Bangladesh International Tutorial Limited

Physics Worksheet

Class-X

Worksheet- 04

Subject Teacher- P.K. Saha

Total Marks- 45

Name: _____

1 (a) The table gives some information about different objects in the universe.

Object	Description
Gliese 832c	Orbits the star Gliese 832 in an almost circular orbit
Hoag's Object	A large collection of billions of stars
Holmes	Orbits the Sun in an elliptical orbit
Io	Orbits the planet Jupiter in an almost circular orbit

(i) Which of these is a comet?

(1)

☒ **A** Gliese 832c

☒ **B** Hoag's Object

☒ **C** Holmes

☒ **D** Io

(ii) Which of these is a galaxy?

(1)

☒ **A** Gliese 832c

☒ **B** Hoag's Object

☒ **C** Holmes

☒ **D** Io

(b) Which galaxy is our solar system in?

(1)

☒ **A** Cartwheel

☒ **B** Milky Way

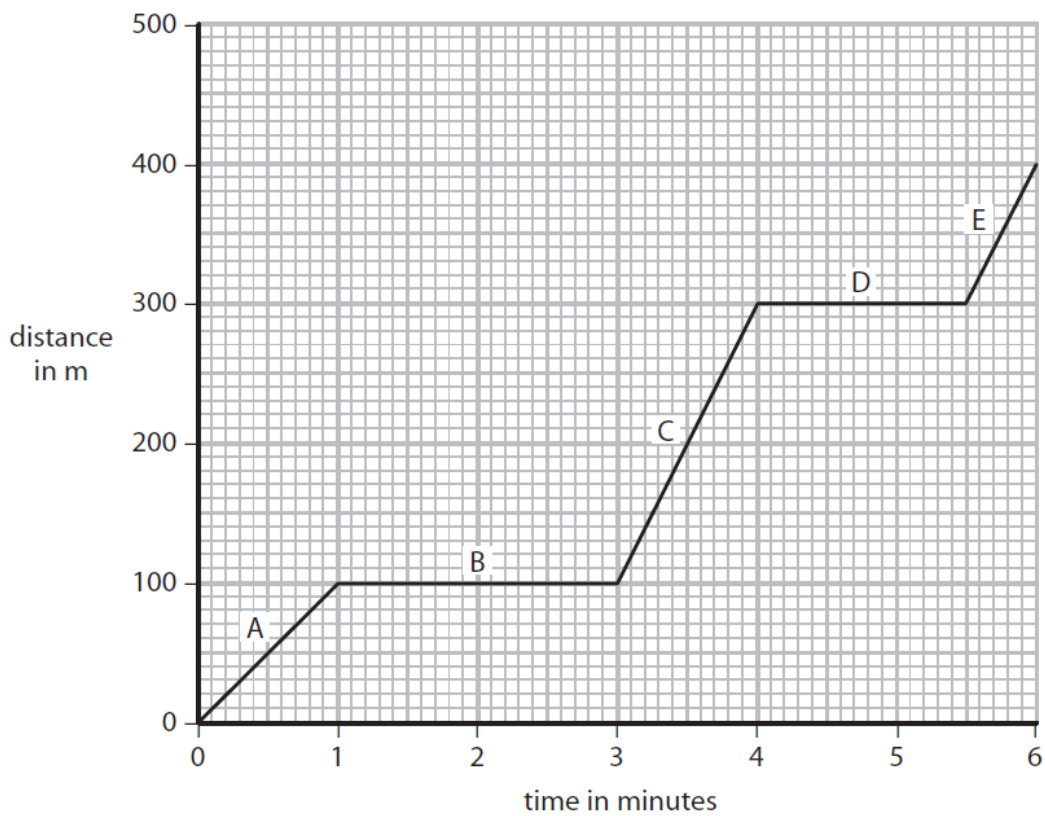☒ **C** Sombrero

☒ **D** Sunflower

(Total for Question 1 = 3 marks)

2 A car travels along a very busy road.

© AnRo0002 (Wikipedia)

The graph shows how the distance travelled by the car changes during a six-minute period.

(a) Calculate the total amount of time the car is stationary during this period.

(2)

time = ... minutes

(b) Explain which stage of the graph, A, B, C, D or E, shows the car moving at the slowest speed.

(2)

....

....

....

....

(c) (i) State the equation linking average speed, distance moved and time taken.

(1)

(ii) Calculate the speed of the car at stage C.

Give a suitable unit for your answer.

(3)

speed = ... unit ....

(d) State two factors that could affect the braking distance of the car.

(2)

1 ....

2 ....
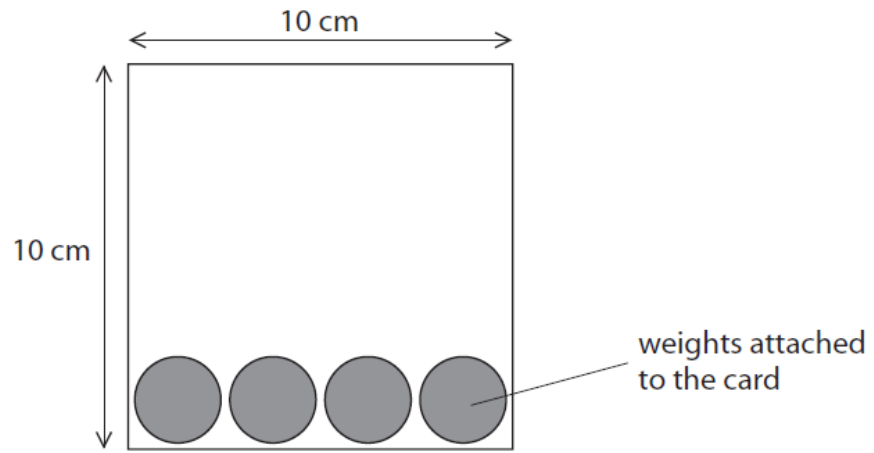
(Total for Question 2 = 10 marks)

3 A student investigates the motion of a 10 cm square piece of card as it falls.

He attaches some weights to the bottom of the card to make sure it falls vertically.

(a) Add an X to the diagram to show the position of the centre of gravity after the weights have been attached.

(1)

(b) The student writes this plan for his investigation.

> Measure the final speed of the card when it is dropped from different heights.
>
> Drop the card from 6 different heights (10, 20, 30, 40, 50 and 60 cm) and measure the final speed using a light gate.
>
> Repeat the final speed measurement 3 times for each height, and take an average.
>
> Make sure that the initial speed of the card is always zero.

Which of these is the dependent variable in the student's investigation?

(1)

☒ **A** the final speed of the card

☒ **B** the initial height of the card

☒ **C** the initial speed of the card

☒ **D** the mass of the card

(c) The table shows the student's results.

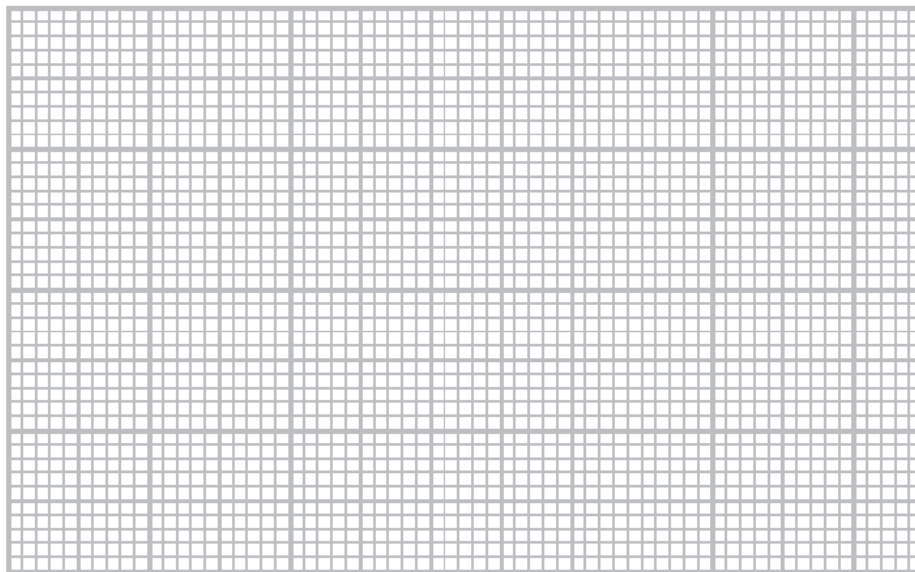| Height in cm	Final speed in m/s			
	trial 1	trial 2	trial 3	average (mean)
10.0	1.40	1.38	1.40	1.39
20.0	1.97	1.96	1.97	1.97
30.0	2.44	2.42	2.44	2.43
40.0	2.46	2.44	2.45	2.45
50.0	3.09	3.10	3.08	3.09
60.0	3.41	3.36	3.42	

(i) Complete the table by calculating the missing average.

Give your answer to two decimal places.

(2)

(ii) Plot a graph to show how the average final speed changes with height.

(4)

(iii) Circle the anomalous point on the graph.

(1)

(iv) Add a curve of best fit to the graph.

(1)

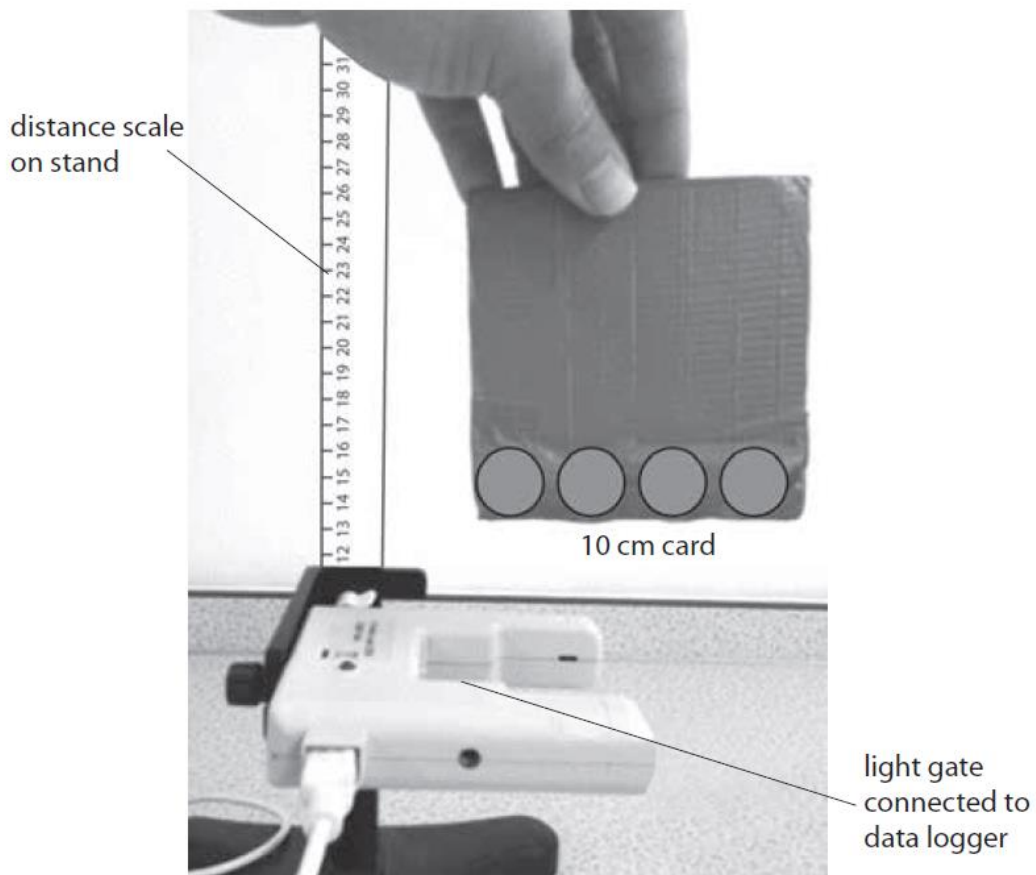(v) Describe the relationship between height and average final speed.

(2)

....

....

....

....

(d) The photograph shows the student releasing a card.

distance scale on stand

10 cm card

light gate connected to data logger

Give two ways that the student could improve the accuracy of his measurements.

(2)

....

....

....

....
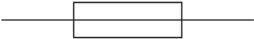
(Total for Question 3 = 14 marks)

4 (a) The table shows the names and circuit symbols of some electrical components.

Complete the table by giving the missing information.

(4)

Component	Circuit symbol
fixed resistor	
variable resistor	
lamp	

(b) A student wants to find the resistance of a fixed resistor.

She measures a current of 0.50 A in the resistor when the voltage across it is 8.0 V.

(i) State the equation linking voltage, current and resistance.

(1)

(ii) Calculate the resistance of the resistor.

(2)

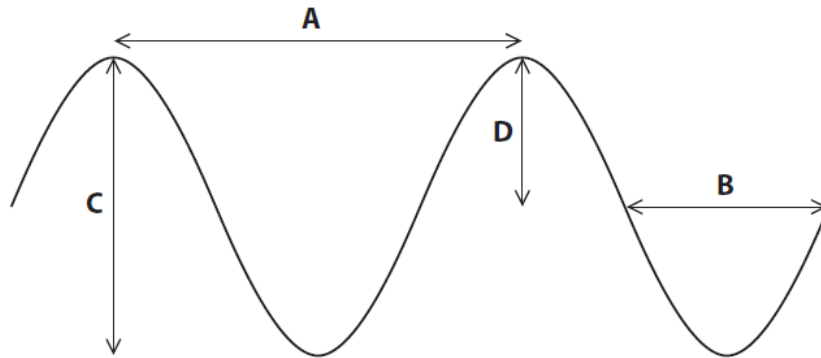resistance = ... Ω

(c) The student replaces the fixed resistor with a light dependent resistor (LDR) and measures its resistance at different light intensities.

Sketch a graph of the expected results.

(3)

5 (a) The diagram shows a transverse wave.

Which letter represents the amplitude of the wave?

(1)

☒ A

☒ B

☒ C

☒ D

(b) A person observes water waves on the surface of a pond.

18 waves pass by the person in 12 s.

Calculate the frequency of these water waves.

Give the unit.

(3)

frequency = ... unit ....

(c) Waves on the surface of water are transverse.

Give another example of a transverse wave.

(1)

....

(d) Describe the difference between transverse and longitudinal waves.

You may include a diagram in your answer.

(3)

....

....

....

....

....

....

(Total for Question 5 = 8 marks)