

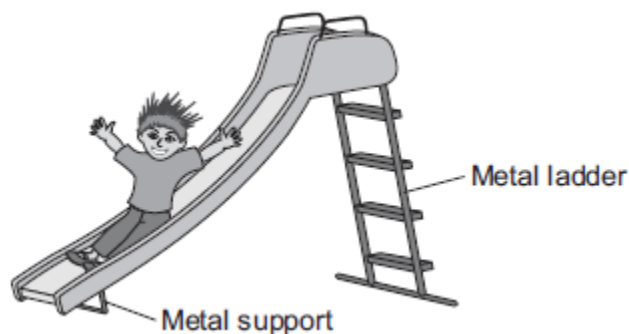
Name of the Student: \_\_\_\_\_

Max. Marks : 20 Marks

Time : 20 Minutes

**Q1.**

The figure below shows a slide in a children's playground.



- (a) A child of mass 18 kilograms goes down the slide.

The vertical distance from the top to the bottom of the slide is 2.5 metres.

Calculate the decrease in gravitational potential energy of the child sliding from the top to the bottom of the slide.

Gravitational field strength = 10 N / kg

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Decrease in gravitational potential energy = \_\_\_\_\_ J

(2)

- (b) The slide is made of plastic.

- (i) The child becomes electrically charged when he goes down the slide.

Explain why.

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(2)

- (ii) Going down the slide causes the child's hair to stand on end.

What conclusion about the electrical charge on the child's hair can be made from this observation?

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Give a reason for your answer.

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(2)

- (iii) Why would the child **not** become electrically charged if the slide was made from metal?

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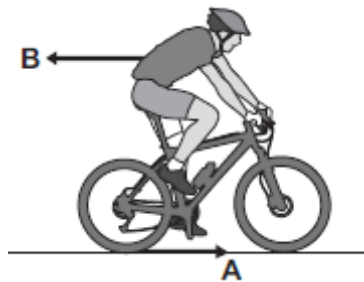
(1)

(Total 7 marks)

## Q2.

- (a) **Figure 1** shows the horizontal forces acting on a moving bicycle and cyclist.

**Figure 1**



- (i) What causes force **A**?

Draw a ring around the correct answer.

**friction**

**gravity**

**weight**

(1)

- (ii) What causes force **B**?

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(1)

- (iii) **In this question you will be assessed on using good English, organising information clearly and using specialist terms where appropriate.**

**Figure 2** shows how the velocity of the cyclist changes during the first part of a journey along a straight and level road. During this part of the journey the force applied by the cyclist to the bicycle pedals is constant.

**Figure 2**



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(6)

- (b) (i) The cyclist used the brakes to slow down and stop the bicycle.

A constant braking force of 140 N stopped the bicycle in a distance of 24 m.

Calculate the work done by the braking force to stop the bicycle. Give the unit.

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Work done = \_\_\_\_\_

(3)

- (ii) Complete the following sentences.

When the brakes are used, the bicycle slows down. The kinetic energy of the bicycle \_\_\_\_\_ .

At the same time, the \_\_\_\_\_ of the brakes increases.

(2)

(Total 13 marks)