

1.1 Cells: Theory

Question Paper

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|------------|-------------------|
| Course | DPIB Biology |
| Section | 1. Cell Biology |
| Topic | 1.1 Cells: Theory |
| Difficulty | Easy |

Time allowed: 10
Score: /5
Percentage: /100

Question 1

Which of the following options is **not** a source of stem cells?

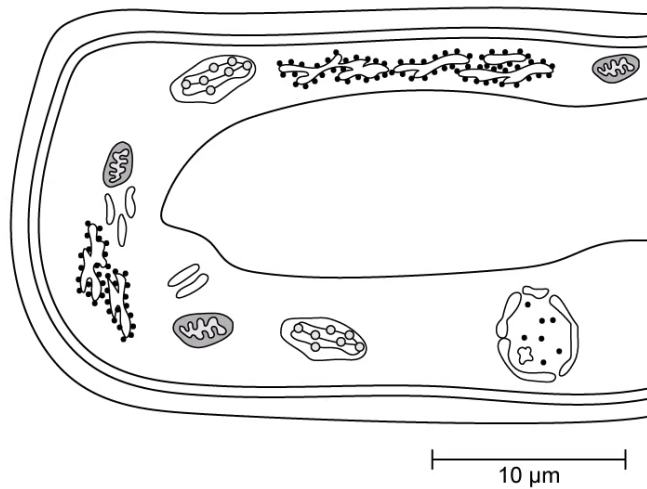
- A. Umbilical cord blood
- B. Bone marrow
- C. An embryo
- D. Blood plasma

[1 mark]

Question 2

The electron micrograph below shows a plant cell.

The scale bar (measuring 45 mm in length) on this drawing represents a length of $10\ \mu\text{m}$.



Which of the following correctly represents the magnification of the electron micrograph?

- A. x45000
- B. x4.5
- C. x4500
- D. x450

[1 mark]

Question 3

Paramecium is a genus of unicellular eukaryotic organisms which carry out several functions in order to stay alive. The table below lists four of these functions and descriptions on how *Paramecium* carry them out.

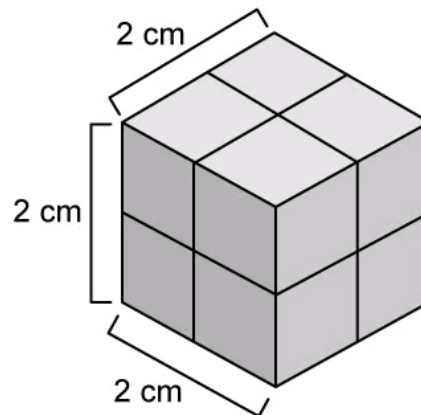
Which of the following rows correctly describes the processes of the *Paramecium*?

| | Metabolism | Reproduction | Response | Nutrition |
|----|---|------------------|--|---|
| A. | Carry out photosynthesis in their chloroplasts | Commonly asexual | Beating cilia moves them through water in response to external stimuli | Get their nutrition from the products of photosynthesis |
| B. | Reactions such as respiration take place in the cytoplasm | Commonly asexual | Beating cilia moves them through water in response to external stimuli | Take in nutrients via their oral groove which they digest using enzymes |
| C. | Carry out photosynthesis in their chloroplasts | Mostly sexual | Beating 'tail' called a flagellum moves them through water in response to external stimuli | Get their nutrition from the products of photosynthesis |
| D. | Reactions such as respiration take place in the cytoplasm | Mostly sexual | Beating 'tail' called a flagellum moves them through water in response to external stimuli | Take in nutrients via their oral groove which they digest using enzymes |

[1 mark]

Question 4

The cube below has sides that measure 2 cm in length.



Which of the following represents the correct surface area : volume ratio of this cube?

- A. 1:1
- B. 6:1
- C. 3:1
- D. 2:1

[1 mark]

Question 5

Which changes can occur when a cell differentiates from a stem cell into a specialised cell?

- I. The shape of the cell can change
- II. The number and type of proteins in the cell changes
- III. Enzymes cut out the DNA that is no longer needed

- A. I. and II.
- B. II. and III.
- C. I. and III.
- D. All of the options

[1 mark]