

**Name of the Student:** \_\_\_\_\_

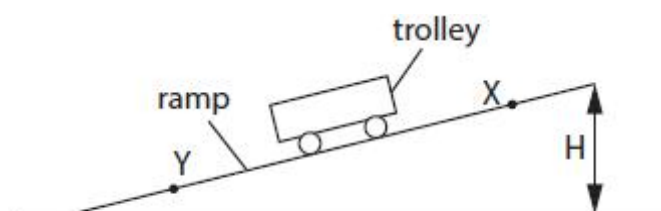
**Max. Marks : 23 Marks**

**Time : 23 Minutes**

Q1.

A student has a trolley and a ramp, as shown in Figure 21.

The height,  $H$ , of one end of the ramp can be adjusted.



**Figure 21**

The student investigates how the average speed of the trolley between X and Y depends on the height,  $H$ , of the ramp.

Describe

- the additional equipment that the student needs
- how that equipment is used to obtain the measurements needed.

(6)

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**(Total for question = 6 marks)**

Q2.

Some technicians are investigating factors affecting the braking distance of a bicycle. They start by investigating how the speed of a bicycle affects the braking distance.

Figure 8 is a graph of their results.

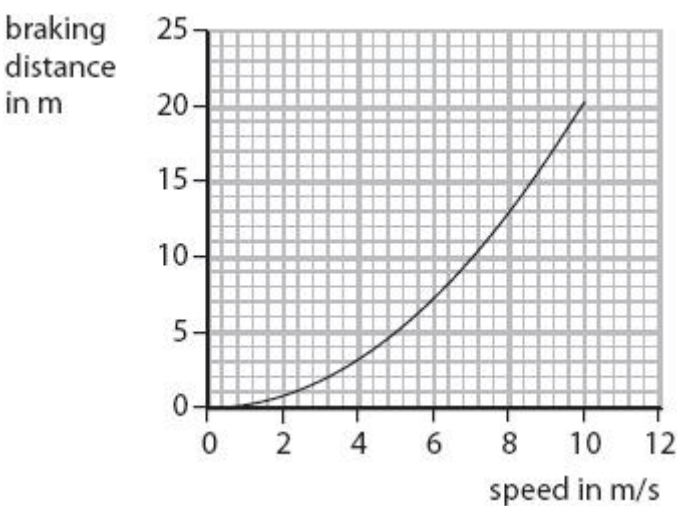


Figure 8

- (i) Use the information in Figure 8 to describe how the braking distance of this bicycle changes with speed. (2)

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- (ii) Figure 8 shows readings taken on a **dry** road.  
Draw a curve on Figure 8 to show how the braking distance would change with speed for a bicycle on a **wet** road. (2)

- (iii) Describe how the technicians could develop their investigation to see how the mass of the bicycle would affect the braking distance. (3)

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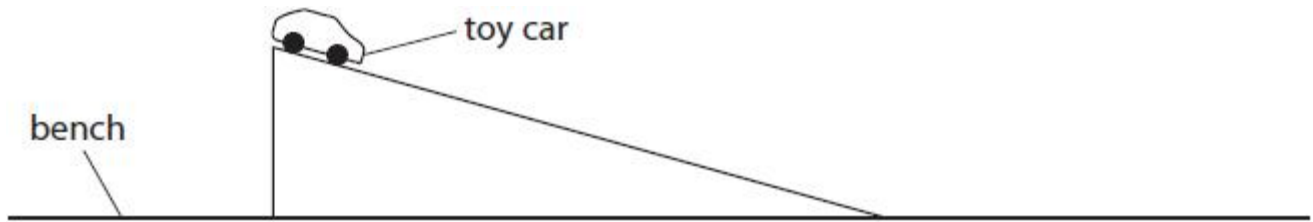
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(Total for question = 7 marks)

Q3.

A student lifts a toy car from a bench and places the toy car at the top of a slope as shown in Figure 16.



**Figure 16**

The student lets the toy car roll down the slope.

Describe how the student could find, by experiment, the speed of the toy car at the bottom of the slope.

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**(Total for question = 4 marks)**

Q4.

Figure 16 is a velocity/time graph for a toy train on a straight track for 7 seconds.

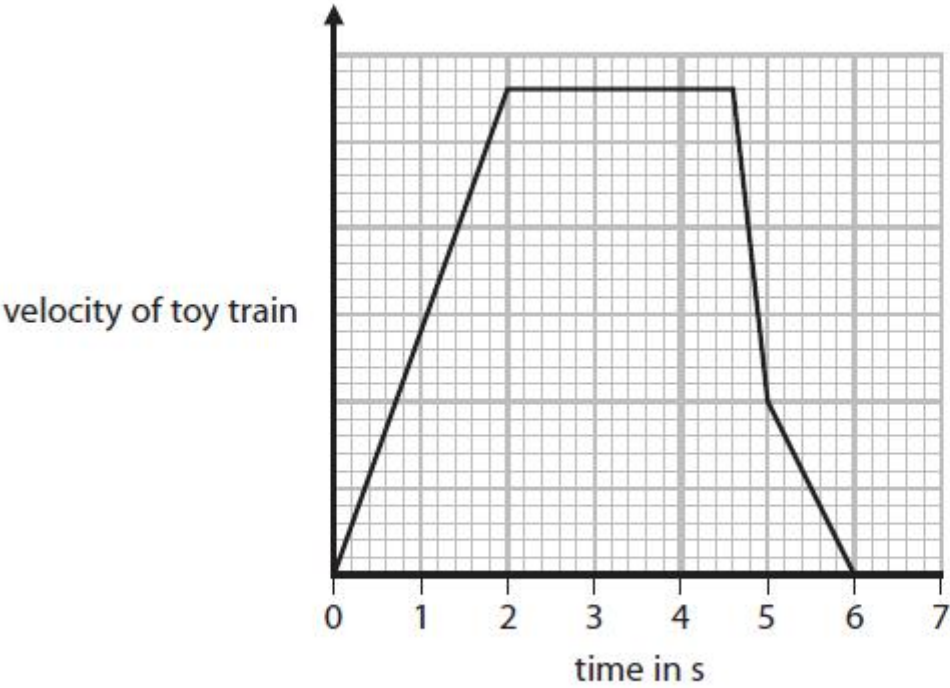


Figure 16

Using information from the graph, describe when and how the velocity and acceleration of the toy train change at different times during the 7 seconds shown on the graph.

(6)

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(Total for question = 6 marks)