GCSE Biology B (Twenty First Century Science)

J257/01 Breadth in Biology (Foundation)

Question Set 4

Multiple Choice Questions

1 Cancer of the ovaries is a common type of cancer in women.

(a) Complete the following sentences about cancer.

Put a ring around the correct option in each sentence. Cancer is a

communicable / **non-communicable** / **sexually-transmitted**

disease. It is caused by changes in the **cell membranes** / **DNA** /

mitochondria.

The changes cause cells to divide many times

by **asexual reproduction** / **meiosis** / **mitosis**.

This uncontrolled growth and division creates **an infection** / **fatty deposits** /

a tumour. **[4]**

(b) The table shows the number of women diagnosed with cancer of the ovaries between 2012 – 2014.

Age range (years)	Number of cases
Below 20	56
20–29	208
30–39	333
40–49	766
50–59	1300
60–69	1818
70–79	1685
80–89	1020
90+	213

Calculate the percentage of cases seen in women aged 60 and over.

$\left(\frac{4736}{7399}\right) \times 100 = 64\%$

Percentage of cases = ……64…….. % **[2]**

(c) Most women diagnosed with cancer of the ovaries will have an operation to remove their ovaries.

Before the operation, the doctor will discuss the risks of the operation with

the patient.

Give **one** example of a risk to the patient.

[1]

Infection

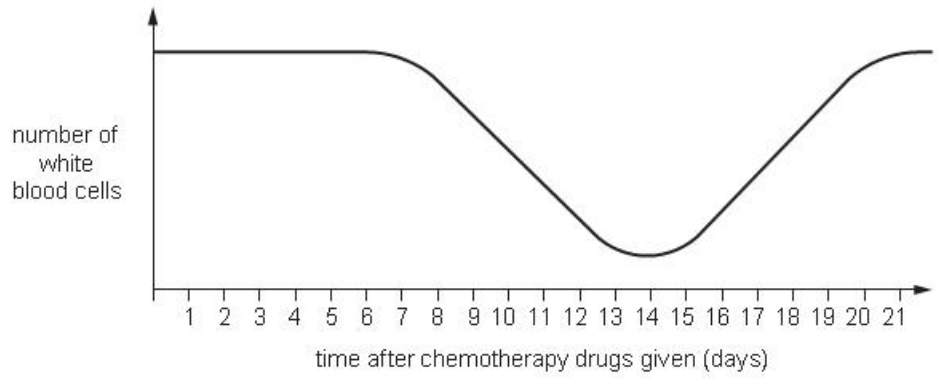
(d) **(i)** After surgery the patient may be given chemotherapy drugs to kill any remaining cancer cells.

Chemotherapy also affects the number of white blood cells in a patient.

The graph shows what happens to the number of white blood cells

during chemotherapy.

The patient receives the chemotherapy drugs on day 1.



Describe what happens to the number of white blood cells
after chemotherapy.
Use information from the graph in your answer.

From day 1 to 6 no change in number of white blood cells.
Number of white blood cells hit its lowest 14 days after treatment. **[2]**

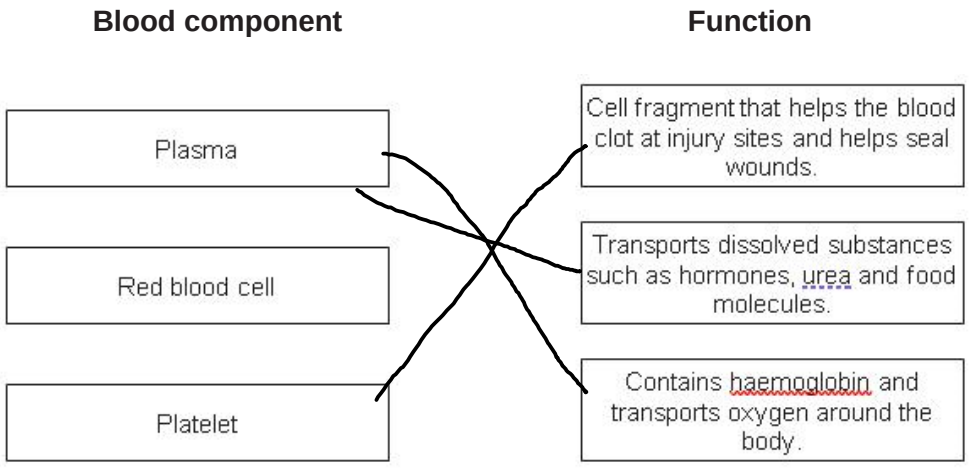
(ii) Explain how white blood cells protect us from disease **and** how they are adapted for this function.

White blood cells engulf and digest pathogens. **[3]**
They also produce antibodies and contain enzymes to digest pathogens.

(iii) White blood cells are one component of the blood.

There are three other major components of the blood, which all have specific functions.

Draw a line to link each **blood component** to its **function**.



[2]

(iv) A chemotherapy patient is told to go to accident and emergency if they feel ill and have a temperature above 38 °C.

Some students have a discussion about why this is important.

Which **two** students made the best suggestions? **[2]**

(e) A clinical trial investigated the effect of different combinations of chemotherapy drugs on survival rates of cancer patients.

Two groups of cancer patients were given different combinations of drugs.

- Patients in group **A** were given two drugs: 1 and 2.
- Patients in group **B** were given two drugs: 3 and 4

Eve and Mia

(i) A placebo was not used in the trial. Explain why.

The cancer would not be treated and it is not ethical to withold treatment. **[2]**

(ii) The results of the trial are shown in the table.

	Group A (Drugs 1 and 2)	**Group B (Drugs 3 and 4)**
Number of people in the trial	**305**	**314**
Number of people still alive two years after treatment	**247**	**222**

What conclusion could be made from these results?

Tick (✓) **one** box.

The drugs given to the patients in Group **A** cured their cancer.	☐
The combination of drugs given to Group **B** was not effective.	☐
The combination of drugs given to Group **A** was the most effective.	✓
The patients in Group **B** were given a placebo.	☐

[1]

(iii) New drugs are tested to see how safe they are to use and how well they work (their effectiveness).

Put a tick (✓) in **one** box in each row of the table to show what each stage of the drug development process tests for.

Clinical trial stage	Tests for both safety and effectiveness	Tests only for safety	Tests only for effectiveness
Preclinical trial using human cells and animals	✓		
Clinical testing – using healthy human volunteers		✓	
Clinical trials – using humans with the disease	✓		

[3]

Total Mark for Question Set 4: 22