

TWENTY FIRST CENTURY
science

Module B5

GROWTH and DEVELOPMENT

Practice test

FOUNDATION

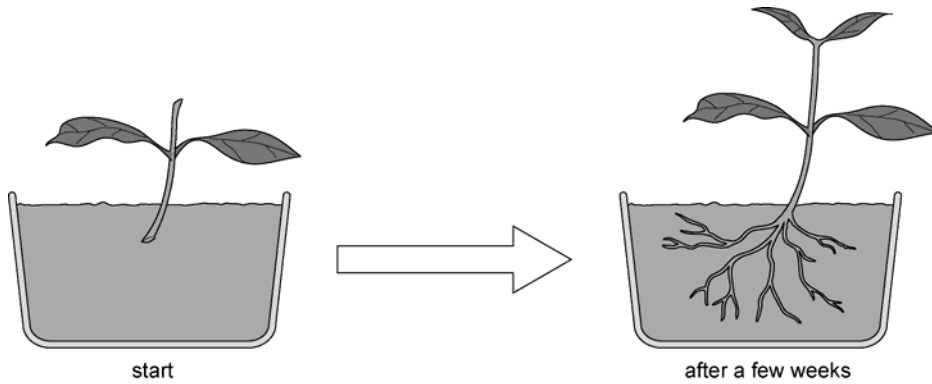
Name:

Form/teaching set:

Answer all of the questions.

Write your answers in the spaces provided on this paper.

- 1 A stem cutting is put into a growth medium.
The diagram shows the cutting after a few weeks.



- (a) Name two new plant parts that have grown from the cutting.

1

2 [2]

- (b) Which of the following is the tissue that has divided to produce cells for these new parts?

Choose from the list.

Put a **ring** around the correct answer.

meristem **phloem** **xylem** [1]

(c) Complete the following sentence.

Use words from the list.

cells

genes

plants

proteins

The tissue can produce many different types of cells because the tissue is made of undifferentiated in which all the are active.

[2]

(d) The growth medium contains a plant hormone.

What job does the hormone do?

Put a tick (✓) in the one correct box.

provides food for the plant

stimulates root cell growth

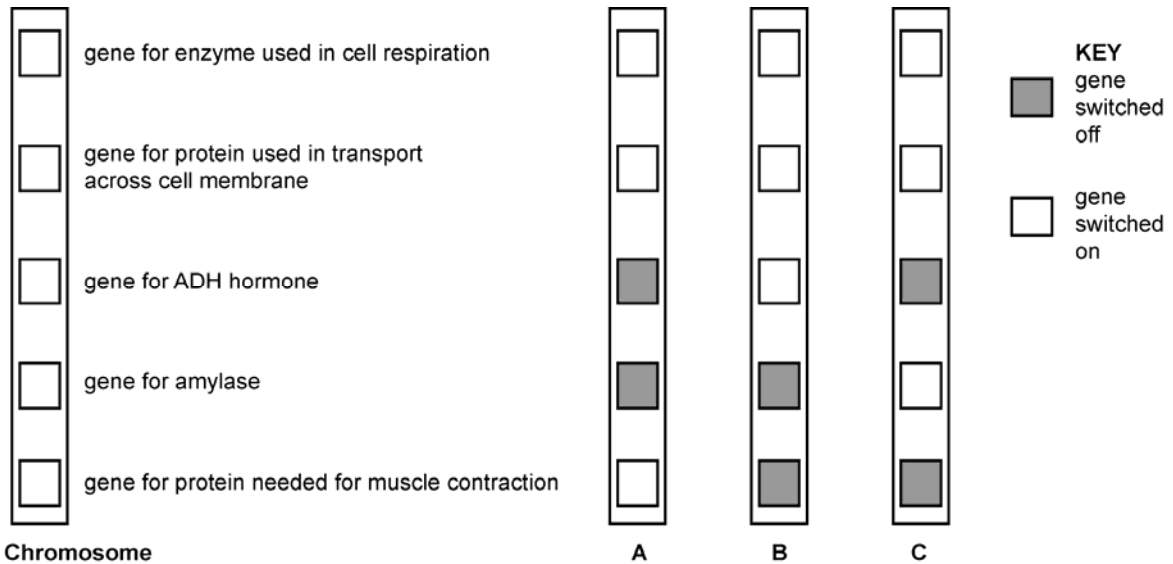
helps the plant reproduce

makes the leaves green

[1]

[Total marks: 6]

- 2 The diagram shows a chromosome with five genes.
Each gene does a different job.
This chromosome was taken from three different cells: cell **A**, cell **B** and cell **C**.



- (a) Salivary glands make amylase.
Which chromosome, **A**, **B** or **C**, is from a salivary gland cell?

..... [1]

- (b) Two of the genes are switched on in all three cells.
Which two sentences best explain why?

Put ticks (✓) in the **two** correct boxes.

- All cells get energy from respiration.
- All cells need muscles.
- All cells have a cell membrane.
- All cells produce ADH.

[2]

- (c) Name the part of the cell where chromosomes are found.

.....

[1]

[Total marks: 4]

3 Mitosis and meiosis are both types of cell division.

Choose the correct answers from the list to complete the table.

identical to parent cell

making gametes

four

different from parent cell

growth and repair

two

	mitosis	meiosis
What is it used for?		
Number of daughter cells		
Genes in daughter cell		

[5]

[Total marks: 5]

4 (a) Read the information about DNA and answer the questions.

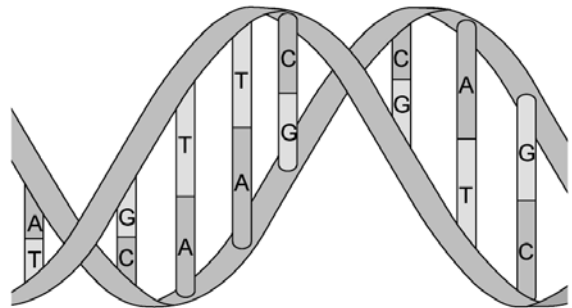
The genetic code

DNA has 4 **bases** called A, G, C and T, which always pair up the same way.

This means a DNA strand can always copy itself exactly.

Each three bases on DNA code forms a **triplet**.

Each triplet codes for one amino acid in a protein.



DNA triplet	amino acid
AAT	leucine
CCG	glycine
CGC	alanine
TTA	asparagine
GGC	proline

(i) Which one of the four bases is **not** in the triplet AGT?

..... [1]

(ii) Write down the DNA triplet which codes for alanine.

..... [1]

(iii) Write down the DNA triplet which pairs up with CAG.

..... [1]

(b) Choose from the list to answer the questions.

- cell membrane cytoplasm nucleus root**

(i) Where in the cell is DNA found?

..... [1]

(ii) Where in the cell is protein made?

..... [1]

[Total marks: 5]

[Total marks for the test: 20]

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HIGHER

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Answer all of the questions.

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Choose the correct answers from the list to complete the table.

identical to parent cell

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four

different from parent cell

growth and repair

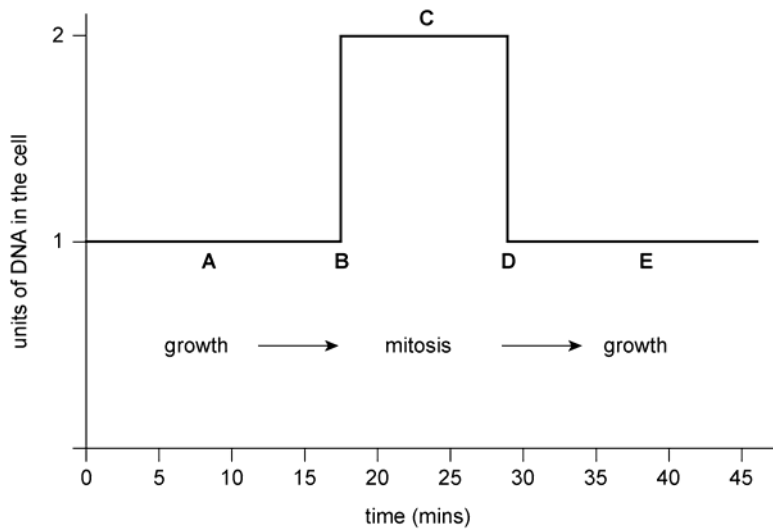
two

	mitosis	meiosis
What is it used for?		
Number of daughter cells		
Genes in daughter cell		

[4]

[Total marks: 4]

2 The graph below shows the changes in the amount of DNA in a cell during the cell cycle.



Put a letter in each box to show when the process happens during the cycle.

copies of chromosomes separate

DNA is copied

cell division

the number of organelles increases

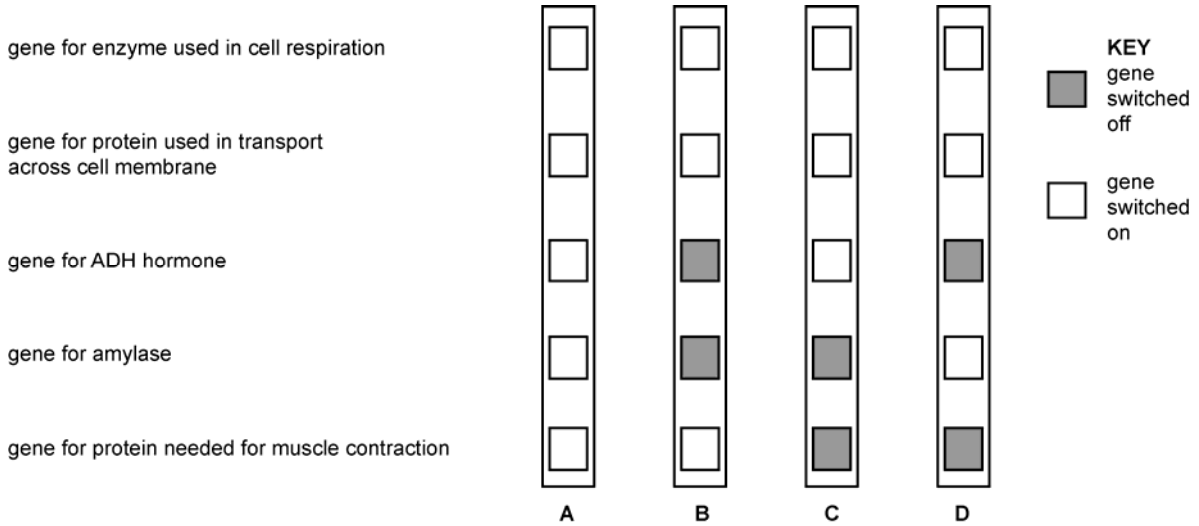
[4]

[Total marks: 4]

3 The diagram shows a chromosome with five genes.

Each gene codes for a different protein.

This chromosome was taken from four different cells: cell **A**, cell **B**, cell **C** and cell **D**.



(a) Each chromosome came from a different type of cell.

Connect the chromosomes to the type of cell using straight lines.

chromosome

A

B

C

D

type of cell

salivary gland

muscle

kidney

pituitary gland

embryonic stem cell

[4]

(b) Two of the genes are switched on in all four cells.

Which two sentences best explain why?

Put ticks (✓) in the **two** correct boxes.

All cells get energy from respiration.

All cells need to produce enzymes.

All cells have a cell membrane with proteins in the membrane.

All cells have DNA which codes for proteins.

All cells produce hormones.

[2]

[Total marks: 6]

The genetic code

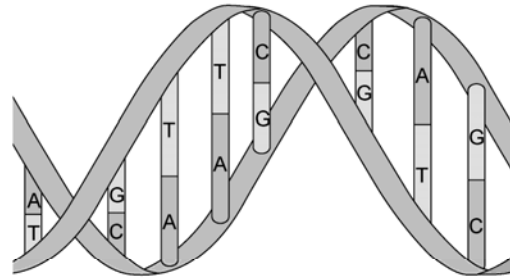
DNA has 4 bases called A, G, C and T, which always pair up in the same way.

This means a DNA strand can always copy itself exactly.

mRNA can carry a copy of the bases on the DNA molecule to where proteins are made in the cell.

mRNA also has 4 bases, AGC and U (the T in DNA is a U in RNA).

DNA uses a triplet code, with three bases coding for one amino acid in a protein.



DNA triplet	amino acid
AAT	leucine
CCG	glycine
CGC	alanine
GCG	arginine
GGC	proline
TTA	asparagine

(a) The bases on a DNA strand always pair up the same way.

What are these pairs?

..... [2]

(b) A sequence of bases on DNA is:

G A C T A A T G C T A C

How many amino acids will this sequence code for?

..... [1]

(c) An mRNA molecule has the base sequence:

C C G G C G A A U

(i) Write down the sequence of bases on the DNA it was copied from.

..... [1]

(ii) Write down, in order, the amino acids produced by the sequence carried on the mRNA.

..... [2]

[Total marks: 6]

[Total marks for the test: 20]