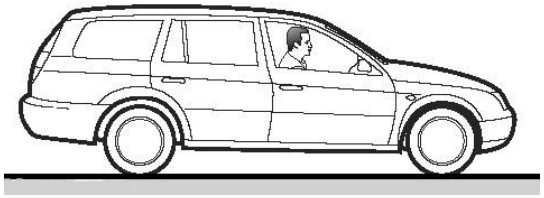
Full Name : …….. **Date: 28 November 2021**

Short Assessment

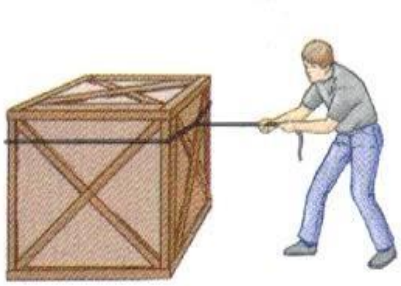
Time Allowed: 20 minutes **Total Marks: 20**

1. In this question you are asked to mark with arrows and label the forces acting on different objects.

   (a) A car accelerates along a horizontal road to the right. Mark and label the forces acting on the car.



   (b) A person pulls a box along a horizontal floor to the right. Mark and label the forces acting on the box.



   (c) An apple floats in a pond. Mark and label the forces acting on the apple.

(6 marks)

2. For each of the following situations, explain whether there is a resultant force acting on the object mentioned.

If there is a resultant force, state the direction of the resultant force.

Explain clearly the reason(s) for your answers.

(a) A marble rolling along a straight line on a horizontal floor and slowing down.

(b) A stone dropped from a height accelerating towards the ground.

(c) A car moving along a horizontal, straight road at a constant velocity.

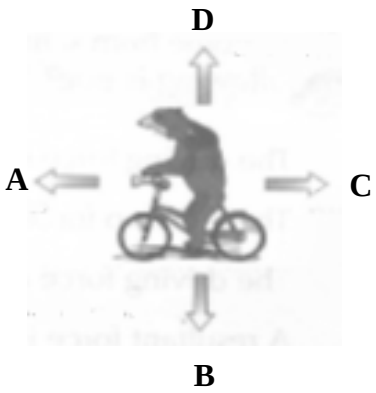
(6 marks)

Question 3 is on the next page.

3. A bear rides a bicycle along a straight, horizontal road.

Forces A, B, C and D shown on the diagram act on the bear and the bicycle.

The mass of the bear and the bicycle is 110 kg.



The force B is the weight of the bear and the bicycle.

(a) Write down an equation linking weight, mass and gravitational field strength.

(1 mark)

(b) Calculate the total weight of the bear and the bicycle. Assume that the gravitational field strength is 10N/kg.

Weight = …….N

(1 mark)

(c) What is the size of force D shown on the diagram? Give a reason for your answer.

Size of force D = ……

Reason:

……...

……...

(2 marks)

(d) While riding forward, during one part of the journey, the force A is 320N and the force C is 100N.

Calculate the acceleration of the bear and the bicycle. Write a suitable unit for your answer.

Acceleration = …… unit: ……

(3 marks)

(e) Later on, during another part of the journey, the bear and the bicycle are moving at a constant speed, in the same direction, along the horizontal road.

How do forces A and C compare during this part of the journey?

Underline the correct statement.

(i) The size of force A is smaller than that of force C.

(ii) Force A and C are of equal size.

(iii) The size of force A is bigger than that of force C.

(1 mark)

- End of Test -