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SPECA

GCSE Combined Science (AQA Trilogy) · Biology

Cell Biology · Worksheet

Cell structure

1) Give one structural difference and one size difference between a eukaryotic cell and a prokaryotic (bacterial) cell. [2]

2) Name three sub-cellular structures found in a plant cell but not in an animal cell. [3]

3) A cell has a real diameter of 0.02 mm. In a micrograph, the image of the cell has a diameter of 40 mm. Calculate the magnification of the image. [2]

4) Explain how the structure of a root hair cell is related to its function. [2]

Differentiation, division and stem cells

5) Describe the difference between differentiation in animal cells and in plant cells. [2]

6) Give one way that electron microscopy changed what biologists could see and understand about sub-cellular structures, compared with light microscopy. [1]

7) Describe the three stages of the cell cycle that end in mitosis. [3]

8) Define a stem cell. [1]

9) State one source of stem cells in an adult human, and one type of cell they can form. [2]

10) Give one medical use of stem cells, and one risk or objection associated with using them. [2]

11) Explain why using stem cells from an embryo produced by therapeutic cloning reduces the risk of the patient's body rejecting the treatment. [2]

12) Explain why plant meristem stem cells are useful for producing large numbers of disease-resistant crop plants quickly. [2]

Transport in and out of cells

13) Define diffusion. [2]

14) State three factors that affect the rate of diffusion. [3]

15) Explain why a small, single-celled organism can rely on diffusion alone to meet its transport needs. [2]

16) Cube A has sides of 2 cm. Cube B has sides of 4 cm. Calculate the surface area to volume ratio of each cube, and state which cube has the higher ratio. [3]

17) Explain, using the idea of surface area to volume ratio, why larger multicellular organisms need specialised exchange surfaces. [2]

18) State two adaptations that make the small intestine efficient for the exchange of digested food molecules. [2]

19) Define osmosis. [2]

20) In an experiment, a piece of potato had an initial mass of 5.0 g. After being placed in a salt solution, its final mass was 4.6 g. Calculate the percentage change in mass. [3]

21) Define active transport, and explain why it requires energy from respiration while diffusion does not. [3]

22) Give one example of active transport in a living organism. [1]

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23) State whether each of diffusion, osmosis, and active transport requires energy from respiration. **[3]**

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