7 The table gives some measurements about a raindrop.

mass of raindrop	0.000 035 kg
distance raindrop falls	1200 m
speed of raindrop as it hits the ground	8.8 m/s

(a) (i) State the relationship between momentum, mass and velocity.

(1)

(ii) Calculate the momentum of the raindrop as it hits the ground.

Give the unit.

(3)

momentum = ... unit .....

(b) (i) State the equation linking gravitational potential energy, mass, *g* and height.

(1)

(ii) Calculate the change in gravitational potential energy (GPE), when the raindrop falls 1200 m above the ground.

(2)

GPE = ... J

(iii) State the kinetic energy (KE) of the raindrop as it hits the ground.
[assume no energy losses]

(1)

KE = ... J

(c) (i) State the equation linking kinetic energy, mass and speed.

(1)

(ii) Show that the speed of the raindrop as it hits the ground would be about 150 m/s. [assume no energy losses]

(3)

(iii) Explain why the actual speed of the raindrop as it hits the ground is much less than 150 m/s.

(2)

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(Total for Question 7 = 14 marks)

TOTAL FOR PAPER = 60 MARKS

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