

Name of the Student: _____

Max. Marks : 10 Marks

Time : 10 Minutes

Q1.

This question is about radioactivity and its uses.

The diagram in Figure 13 shows a radioactive source used to check the thickness of paper.

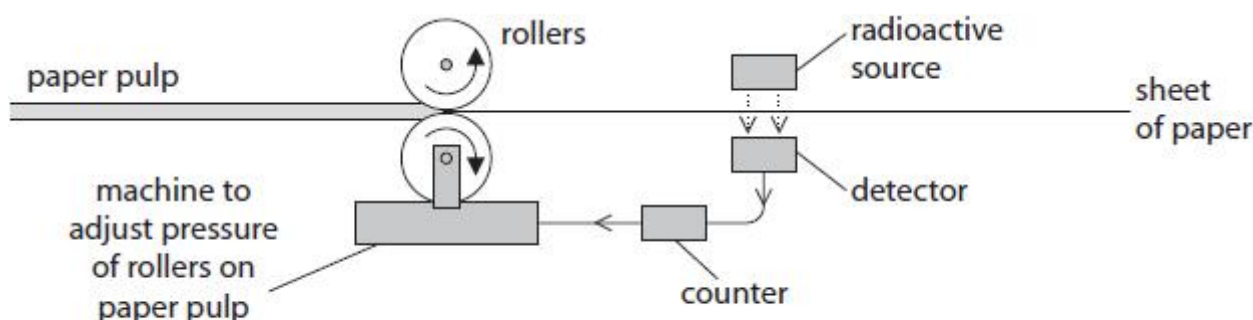


Figure 13

(i) Name the type of radiation used to check the thickness of the paper.

(1)

.....

(ii) Give the name of **one** device which could detect this type of radiation.

(1)

.....

When the paper is the correct thickness, the count rate is 4000 counts per minute.

(iii) The count rate increases when the paper gets thinner.

Give **one** reason for this increase.

(1)

.....

.....

(iv) The rollers need to be adjusted if the count rate increases by 5%.

Calculate the maximum count rate that would be allowed before the rollers need to be adjusted.

(2)

maximum count rate = counts per minute

(Total for question = 5 marks)

Q2.

Answer the question with a cross in the boxes you think are correct ☐. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☐.

Figure 8 shows the symbol for the nucleus of an atom of strontium-90.

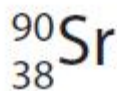


Figure 8

(i) How many protons are in the nucleus of an atom of strontium-90?

(1)

- ☐ A 38
☐ B 52
☐ C 90
☐ D 128

(ii) How many neutrons are in the nucleus of an atom of strontium-90?

(1)

- ☐ A 38
☐ B 52
☐ C 90
☐ D 128

(Total for question = 2 marks)

Q3.

The typical size of an atom is

(1)

- ☐ A 10^{-5} m
- ☐ B 10^{-10} m
- ☐ C 10^{-15} m
- ☐ D 10^{-20} m

(Total for question = 1 mark)

Q4.

Answer the question with a cross in the box you think is correct (☒). If you change your mind about an answer, put a line through the box (☒) and then mark your new answer with a cross (☒).

The nucleus of a different atom emits a gamma ray.

What happens to the number of particles in the nucleus?

(1)

- ☐ **A** it decreases by one
- ☐ **B** it decreases by two
- ☐ **C** it decreases by four
- ☐ **D** it does not change

(Total for question = 1 mark)

Q5.

Answer the question with a cross in the box you think is correct ☐. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☐.

This question is about radioactivity and its uses.

Which of these radiations does **not** have a charge?

(1)

- ☐ A alpha
- ☐ B beta minus
- ☐ C beta plus
- ☐ D gamma

(Total for question = 1 mark)