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**9** A teacher measures the count from a radioactive source over a 20 minute period.

(a) Name an instrument the teacher should use to detect the radiation emitted from the source.

(1)

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(b) (i) State two sources of background radiation.

(2)

1 .....

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2 .....

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(ii) Describe the procedure the teacher should follow to measure the background radiation and correct the count measurement.

(3)

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- (c) The radioactive source used by the teacher emits beta radiation.

Describe how the nucleus of an atom is changed by the emission of a beta particle.

(2)

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- (d) State two ways that the teacher can reduce the risks when working with radioactive sources.

(2)

1 .....

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2 .....

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**(Total for Question 9 = 10 marks)**



**10** The photograph shows a cylinder of compressed air used to breathe underwater.



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(a) Explain how the air causes a pressure on the inside of the cylinder.

Refer to particles in your answer.

(3)

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(b) Explain what happens to the pressure of the air inside the cylinder as its temperature increases.

(3)

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