

爱德思

**Mechanics 1**

分类真题

**2014-2022 册**

A Level Clouds 出品

# 目录

<b>Chapter 1 Constant Acceleration</b>	<b>1</b>
<b>Chapter 2 Vectors in Mechanics</b>	<b>80</b>
<b>Chapter 3 Dynamics</b>	<b>153</b>
<b>Chapter 4 Limiting Equilibrium and Statics</b>	<b>224</b>
<b>Chapter 5 Momentum and Impulse</b>	<b>278</b>
<b>Chapter 6 Moments</b>	<b>329</b>

# Chapter 1

## Constant Acceleration



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8. Two trains,  $A$  and  $B$ , start together from rest, at time  $t = 0$ , at a station and move along parallel straight horizontal tracks. Both trains come to rest at the next station after 180 s.

Train  $A$  moves with constant acceleration  $\frac{2}{3} \text{ m s}^{-2}$  for 30 s, then moves at constant speed

for 120 s and then moves with constant deceleration for the final 30 s. Train  $B$  moves with constant acceleration for 90 s and then moves with constant deceleration for the final 90 s.

- (a) Sketch, on the same axes, the speed–time graphs for the motion of the two trains between the two stations. (3)
- (b) Find the acceleration of train  $B$  for the first half of its journey. (5)
- (c) Find the times when the two trains are moving at the same speed. (4)
- (d) Find the distance between the trains 96 s after they start. (5)

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