7 Scientists use the term radiation in different ways.

Sometimes radiation means streams of particles and sometimes radiation means high frequency waves.

(a) Draw a straight line from each description to the type of radiation it describes.

(3)

description	**type of radiation**
electromagnetic waves	alpha
particles with a negative charge	beta
particles with a positive charge	gamma
	neutron

(b) Alpha, beta and gamma radiations are described as ionising.

(i) Complete the table to show alpha, beta and gamma radiations in order of increasing ionisation.

(1)

least ionising → most ionising

(ii) Describe two ways in which these ionising radiations can cause harm.

(2)

1. .....

.....

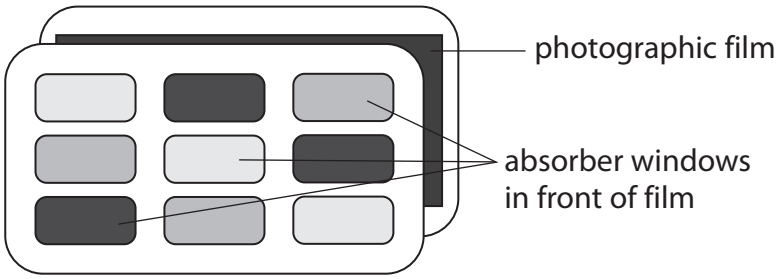
2. .....

.....

(c) People who work with ionising radiations need to measure the amount of radiation they are exposed to.

For many years, a film badge was used to detect the radiations.

The diagram shows how a film badge is constructed.



Each absorber window is made from different thicknesses of paper, aluminium or lead.

Complete the table to show if alpha, beta and gamma radiations penetrate each material. Some have been done for you.

Use the words 'goes through' or 'stopped'.

(3)

	0.1 cm paper	**0.5 cm aluminium**	**0.5 cm lead**
alpha radiation			stopped
beta radiation		stopped	
gamma radiation	goes through		

(d) State the name of another device that can be used to detect alpha radiation.

(1)

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(Total for Question 7 = 10 marks)