2 **(a)** State Newton's second law of motion.

……

…… [1]

(b) A ball of mass 65 g hits a wall with a velocity of 5.2 m s^{-1} perpendicular to the wall. The ball rebounds perpendicularly from the wall with a speed of 3.7 m s^{-1}. The contact time of the ball with the wall is 7.5 ms.

Calculate, for the ball hitting the wall,

(i) the change in momentum,

change in momentum = …… N s [2]

(ii) the magnitude of the average force.

average force = …… N [1]

(c) **(i)** For the collision in **(b)** between the ball and the wall, state how the following apply:

1. Newton's third law,

……

…… [2]

2. the law of conservation of momentum.

……

…… [1]

(ii) State, with a reason, whether the collision is elastic or inelastic.

……

…… [1]

[Total: 8]