**Name of the Student**:_____
**Max. Marks : 12 Marks** **Time : 12 Minutes**

Q1.

A student investigates the relationship between force and acceleration for a trolley on a runway.

Figure 12 shows some of the apparatus the student uses.

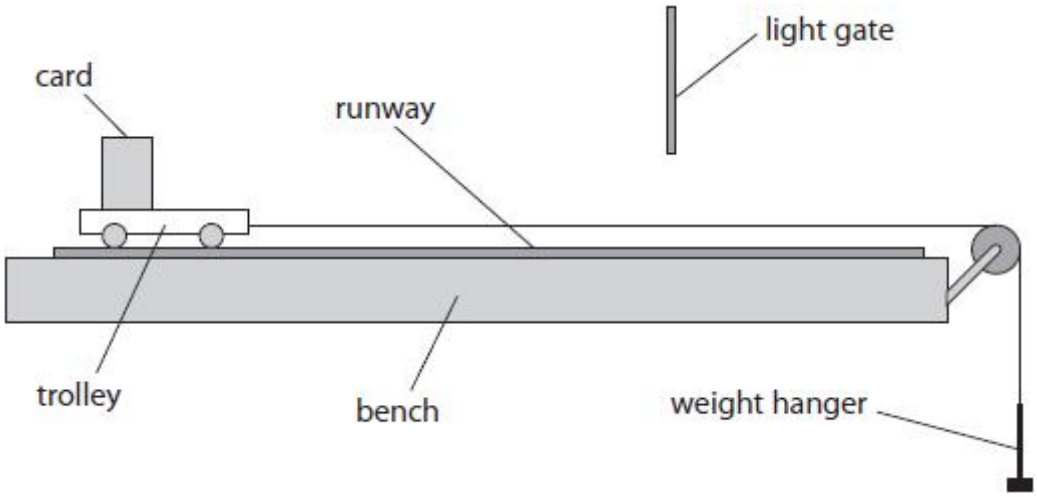


**Figure 12**

(i) Describe how the student could increase the accelerating force applied to the trolley.

**(2)**

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(ii) Describe how the mass of the moving system can be kept constant.

**(2)**

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(iii) Explain how the student could improve the procedure to compensate for the effects of frictional forces acting on the trolley.

**(2)**

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

Q2.

The earthquake causes seismic waves.

(i) S waves are one type of seismic wave. They travel at 0.65 km/s.
There is a seismometer 80 km away from point E.
Show that it takes about 2 minutes for the S waves from the earthquake to reach the seismometer.

**(2)**

(ii) P waves are another type of seismic wave.
They travel about 10 times more quickly than S waves.

Describe how scientists can use seismometer records of P and S waves to locate the epicentre.

**(3)**

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(iii) Seismic waves have a frequency of about 15 Hz.
P waves have a much smaller amplitude than S waves.

Some people claim that animals can detect an earthquake before people are aware of it.
Suggest an explanation for this.

**(2)**

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