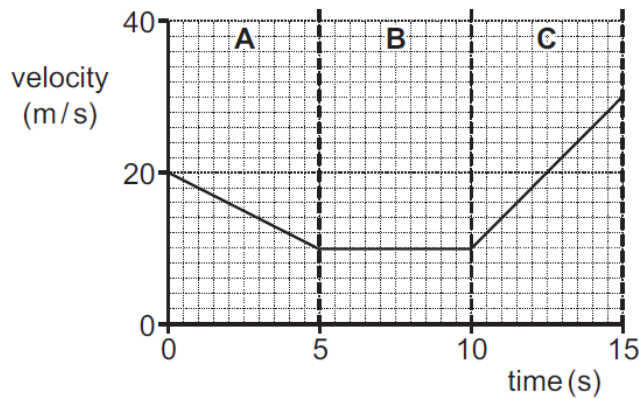


**GCSE Physics B (Twenty First Century Science)**  
**J259/04** Depth in physics (Higher Tier)

**Question Set 19**

1 A delivery company uses GPS tracker devices to monitor the velocity of their vans.

(a) The velocity against time graph of one van is shown in **Fig. 10.1**.



**Fig. 10.1**

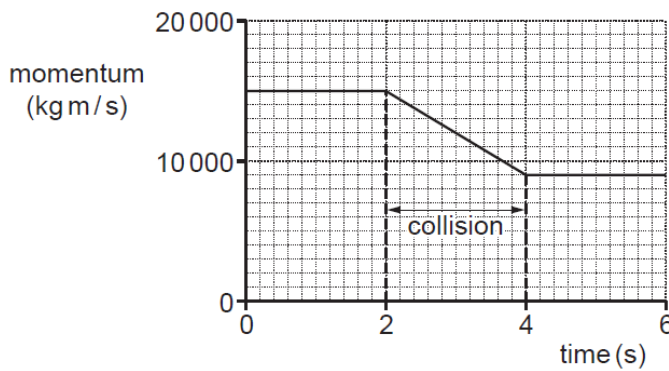
**Fig. 10.1** has been divided into three sections **A**, **B** and **C**.

- (i) Describe the motion of the van in the three sections. [3]
- (ii) Calculate the acceleration of the van in section **C**.

Acceleration = ..... m/s<sup>2</sup> [3]

(b) One of the vans collides with a **stationary** car.

(i) **Fig. 10.2** shows the momentum against time graph for the **van**.



**Fig. 10.2**

Use **Fig. 10.2** to explain why the momentum of the **car** is **6000 kg m/s** immediately after the collision. [2]

(ii) The mass of the van is 1500kg and the mass of the car is 1000kg.

Calculate the speed of the car immediately after the collision.

Use the information given in **(b)(i)** to help you answer the question.

Speed = ..... m/s [3]

**Total Marks for Question Set 19: 11**

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