EXAM PAPERS PRACTICE

Cell Division

Level: GSCE AQA 8461

Subject: Biology

Exam Board: Suitable for all boards

Topic: Cell Division

Level: Medium

This is to be used by all students preparing for AQA Biology 8461 foundation or higher tier but it is also suitable for students of other boards

Q1. Which statement about stem cells is correct?

a. Embryonic stem cells can differentiate into different cell types

b. Adult stem cells are only found in the bone marrow of adults

c. Bone marrow transplants use embryonic stem cells

(1)

Q2. A scientist observes 100 cancer cells with a microscope. If 16 cells are undergoing mitosis, and the length of the cell cycle is 400 hours, what is the length of mitosis?

a. 116 hours

b. 64 hours

c. 4 hours

(1)

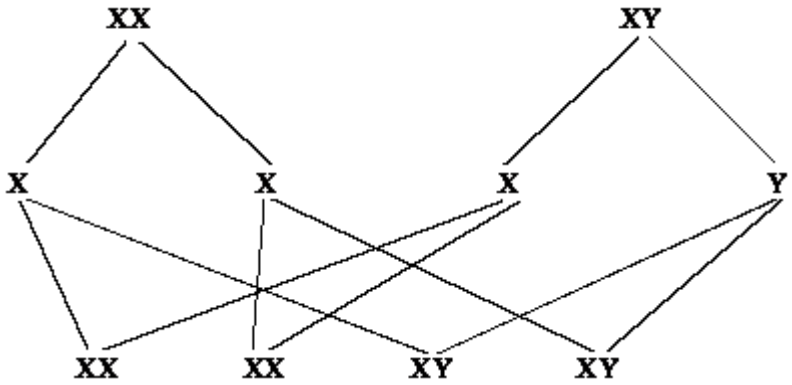
Q3. Which of the following is an ethical consideration about the use of embryonic stem cells?

a. In some cases embryos are being produced just so that stem cells can be extracted for research on therapies.

b. Transplants of stem cells from donors might transfer viruses to patients.

c. It is important to inform the public about the pros and cons of embryonic stem cell transplants. **(1)**

Q4. The genetic diagram shows how the chromosomes divide and combine in human reproduction.



(a) Draw circles around the symbols for the **two** male gametes.

(2)

(b) State the chance of a child being a girl.

.....

(1)

(c) (i) How many pairs of chromosomes are there in a human body cell?

.....

(1)

(ii) How many chromosomes are there in a human egg cell?

.....

(1)

(d) Chromosomes contain genes. From what substance are genes made?

.....

(1)

(e) In the process of mitosis, how do the number of chromosomes in the daughter cells compare to that in the original cell?

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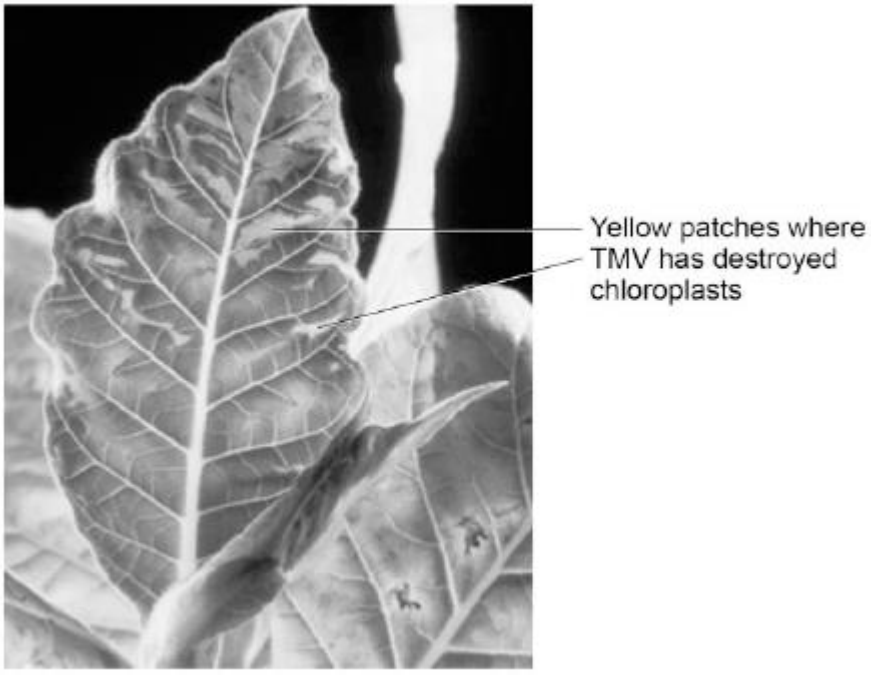
(1)

(Total 7 marks)

Q5. Tobacco mosaic virus (TMV) is a disease affecting plants.

The diagram below shows a leaf infected with TMV.



(a) All tools should be washed in disinfectant after using them on plants infected with TMV.

Suggest why.

.....

(b) Scientists produced a single plant that contained a TMV-resistant gene.

(1)

Suggest how scientists can use this plant to produce **many** plants with the TMV-resistant gene.

.....

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(1)

(c) Some plants produce fruits which contain glucose.

Describe how you would test for the presence of glucose in fruit.

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(2)

(d) TMV can cause plants to produce less chlorophyll.

This causes leaf discoloration.

Explain why plants with TMV have stunted growth.

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(4)

(Total 8 marks)

Q6.(a) In humans there are two types of cell division: **mitosis** and **meiosis.**

The table below gives statements about cell division.

Tick (✓) **one** box in each row to show if the statement is true for mitosis only, for meiosis only, or for both mitosis **and** meiosis.

The first row has been done for you.

Statement	Mitosis only	Meiosis only	Both mitosis and meiosis
How cells are replaced	✓		
How gametes are made			
How a fertilised egg undergoes cell division			
How copies of the genetic information are made			
How genetically identical cells are produced			

(4)

(b) Stem cells can be taken from human embryos.

In therapeutic cloning, an embryo is produced that has the same genes as the patient.

(i) Name **one** source of human stem cells, other than human embryos.

.....

(1)

(ii) Stem cells from embryos can be transplanted into patients for medical treatment.

Give **one** advantage of using stem cells from embryos, compared with cells from the source you named in part (i).

(1)

.....

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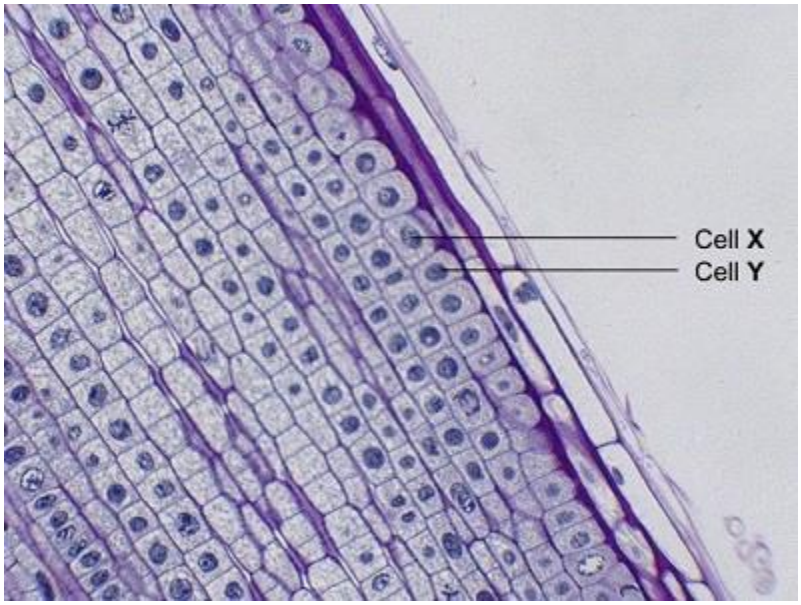
(Total 6 marks)

Q7. The photograph shows some cells in the root of an onion plant.



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(a) Cells **X** and **Y** have just been produced by cell division.

(i) Name the type of cell division that produced cells **X** and **Y**.

.....

(1)

(ii) What happens to the genetic material before the cell divides?

.....

(1)

(b) A gardener wanted to produce a new variety of onion.

Explain why sexual reproduction could produce a new variety of onion.

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(3)
(Total 5 marks)