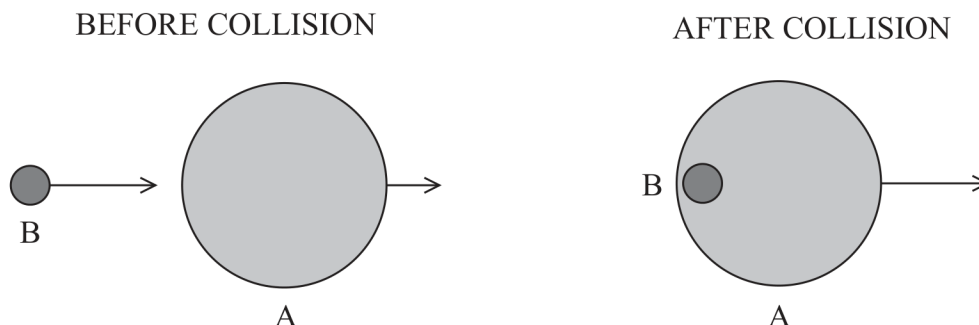


## SECTION B

Answer ALL questions in the spaces provided.

- 11 A slow moving asteroid A was hit by a faster asteroid B. Asteroid B was absorbed by asteroid A as shown.



- (a) State the principle of conservation of linear momentum.

(2)

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- (b) Before the collision, asteroid A had a velocity of  $2.19 \times 10^3 \text{ m s}^{-1}$  and a momentum of  $1.80 \times 10^{17} \text{ kg m s}^{-1}$ .

- (i) Show that the mass of asteroid A was about  $8.2 \times 10^{13} \text{ kg}$ .

(2)

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(ii) Calculate the velocity of the asteroids after the collision.

mass of asteroid B =  $5.90 \times 10^{12} \text{ kg}$

velocity of asteroid B before the collision =  $15.0 \times 10^3 \text{ m s}^{-1}$

(3)

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Velocity of asteroids = .....

(Total for Question 11 = 7 marks)

DO NOT WRITE IN THIS AREA

IN THIS AREA