Section A

Answer **all** the questions in this section.

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1 **(a)** State the principle of conservation of momentum.

....

....

.... [2]

(b) Object A of mass 160 g is travelling with a speed of 400 m s^{-1}. It collides with an object B of mass 1.20 kg travelling at 16.0 m s^{-1} directly towards object A. After the collision, the objects stick together.

(i) Calculate the change in speed of object A.

change in speed = ... m s^{-1} [2]

(ii) The collision lasts for 0.450 s.

Calculate the magnitude of the average force exerted on object A by object B.

average force = ... N [2]

(iii) State the magnitude and direction of the force exerted on object B by object A.

Explain your answer.

....

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.... [2]

[Total: 8]