2 **(a)** State what is meant by *work done*.

.....

..... [1]

(b) A beach ball is released from a balcony at the top of a tall building. The ball falls vertically from rest and reaches a constant (terminal) velocity. The gravitational potential energy of the ball decreases by 60 J as it falls from the balcony to the ground. The ball hits the ground with speed 16 m s^{-1} and kinetic energy 23 J.

(i) Show that the mass of the ball is 0.18 kg.

[2]

(ii) Calculate the height of the balcony above the ground.

height = ... m [2]

(iii) Determine the average resistive force acting on the ball as it falls from the balcony to the ground.

average resistive force = ... N [2]

(c) State and explain the variation, if any, in the magnitude of the acceleration of the ball in **(b)** during the time interval when the ball is moving downwards **before** it reaches constant (terminal) velocity.

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..... [3]

[Total: 10]