5 An aircraft travels along a runway.

(a) The aircraft starts from rest and has a constant acceleration of 4.1 m/s^2.

Calculate the distance required to reach take-off speed of 75 m/s.

(3)

distance = ... m

(b) The aircraft takes off and reaches its maximum height above the ground.

At maximum height, the background radiation count rate is higher than on the ground.

(i) Explain what is meant by background radiation.

(2)

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(ii) Suggest why there is a limit to the number of hours that an airline pilot can fly at maximum height.

(3)

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(Total for Question 5 = 8 marks)