50 times larger.
- C The red blood cells are 5 times smaller.
- D The red blood cells are 50 times smaller.

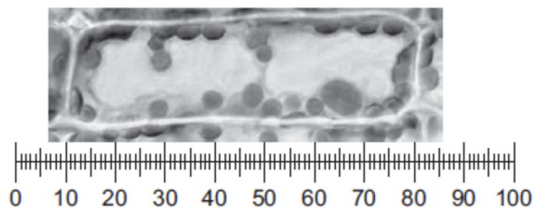
Questions (Continued)

Question 11:

The diagram shows a stage micrometer on which the small divisions are 0.1 mm. It is viewed through an eyepiece containing a graticule.



The stage micrometer is replaced by a slide of a plant cell.



What is the width of a chloroplast?

- A 0.5 mm B 10 μm C 50 μm D 100 μm

Question 12:

A lymphocyte has a diameter of 1×10^{-2} millimetres (mm).

What is the diameter in nanometres (nm)?

- A 1×10^1 B 1×10^2 C 1×10^3 D 1×10^4