

Mark	/27
%	

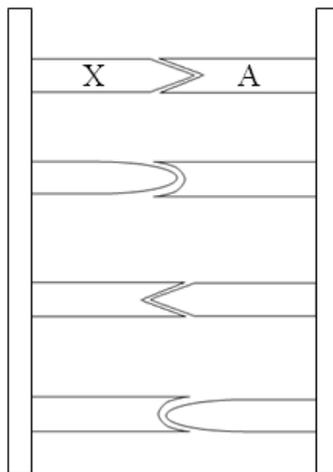
Producing new cells and DNA

SECTION 1

1. The cell structure where chromosomes are found is the

- A Nucleus
- B Ribosome
- C Mitochondria
- D Cell membrane

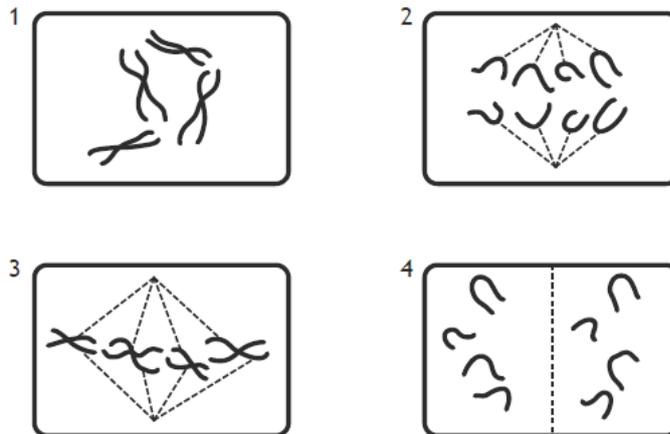
2. The diagram below shows a section of DNA.



Which base should be in position X?

- A Cytosine
- B Guanine
- C Adenine
- D Thymine

The following diagrams show a cell at four different stages of mitosis.



The correct order of the stages of mitosis is

- A 1,3,2,4
- B 2,3,4,1
- C 3,2,1,4
- D 4,1,2,3.

4. A cell which is about to divide has 46 chromosomes. After cell division, how many chromosomes will the daughter cells contain?

- A 23
- B 46
- C 69
- D 92

5. In which cell structure are proteins produced?

- A Mitochondria
- B Vacuole
- C Ribosome
- D Chloroplast

SECTION 2

1a)

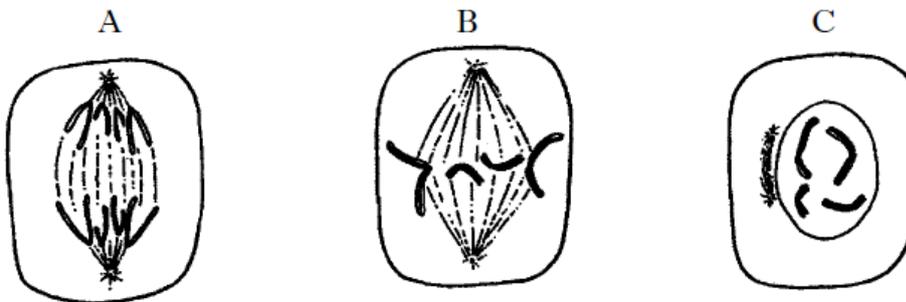
Write the correct from each set of brackets word onto your answer sheet

During cell division the **(nucleus/cytoplasm)** divides first, followed by the **(nucleus/cytoplasm)**.

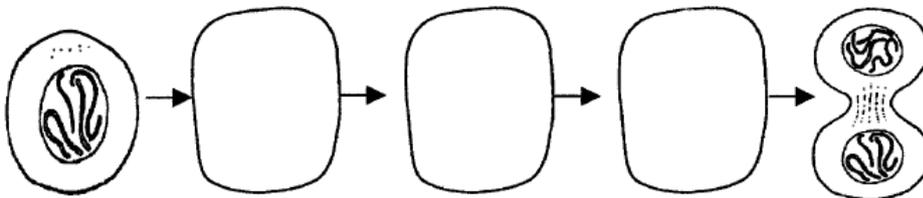
Cells produced by cell division have **(the same/a different)** number of chromosomes compared to the parent cell. (2 marks)

b) Why is cell division important to multicellular organisms such as humans (1 mark)

c) Diagrams A, B and C represent stages of cell division



The diagram below shows the process of cell division with some stages missing



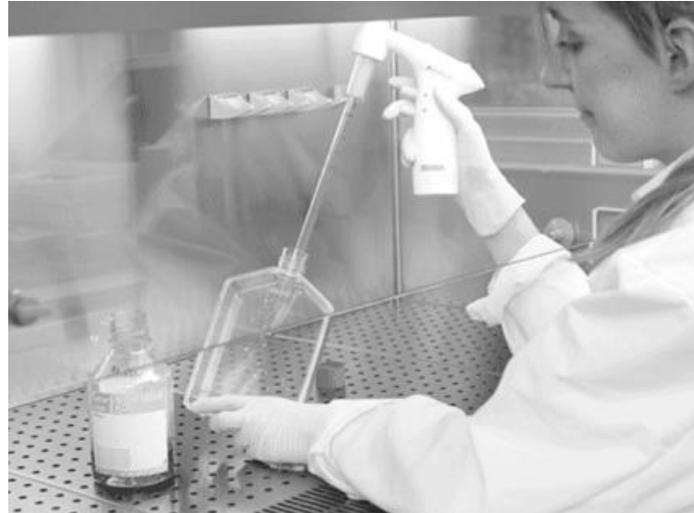
D i) On your answer sheet write the order that the diagrams A, B and C should be inserted into the missing stages (1 mark)

ii) What is the name given to this process? (1 mark)

iii) Describe what is taking place at stage B (1 mark)

2.

The picture below shows a scientist growing cell in a lab using a process known as cell culture



It is important to use aseptic techniques when carrying out cell culture in a lab.

a i) When making growing bacteria on an agar plate, the loop is flame in the bunsen before use. Why is this done? (1 mark)

ii) Give one **other** of an aseptic technique used in cell culture (1 mark)

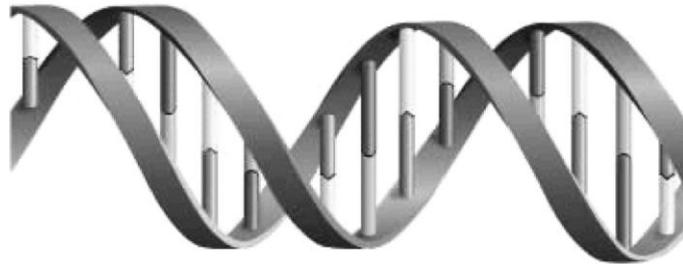
b) Name one factor which must be controlled while carrying out cell culture (1 mark)

c) A scientist growing bacterial cells in a lab had just one cell at the start of her experiment. She knew that the cell would divide every 3 hours.

How many cells would she have after 20 minutes? (1 mark)

3.

The following picture shows an important biological molecule



- a) What is the name given to this molecule? (1 mark)
- b) In which structure would you find this molecule? (1 mark)
- c) You have to decide whether each of the following statements are true or false. Write True or False on your answer sheet. **MAKE SURE YOU CORRECT THE UNDERLINED WORD FOR FALSE ANSWERS** (2 marks)

Statement	True	False	Correction
Genes carry instructions for making <u>carbohydrates</u> .			
<u>Genes</u> are passed from parents to offspring.			

4.

Our genetic code uses 4 bases, adenine, guanine, cytosine and thymine. These bases are complementary to each other and can pair up.

a) What is meant by the term complementary? (what is the base pair rule?) (1 mark)

b) What type of bond holds bases together? (1 mark)

c) A length of genetic code contains 1000 bases and 240 are adenine.

i) How many thymine bases would there be? (1 mark)

ii) How many cytosine bases would there be? (1 mark)

d) The table below shows the number of each type of base in a piece of genetic code which is 500 bases long in total.

<u>Type of base</u>	<u>Number of bases</u>	<u>Percentage</u>
C	150	
G	150	
A	100	
T	100	

On your answer sheet, write down the percentages of each base in this piece of genetic code. (2 marks)

5. On your answer sheet, write the words that should fill the gaps.

Order of bases in DNA determines sequence of _____ in the protein. (1 mark)

Our genetic information is found in the nucleus of the cell, but proteins are made elsewhere. What molecule carries the code out of the nucleus to the site of protein synthesis? (1 mark)

END OF TEST