ST MARY'S SCIENCE DEPARTMENT:

BIOLOGY

H

GCSE BIOLOGY **HOMEWORK BOOK**
TOPIC 1: ADVANCED CELLS
STUDENT BOOK

YOU MUST ANSWER ALL THREE SECTIONS IN EACH PART OF THE HOMEWORK TASKS

NAME	
CLASS	
TEACHER	
FORM	

TASK	MARK	GRADE
1		
2		
3		
4		
5		
OVERALL		

GCSE BIOLOGY

YEAR 9

TOPIC 1

HOMEWORK SCHEDULE

Please use the following table to ensure each homework task is completed and submitted on time.

Carrying out these homework tasks can only increase your ability to gain a high grade in the GCSE examinations.

Failure to hand in work on time will lead to sanctions to complete this work.

Task	Submission Date	Completed?	On Time?
Task 1 Microscopy 1			
Task 2 Microscopy 2			
Task 3 Mitosis			
Task 4 Stem Cells			
Task 5 Cell Transport			

SCIENCE DEPARTMENT MARKING CODE

ID = Insufficient detail in answer
W = Wrong understanding of science
IR = Irrelevant information given.
V = This is too vague to get a mark.
AQ = Answer the question asked
R = Read the question/information
M = Maths mistake
BOD = Benefit of the doubt given.
E = Explain the answer further please.
U = Wrong units used.
SF = Wrong significant figures used.
SP = Wrong spelling of a technical term
SR = Same reason given more than once.
A circle means this lost you marks
An underline means this gained you marks

PLEASE READ

This homework booklet has made with custom selected examination questions and activities to assess your understanding in the concepts covered in class. This will increase your familiarity with the style of examination questions.

Carrying out these questions can only increase your ability to gain a high grade in the GCSE examination.

Thank you for your hard work in completing this book, and good luck.

Mr. Turnbull

TASK 1: MICROSCOPY 1

SPEC CHECK

Content	Achieved?
Students should be able to: • Understand how microscopy techniques have developed over time • Explain how electron microscopy has increased understanding of sub-cellular structures. Limited to the differences in magnification and resolution. An electron microscope has much higher magnification and resolving power than a light microscope. This means that it can be used to study cells in much finer detail. This has enabled biologists to see and understand many more sub-cellular structures.	
Students should be able to carry out calculations involving magnification, real size and image size using the formula: $\text{magnification} = \frac{\text{size of image}}{\text{size of real object}}$	
Students should be able to express answers in standard form if appropriate.	

Target Setting

In this assessed piece of work, what target should I look to achieve in completing this task? Please refer to your marking feedback for your target.

From your previous work, fill in the following boxes with your personal progress in Physics.

What Topics Do I Know Well?

What Topics Do I Need to Revise?

SECTION A

This is a revision question on a previous topic.

You should aim to spend **10 minutes** answering this section.

1.1 Fill in the table below to complete the information about units used in biology.

[7 Marks]

Prefix	Power of 10	Example using length
_____	10^3	1 kilometre (km) = 1000 m
		metre (m)
centi	10^{-2}	1 centimetre (cm) = 0.01 m
milli	_____	1 _____ (mm) =0.001 m
_____	10^{-6}	1 micrometre (μm) = _____ m
nano	_____	1 nanometre (_____) = 0.000 000 001 m

1.2 A 15-year-old girl is 1.55 m tall. She was 47.6 cm long at birth.

Calculate how much she has grown since birth in metres.

[1 Mark]

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1.3 A fertilised egg (zygote) has a diameter of 0.01 cm.

At birth the average baby measures 50 cm in length.

Calculate the change in order of magnitude of length from fertilisation to birth.

[2 Marks]

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SECTION B

This is a question to revise understanding carried out in lesson.

You should aim to spend **10 minutes** answering this section.

1. A scientist clones a cauliflower plant.

He uses small pieces of the cauliflower plant called explants.

This is the method the scientist uses to get the explants:

- Place the equipment in a beaker of bleach and swab the bench with 70% alcohol.
- Collect a small piece of cauliflower and place on a white tile.
- Using a scalpel cut the piece of cauliflower lengthways into small 3–5 mm pieces called explants.
- Measure the mass of the explants.

1.1 What equipment should be used to measure the mass of the explants to 1 hundredth of a gram?

[1 Mark]

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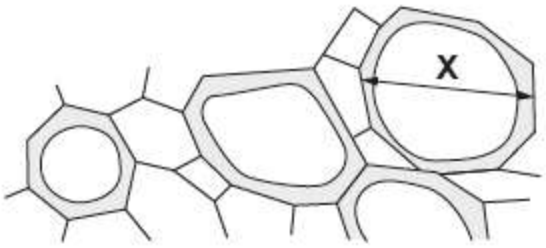
.....

The scientist observes some of the tissues of the growing explants using a light microscope.

The diagram shows some of the plant cells.



The diameter of **X** has been magnified 500×.

1.2 What is the actual diameter of **X**?

Give your answer in standard form.

[2 Marks]

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.....

Diameter = ... mm

1.3 Transmission electron microscopes (TEM) work by passing a beam of electrons through a very thin slice of an object.

Suggest **one** advantage and **one** disadvantage of using TEM rather than a light microscope to look at cells.

[2 Marks]

Advantage

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Disadvantage

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SECTION C

This is a challenge question to extend your understanding.

You should aim to spend **10 minutes** answering this section.

1.1 A student views the image of a cell magnified 40 000 times. The image is 50 mm long.

Calculate the actual length of the sample in micrometres.

[3 Marks]

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1.2 A sperm cell has a tail 40 µm long and a student draws it 40 mm long. Calculate the magnification.

[3 Marks]

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1.3 A red blood cell is 7.5 µm in diameter. It is magnified 2000 times. Calculate the diameter of the image seen through the microscope in millimetres.

[3 Marks]

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FEEDBACK SHEET

Overall Mark:	**/24**	**GRADE ACHIEVED:**	
		9 ☐	**5** ☐
		8 ☐	**4** ☐
		7 ☐	**3** ☐
		6 ☐	**U** ☐
Section A: Mark	/10		
Section B: Mark	/5		
Section C: Mark	/9		

Knowledge and understanding shown	Unsatisfactory	Satisfactory	Good	Outstanding

Strengths:	☐ Basic Knowledge of Concepts ☐ Quality of Written Communication ☐ Working Scientifically ☐ Answering Examination Questions ☐ Analytical Skills **Others** (Topic Specific)	☐ Applications of Concepts ☐ Mathematical Skills ☐ Experimental Technique ☐ Previous Topics ☐ Problem Solving
Areas to Improve:	☐ Basic Knowledge of Concepts ☐ Quality of Written Communication ☐ Working Scientifically ☐ Answering Examination Questions ☐ Analytical Skills **Others** (Topic Specific)	☐ Applications of Concepts ☐ Mathematical Skills ☐ Experimental Technique ☐ Previous Topics ☐ Problem Solving

Progress:	Unsatisfactory	Satisfactory	Good	Outstanding
Working:	Below	In line with	Above	**(your target)**
Effort:	Poor	Inconsistent	Good	Excellent

To improve further you need to:

☐ Carry out **independent** revision. ☐ Complete outstanding work. ☐ Make corrections as indicated by the teacher. ☐ Attend intervention for this topic ☐ Include more information in responses. ☐ Include more key words in responses. ☐ Attend departmental revision sessions. ☐ Read the questions carefully. ☐ Explain your answers in more detail. ☐ Carry out revision on Seneca Learning.	☐ Revise the equations. ☐ Check the units on answers. ☐ Check the correct amount of sig figs on answers. ☐ Check to convert values correctly. ☐ Show your full working out. ☐ Check your calculations. ☐ Revise the science investigative skills. ☐ Revise the key concepts of the topics. ☐ Thoroughly check your work for mistakes. Other:

Student response

TASK 2: MICROSCOPY 2

SPEC CHECK

Content	Achieved?
Students should be able to: • Understand how microscopy techniques have developed over time • Explain how electron microscopy has increased understanding of sub-cellular structures. Limited to the differences in magnification and resolution. An electron microscope has much higher magnification and resolving power than a light microscope. This means that it can be used to study cells in much finer detail. This has enabled biologists to see and understand many more sub-cellular structures.	
Students should be able to carry out calculations involving magnification, real size and image size using the formula: $\text{magnification} = \frac{\text{size of image}}{\text{size of real object}}$	
Students should be able to express answers in standard form if appropriate.	

Target Setting

In this assessed piece of work, what target should I look to achieve in completing this task? Please refer to your marking feedback for your target.

From your previous work, fill in the following boxes with your personal progress in Physics.

What Topics Do I Know Well?

What Topics Do I Need to Revise?

SECTION A

This is a revision question on a previous topic.

You should aim to spend **10 minutes** answering this section.

1. Work out the real size of these objects.

[10 Marks]

Question	Size of image (mm)	Magnification	Size of real object (mm)
1.1	5	40	
1.2	10	1000	
1.3	12	60	
1.4	8	200	
1.5	15	500	

SECTION B

This is a question to revise understanding carried out in lesson.

You should aim to spend **10 minutes** answering this section.

1. Figure 2 shows a sperm cell.

Figure 2

The function of a sperm cell is to swim to an egg and fertilise it.

It has a tail to swim.

1.1 Describe **one** other adaptation of the sperm cell.

[2 Marks]

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1.2 A student observed a sperm cell using a microscope at a magnification of ×400.

The sperm cell image measured 22 mm long.

Use the equation to calculate the real size of the cell.

Give your answer in micrometres (μm).

$$\text{magnification} = \frac{\text{size of image}}{\text{size of real object}}$$

[3 Marks]

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SECTION C

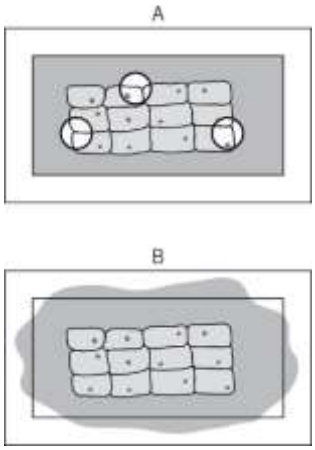
This is a challenge question to extend your understanding.

You should aim to spend **10 minutes** answering this section.

1. A student prepared a slide of onion epidermis to observe under a microscope.

Two of the slides she prepared are shown in **Figure 3**.

Figure 3



1.1 Describe what is wrong with slide **A**.

Suggest how this problem can be avoided.

[2 Marks]

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1.2 Describe what is wrong with slide **B**.

Suggest how this problem could be corrected.

[2 Marks]

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1.3 When observing a slide under the microscope you must first use the lowest power objective lens.

Explain why this is important.

[2 Marks]

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FEEDBACK SHEET

Overall Mark:	**/21**	**GRADE ACHIEVED:**	
		9 ☐	**5** ☐
		8 ☐	**4** ☐
		7 ☐	**3** ☐
		6 ☐	**U** ☐
Section A: Mark	/10		
Section B: Mark	/5		
Section C: Mark	/6		

Knowledge and understanding shown	Unsatisfactory	Satisfactory	Good	Outstanding

Strengths:	☐ Basic Knowledge of Concepts ☐ Quality of Written Communication ☐ Working Scientifically ☐ Answering Examination Questions ☐ Analytical Skills **Others** (Topic Specific)	☐ Applications of Concepts ☐ Mathematical Skills ☐ Experimental Technique ☐ Previous Topics ☐ Problem Solving
Areas to Improve:	☐ Basic Knowledge of Concepts ☐ Quality of Written Communication ☐ Working Scientifically ☐ Answering Examination Questions ☐ Analytical Skills **Others** (Topic Specific)	☐ Applications of Concepts ☐ Mathematical Skills ☐ Experimental Technique ☐ Previous Topics ☐ Problem Solving

Progress:	Unsatisfactory	Satisfactory	Good	Outstanding
Working:	Below	In line with	Above	**(your target)**
Effort:	Poor	Inconsistent	Good	Excellent

To improve further you need to:

☐ Carry out **independent** revision.	☐ Revise the equations.
☐ Complete outstanding work.	☐ Check the units on answers.
☐ Make corrections as indicated by the teacher.	☐ Check the correct amount of sig figs on answers.
☐ Attend intervention for this topic	☐ Check to convert values correctly.
☐ Include more information in responses.	☐ Show your full working out.
☐ Include more key words in responses.	☐ Check your calculations.
☐ Attend departmental revision sessions.	☐ Revise the science investigative skills.
☐ Read the questions carefully.	☐ Revise the key concepts of the topics.
☐ Explain your answers in more detail.	☐ Thoroughly check your work for mistakes.
☐ Carry out revision on Seneca Learning.	Other:

Student response

TASK 3: MITOSIS

SPEC CHECK

Content	Achieved?
The nucleus of a cell contains chromosomes made of DNA molecules. Each chromosome carries a large number of genes. In body cells the chromosomes are normally found in pairs.	
Cells divide in a series of stages called the cell cycle. Students should be able to describe the stages of the cell cycle, including mitosis. During the cell cycle the genetic material is doubled and then divided into two identical cells. Before a cell can divide it needs to grow and increase the number of sub-cellular structures such as ribosomes and mitochondria. The DNA replicates to form two copies of each chromosome. In mitosis one set of chromosomes is pulled to each end of the cell and the nucleus divides. Finally, the cytoplasm and cell membranes divide to form two identical cells. Students need to understand the three overall stages of the cell cycle but do not need to know the different phases of the mitosis stage. Cell division by mitosis is important in the growth and development of multicellular organisms. Students should be able to recognise and describe situations in given contexts where mitosis is occurring.	

Target Setting

In this assessed piece of work, what target should I look to achieve in completing this task? Please refer to your marking feedback for your target.

From your previous work, fill in the following boxes with your personal progress in Physics.

What Topics Do I Know Well?	What Topics Do I Need to Revise?

SECTION A

This is a revision question on a previous topic.

You should aim to spend **10 minutes** answering this section.

1. As an organism develops, cells differentiate to form specialised cells.

1.1 Describe what happens during differentiation to form a specialised cell.

[2 Marks]

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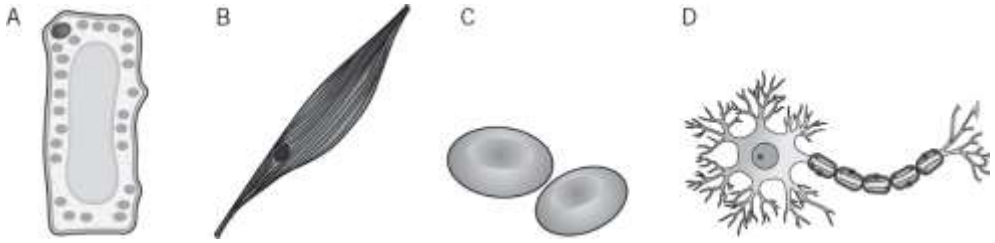
Figure 1 shows some specialised cells from plants and animals.

Figure 1



1.2 Complete the table to name each cell and describe its function.

[8 Marks]

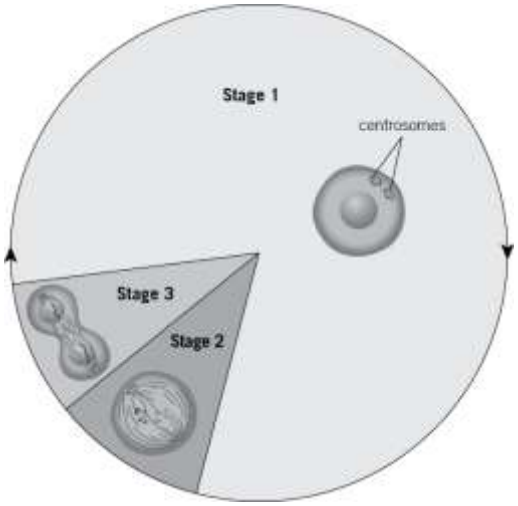
Cell	Name	Function
A		
B		
C		
D		

SECTION B

This is a question to revise understanding carried out in lesson.

You should aim to spend **10 minutes** answering this section.

Below is a diagram of the cell cycle for human skin cells at the site of a wound.



The stages in the cell cycle of a human skin cell

1.1 Describe the main events which occur in:

Stage **1**

[1 Mark]

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Stage **2**

[1 Mark]

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Stage **3**

[1 Mark]

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1.2 Explain why the interphase stage is the longest stage in the cell cycle.

[2 Marks]

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1.3 Suggest why mitosis is important in living organisms.

[2 Marks]

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SECTION C

This is a challenge question to extend your understanding.

You should aim to spend **10 minutes** answering this section.

1.1 How many chromosomes are found in a body cell of a human baby?

[1 Mark]

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1.2 In order for a baby to grow, its cells must enlarge and divide by mitosis.

Why is cell enlargement important in the growth of a baby?

[1 Mark]

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1.3 Describe in detail the process of cell division by mitosis.

You should include:

What happens in the cell?

What is produced?

[6 Marks]

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FEEDBACK SHEET

Overall Mark:	**/26**	**GRADE ACHIEVED:**	
		9 ☐	**5** ☐
		8 ☐	**4** ☐
		7 ☐	**3** ☐
		6 ☐	**U** ☐
Section A: Mark	/10		
Section B: Mark	/7		
Section C: Mark	/9		

Knowledge and understanding shown	Unsatisfactory	Satisfactory	Good	Outstanding

Strengths:	☐ Basic Knowledge of Concepts ☐ Quality of Written Communication ☐ Working Scientifically ☐ Answering Examination Questions ☐ Analytical Skills **Others** (Topic Specific)	☐ Applications of Concepts ☐ Mathematical Skills ☐ Experimental Technique ☐ Previous Topics ☐ Problem Solving
Areas to Improve:	☐ Basic Knowledge of Concepts ☐ Quality of Written Communication ☐ Working Scientifically ☐ Answering Examination Questions ☐ Analytical Skills **Others** (Topic Specific)	☐ Applications of Concepts ☐ Mathematical Skills ☐ Experimental Technique ☐ Previous Topics ☐ Problem Solving

Progress:	Unsatisfactory	Satisfactory	Good	Outstanding
Working:	Below	In line with	Above	**(your target)**
Effort:	Poor	Inconsistent	Good	Excellent

To improve further you need to:

☐ Carry out **independent** revision. ☐ Complete outstanding work. ☐ Make corrections as indicated by the teacher. ☐ Attend intervention for this topic ☐ Include more information in responses. ☐ Include more key words in responses. ☐ Attend departmental revision sessions. ☐ Read the questions carefully. ☐ Explain your answers in more detail. ☐ Carry out revision on Seneca Learning.	☐ Revise the equations. ☐ Check the units on answers. ☐ Check the correct amount of sig figs on answers. ☐ Check to convert values correctly. ☐ Show your full working out. ☐ Check your calculations. ☐ Revise the science investigative skills. ☐ Revise the key concepts of the topics. ☐ Thoroughly check your work for mistakes. Other:

Student response

TASK 4: STEM CELLS

SPEC CHECK

Content	Achieved?
A stem cell is an undifferentiated cell of an organism which is capable of giving rise to many more cells of the same type, and from which certain other cells can arise from differentiation. Students should be able to describe the function of stem cells in embryos, in adult animals and in the meristems in plants. Stem cells from human embryos can be cloned and made to differentiate into most different types of human cells. Stem cells from adult bone marrow can form many types of cells including blood cells. Meristem tissue in plants can differentiate into any type of plant cell, throughout the life of the plant. Knowledge and understanding of stem cell techniques are not required. Treatment with stem cells may be able to help conditions such as diabetes and paralysis.	
In therapeutic cloning an embryo is produced with the same genes as the patient. Stem cells from the embryo are not rejected by the patient's body so they may be used for medical treatment. The use of stem cells has potential risks such as transfer of viral infection, and some people have ethical or religious objections. Stem cells from meristems in plants can be used to produce clones of plants quickly and economically. • Rare species can be cloned to protect from extinction. • Crop plants with special features such as disease resistance can be cloned to produce large numbers of identical plants for farmers.	
Evaluate the practical risks and benefits, as well as social and ethical issues, of the use of stem cells in medical research and treatments.	

Target Setting

In this assessed piece of work, what target should I look to achieve in completing this task? Please refer to your marking feedback for your target.

From your previous work, fill in the following boxes with your personal progress in Physics.

What Topics Do I Know Well?	What Topics Do I Need to Revise?

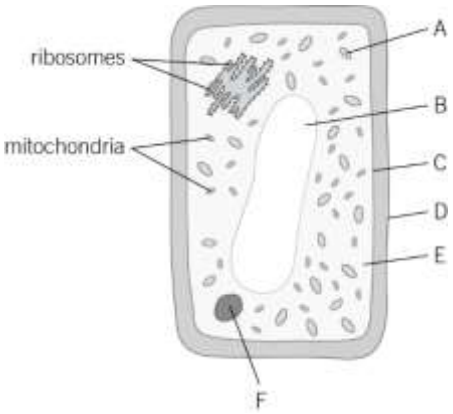
SECTION A

This is a revision question on a previous topic.

You should aim to spend **10 minutes** answering this section.

1. Figure 1 shows a plant cell.

Figure 1



1.1 Which part of the cell shown in **Figure 1** is the cell wall?

[1 Mark]

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1.2 Name the chemical that the cell wall is made of.

[1 Mark]

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1.3 Which part of the cell shown in **Figure 1** controls what enters and leaves the cell?

What is this structure called?

[2 Marks]

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In which part of the cell shown in **Figure 1** does photosynthesis take place?

1.4 What is the name of this structure?

[2 Marks]

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1.5 What is the function of ribosomes?

[1 Mark]

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In which type of animal cell would you find a lot of mitochondria?

1.6 Give a reason for your answer.

[2 Marks]

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1.7 Name **one** part of a plant cell that is also found in bacterial cells.

[1 Mark]

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SECTION B

This is a question to revise understanding carried out in lesson.

You should aim to spend **10 minutes** answering this section.

1. After a baby is born, stem cells may be collected from the umbilical cord. These can be frozen and stored for possible use in the future.

1.1 What are stem cells?

[Marks]

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1.2 Suggest why it is ethically more acceptable to take stem cells from an umbilical cord instead of using stem cells from a 4-day-old embryo produced by In Vitro Fertilisation (IVF).

[1 Mark]

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1.3 Stem cells taken from a child's umbilical cord could be used to treat a condition later in that child's life.

Give **one** advantage of using the child's own umbilical cord stem cells instead of using stem cells donated from another person.

[1 Mark]

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1.4 Why would it **not** be possible to treat a genetic disorder in a child using his own umbilical cord stem cells?

[1 Mark]

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SECTION C

This is a challenge question to extend your understanding.

You should aim to spend **10 minutes** answering this section.

1. This question is about stem cells.

1.1 Where in a plant are stem cells found?

[1 Mark]

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Stem cells can be used to treat some human diseases.

There are two main sources of stem cells.

Stem cells can be collected from an early embryo, before the cells have started to differentiate. These embryonic stem cells can form any type of human cell, tissue or organ. Research is being done on the use of embryonic stem cells to treat some human diseases.

Stem cells can also be collected from adult bone marrow. It involves a simple operation, but the procedure can be painful. Stem cells from bone marrow mainly differentiate to form blood cells. They have been used for many years to treat blood diseases such as leukaemia in humans. Recently there have been trials of other types of stem cell from bone marrow. These could be used to treat diseases such as heart disease.

1.2 Evaluate the use of embryonic stem cells and stem cells from adult bone marrow in the treatment of human diseases.

[6 Marks]

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FEEDBACK SHEET

Overall Mark:	**/22**	**GRADE ACHIEVED:**	
		9 ☐	**5** ☐
		8 ☐	**4** ☐
		7 ☐	**3** ☐
		6 ☐	**U** ☐
Section A: Mark	/10		
Section B: Mark	/5		
Section C: Mark	/7		

Knowledge and understanding shown	Unsatisfactory	Satisfactory	Good	Outstanding

Strengths:	☐ Basic Knowledge of Concepts ☐ Quality of Written Communication ☐ Working Scientifically ☐ Answering Examination Questions ☐ Analytical Skills **Others** (Topic Specific)	☐ Applications of Concepts ☐ Mathematical Skills ☐ Experimental Technique ☐ Previous Topics ☐ Problem Solving
Areas to Improve:	☐ Basic Knowledge of Concepts ☐ Quality of Written Communication ☐ Working Scientifically ☐ Answering Examination Questions ☐ Analytical Skills **Others** (Topic Specific)	☐ Applications of Concepts ☐ Mathematical Skills ☐ Experimental Technique ☐ Previous Topics ☐ Problem Solving

Progress:	Unsatisfactory	Satisfactory	Good	Outstanding
Working:	Below	In line with	Above	**(your target)**
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To improve further you need to:

☐ Carry out **independent** revision.	☐ Revise the equations.
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☐ Read the questions carefully.	☐ Revise the key concepts of the topics.
☐ Explain your answers in more detail.	☐ Thoroughly check your work for mistakes.
☐ Carry out revision on Seneca Learning.	Other:

Student response

TASK 5: CELL TRANSPORT

SPEC CHECK

Content	Achieved?
Substances may move into and out of cells across the cell membranes via diffusion. Diffusion is the spreading out of the particles of any substance in solution, or particles of a gas, resulting in a net movement from an area of higher concentration to an area of lower concentration. Some of the substances transported in and out of cells by diffusion are oxygen and carbon dioxide in gas exchange, and of the waste product urea from cells into the blood plasma for excretion in the kidney. Students should be able to explain how different factors affect the rate of diffusion. Factors which affect the rate of diffusion are: • The difference in concentrations (concentration gradient) • The temperature • The surface area of the membrane. A single-celled organism has a relatively large surface area to volume ratio. This allows sufficient transport of molecules into and out of the cell to meet the needs of the organism.	
Water may move across cell membranes via osmosis. Osmosis is the diffusion of water from a dilute solution to a concentrated solution through a partially permeable membrane.	
Active transport moves substances from a more dilute solution to a more concentrated solution (against a concentration gradient). This requires energy from respiration. Active transport allows mineral ions to be absorbed into plant root hairs from very dilute solutions in the soil. Plants require ions for healthy growth. It also allows sugar molecules to be absorbed from lower concentrations in the gut into the blood which has a higher sugar concentration. Sugar molecules are used for cell respiration. Students should be able to: • Describe how substances are transported into and out of cells by diffusion, osmosis and active transport • Explain the differences between the three processes.	

Target Setting

In this assessed piece of work, what target should I look to achieve in completing this task? Please refer to your marking feedback for your target.

From your previous work, fill in the following boxes with your personal progress in Physics.

What Topics Do I Know Well?	What Topics Do I Need to Revise?

SECTION A

This is a revision question on a previous topic.

You should aim to spend **10 minutes** answering this section.

1. An understanding of relative size is essential in science.

1.1 Draw **one** line from each structure to the approximate radius of that structure.

[4 marks]

Structure	Approximate radius
a bacterial cell	1×10^{-14} m
a large molecule	5×10^{-10} m
an animal cell	1×10^{-10} m
an atom	1×10^{-6} m
	2×10^{-5} m
	3×10^{-9} m

1.2 Explain why a bacterium can rely on diffusion for gas exchange, but animals need a transport system.

[3 marks]

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SECTION B

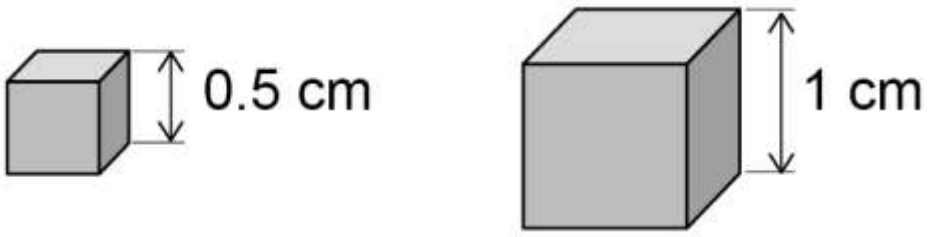
This is a question to revise understanding carried out in lesson.

You should aim to spend **10 minutes** answering this section.

1. Figure 7 shows two model cells.

Both models are cubes.

Figure 7



1.1 Describe how the surface area to volume ratio changes as the length of the side of the model cell increases.

You should include calculations in your answer.

[3 marks]

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1.2 Explain why a bacterium can rely on diffusion for gas exchange, but animals need a transport system.

[3 marks]

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SECTION C

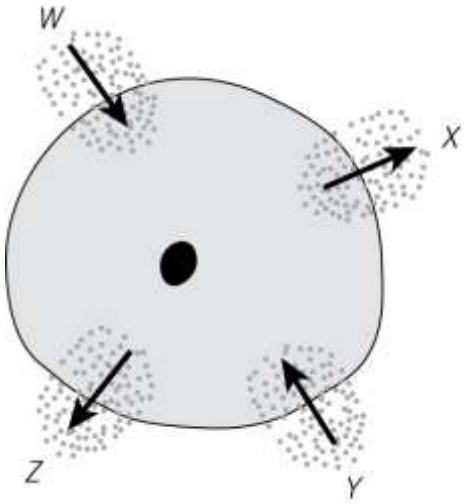
This is a challenge question to extend your understanding.

You should aim to spend **10 minutes** answering this section.

1. Figure 4 shows how particles can move into or out of a cell.

The dots represent the concentration of the particles.

Figure 4



1.1 During aerobic respiration, which arrow will represent the movement of carbon dioxide and which arrow will represent the movement of oxygen?

[2 Marks]

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1.2 Name the process by which these gases move into and out of the cell.

[1 Mark]

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Figure 5 shows a root hair cell.

Figure 5

root hair cell

1.3 Root hair cells are adapted for the efficient absorption of water and mineral ions from the soil.

Describe the processes by which root hair cells absorb water and mineral ions from the soil.

[6 Marks]

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FEEDBACK SHEET

Overall Mark:	**/22**	**GRADE ACHIEVED:**	
		9 ☐	**5** ☐
		8 ☐	**4** ☐
		7 ☐	**3** ☐
		6 ☐	**U** ☐
Section A: Mark	/7		
Section B: Mark	/6		
Section C: Mark	/9		

Knowledge and understanding shown	Unsatisfactory	Satisfactory	Good	Outstanding

Strengths:	☐ Basic Knowledge of Concepts ☐ Quality of Written Communication ☐ Working Scientifically ☐ Answering Examination Questions ☐ Analytical Skills **Others** (Topic Specific)	☐ Applications of Concepts ☐ Mathematical Skills ☐ Experimental Technique ☐ Previous Topics ☐ Problem Solving
Areas to Improve:	☐ Basic Knowledge of Concepts ☐ Quality of Written Communication ☐ Working Scientifically ☐ Answering Examination Questions ☐ Analytical Skills **Others** (Topic Specific)	☐ Applications of Concepts ☐ Mathematical Skills ☐ Experimental Technique ☐ Previous Topics ☐ Problem Solving

Progress:	Unsatisfactory	Satisfactory	Good	Outstanding
Working:	Below	In line with	Above	**(your target)**
Effort:	Poor	Inconsistent	Good	Excellent

To improve further you need to:

☐ Carry out **independent** revision. ☐ Complete outstanding work. ☐ Make corrections as indicated by the teacher. ☐ Attend intervention for this topic ☐ Include more information in responses. ☐ Include more key words in responses. ☐ Attend departmental revision sessions. ☐ Read the questions carefully. ☐ Explain your answers in more detail. ☐ Carry out revision on Seneca Learning.	☐ Revise the equations. ☐ Check the units on answers. ☐ Check the correct amount of sig figs on answers. ☐ Check to convert values correctly. ☐ Show your full working out. ☐ Check your calculations. ☐ Revise the science investigative skills. ☐ Revise the key concepts of the topics. ☐ Thoroughly check your work for mistakes. Other:

Student response

Acknowledgements

This document has been produced by Mr J Turnbull.

All relevant information has been credited in the document.

This document has been produced for educational purposes only.

This document has been produced for the AQA GCSE Science Specification.