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Answer ALL questions. Write your answers in the spaces provided.

1. Two particles, P and Q, have masses $3m$ and $2m$ respectively. They are moving in a straight line in opposite directions towards each other on a smooth horizontal plane and collide directly. The speeds of P and Q immediately before the collision are $2u$ and $4u$ respectively. As a result of the collision, the speed of P is halved and its direction of motion is reversed.

(a) Find the speed of Q immediately after the collision.

(3)

(b) Find the magnitude of the impulse exerted on Q by P in the collision.

(2)

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Question 1 continued

Q1

(Total 5 marks)