Momentum Past Paper Questions Name ……

1. (a) How can the momentum of an object be calculated?

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(2)

(b) In a collision momentum is always conserved. What does this mean?

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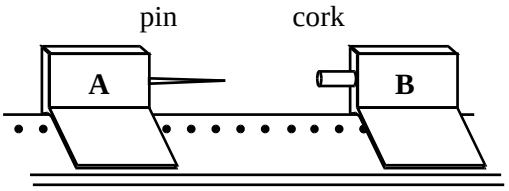
(2)

(c) Two trolleys are placed on a frictionless runway as shown in the diagram below. Trolley A has a protruding pin, and trolley B is fitted with a piece of soft cork so that the trolleys will stick together after colliding.



frictionless runway

Trolley A has a mass of 2 kg, and trolley B has a mass of 1 kg. Trolley B is stationary. Trolley A strikes trolley B at a speed of 6 m/s. Both trolleys then move to the right together.

(i) Calculate the speed at which trolleys A and B jointly move after the collision.

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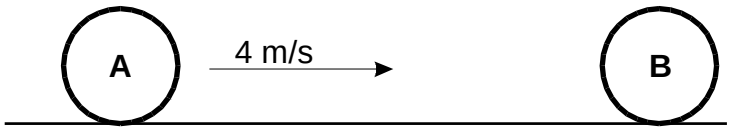
(4)

(Total 8marks)

2. The diagram below shows two balls on the bowling green. Ball A is moving with a velocity of 4 m/s, and is about to collide with ball B which is stationary. Both balls have a mass of 1.5 kg.



After the collision both balls move to the right but the velocity of A is now 1 m/s.

(a) (i) Calculate the momentum of ball A just before the collision.

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Answer ..... kg m/s

(1)

(ii) What is the total momentum of balls A and B after the collision?

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Answer ..... kg m/s

(1)

(iii) Calculate the momentum of ball A just after the collision.

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Answer ..... kg m/s

(1)

(iv) Calculate the momentum of ball B just after the collision.

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Answer ..... kg m/s

(1)

(v) Calculate the velocity of ball B just after the collision.

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Answer ..... m/s

(1)

(Total 5 marks)