



# Interactive Example Candidate Responses

Paper 3 (May / June 2016), Question 12

**Cambridge IGCSE™**  
**Physics 0625**



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12 Two radioactive sources are used by a teacher. One source emits only alpha particles and the other source emits only beta particles.

(a) Suggest how the sources can be identified.

By the material which they can go through. <sup>Beta</sup>Alpha particles can go through more ~~metals~~ materials than Alpha particles. The one which goes through the most is beta, the least Alpha [2]

(b) The teacher also has a source that emits gamma rays.

State two ways in which gamma rays are different from alpha particles.

1. Only <sup>metals</sup> materials like lead can block gamma rays
2. Gamma is green [2]

(c) State an effect of ionising radiation on living things.

Mutation of cells. Cancer [1]

[Total: 5]

Your  
Mark

12(a)

12(b)

12(c)

| Q12 | Mark scheme  |
|-----|--|
| (a) | <p>idea of paper between source and detector OR measuring range (in air) OR pass through an electric or magnetic field</p> <p>alpha stopped by paper OR larger range in air for beta OR identify deflection when in field</p>  |
| (b) | <p>any two from:</p> <ul style="list-style-type: none"> <li>gamma travel at the speed of light</li> <li>gamma rays have no charge</li> <li>gamma rays have no mass</li> <li>gamma is a wave OR part of the electromagnetic spectrum</li> <li>gamma less ionising</li> <li>greater penetration</li> <li>not deflected by electric or magnetic fields</li> </ul> |
| (c) | <p>damages cells/tissues/DNA OR causes (cell) mutations OR <u>radiation sickness</u></p>   |

12 Two radioactive sources are used by a teacher. One source emits only alpha particles and the other source emits only beta particles.

(a) Suggest how the sources can be identified.

The sources can be identified by taking each one of them and identifying which radioactive source emits Alpha or beta particles by identifying them one at a time. [2]

(b) The teacher also has a source that emits gamma rays.

State two ways in which gamma rays are different from alpha particles.

1. gamma rays are neutral
2. gamma rays have a charge of zero. [2]

(c) State an effect of ionising radiation on living things.

It destroys living things. [1]

[Total: 5]

Your  
Mark

12(a)

12(b)

12(c)

| Q12 | Mark scheme   |
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