



MINISTRY OF EDUCATION AND HUMAN RESOURCES  
MAURITIUS EXAMINATIONS SYNDICATE

**NATIONAL ASSESSMENT AT FORM III**

NAME

SCHOOL  
NAME

CLASS/SECTION

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**PHYSICS**

**Specimen Paper**

**1 hour**

Students answer on the Question Paper.

Additional Materials: Mathematical set  
Ruler

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**READ THESE INSTRUCTIONS FIRST**

Write your name, the name of your school and your class/section in the spaces provided above.

Write in dark blue or black pen.

You may use a soft pencil for diagrams, graphs or rough working.

Any rough working should be done in this booklet.

Do not use correction fluid.

There are **7** questions in this paper.

Answer **all** questions.

All answers must be written in the spaces provided. Show all your workings.

Give **all** your answers using appropriate units.

**You may assume  $g = 10 \text{ m/s}^2$ .**

**You may also assume that 1 kg weighs 10 N.**

The number of marks is given in brackets [ ] at the end of each question or part question.

The total number of marks for this paper is **50**.

1. For each of the items, there is one correct answer. Draw a circle around the letter which shows the correct answer.

(a) Which of the following instruments is the most appropriate to measure the thickness of your Physics book?

A a half-metre rule

B a vernier caliper

C a measuring tape

D a ruler

(b) Fig. 1.1 below shows a rod being measured with a ruler whose ends are damaged. What is the length of the rod?

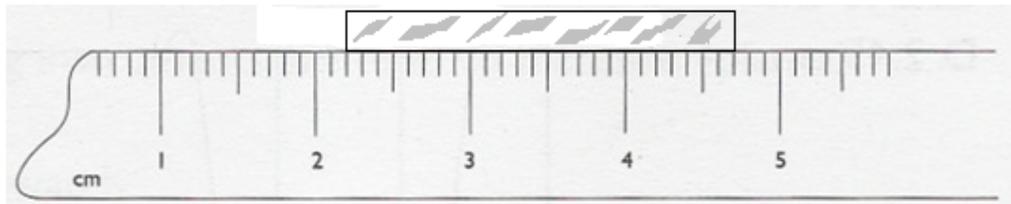


Fig. 1.1

A 2.0 cm

B 2.4 cm

C 2.5 cm

D 4.2 cm

(c) A man applies a force of 30 N to push a block a distance of 3 m along a flat surface. What is the work done by the man?

A 2 J

B 10 J

C 45 J

D 90 J

(d) The amount of current flowing in a circuit is measured in

A ampere.

B coulomb.

C ohm.

D volt.

(e) Which of the following statements about refraction of light is correct?

- A The speed of light remains unchanged during refraction.
- B Light bends away from the normal when moving into a denser medium.
- C Refraction occurs when a ray of light travels through two different media.
- D A swimming pool looks deeper than it really is because of refraction.

[5]

2. Write either **True** or **False** in the blank spaces provided below.

(a) Energy is the capacity to do work. ....

(b) Speed is a vector quantity. ....

(c) The moon is a luminous body. ....

(d) A sundial is used to indicate time. ....

(e) Bulbs in houses are usually connected in parallel. ....

[5]

3. Fig. 3.1 shows a ray of light being shone onto a plane mirror.

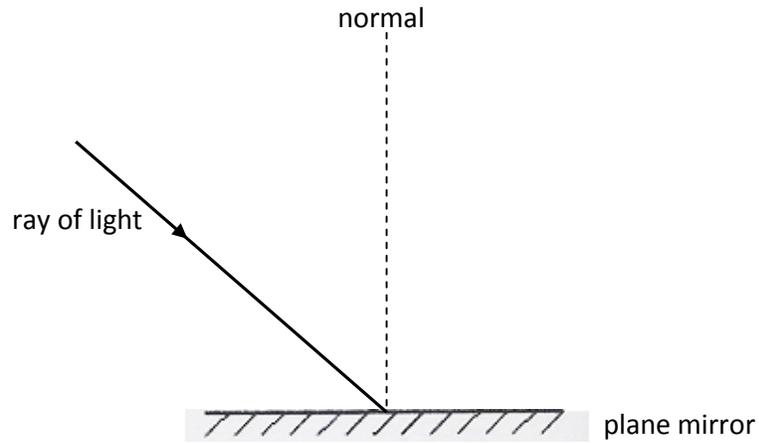


Fig. 3.1

- (a) State the laws of reflection.

.....

.....

.....

.....

.....[2]

- (b) Measure the angle of incidence.

angle of incidence = .....[1]

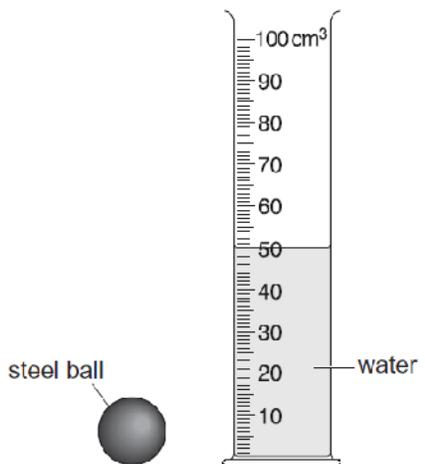
- (c) Hence, write down the angle of reflection.

angle of reflection = .....[1]

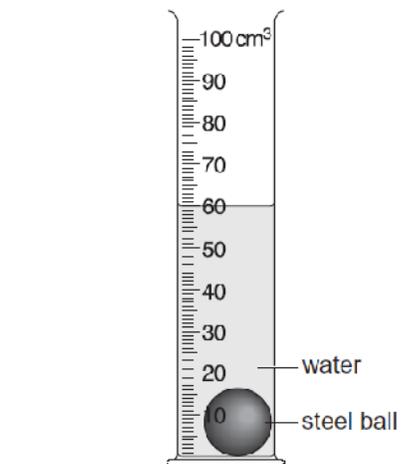
- (d) On Fig. 3.1, complete the path of the ray of light after being reflected by the plane mirror. Add an arrow to show the direction of the reflected ray. Use a ruler.

[2]

4. 50 cm<sup>3</sup> of water is poured into a measuring cylinder as shown in **Fig. 4.1**. A steel ball is then lowered down in the measuring cylinder as shown in **Fig. 4.2**.



**Fig. 4.1**



**Fig. 4.2**

- (a) What is the reading shown on the measuring cylinder in **Fig. 4.2**?  
 ..... [1]
- (b) What is the volume of the steel ball?  
 ..... [1]
- (c) What do you understand by the term volume?  
 ..... [2]  
 .....
- (d) On **Fig. 4.2**, mark with the letter **E** the best position of the eye when taking the new reading. [1]
- (e) Explain why the eye must be placed in the position shown in part (d) above.  
 ..... [1]  
 .....
- (f) State **another** precaution that you would take to measure the volume of the steel ball using the measuring cylinder. Give a reason for your answer.  
 .....

5. Fig. 5.1 shows the parts of a torch.

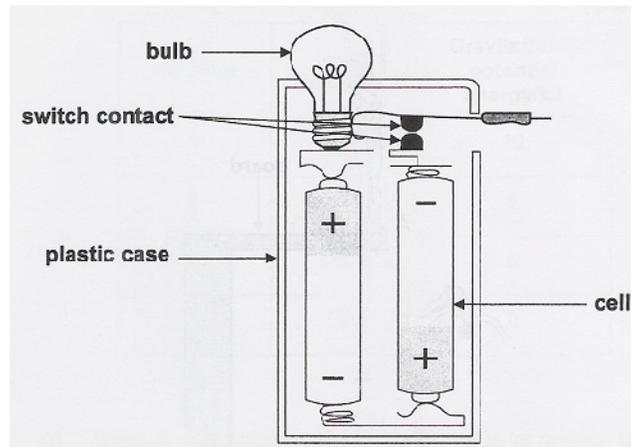


Fig. 5.1

- (a) The switch in Fig. 5.1 is closed. Why does this light up the torch?

.....[1]

- (b) In the space provided below, use circuit symbols to represent the circuit in Fig. 5.1.

[3]

- (c) Define resistance.

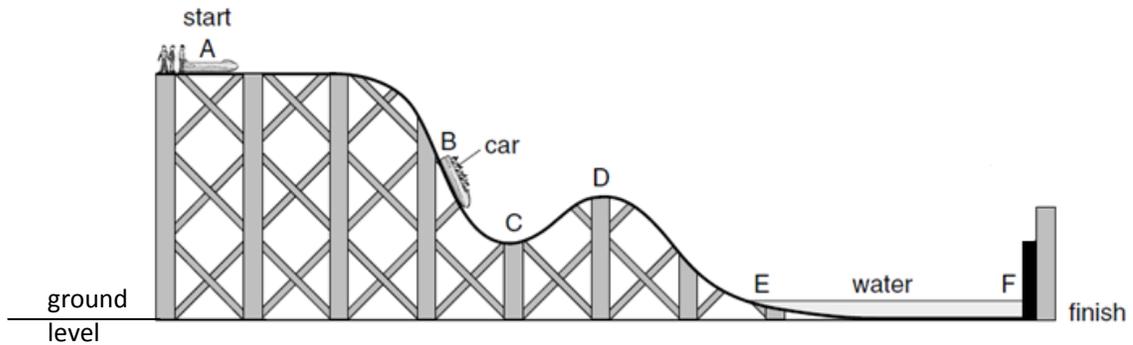
.....

.....

.....[2]

- (d) Given that the voltage of the cells used in the torch in Fig. 5.1 is 1.5 V each and that a current of 0.3 A flows in the circuit when it is closed, calculate the total resistance of the circuit.

6. Fig. 6.1 below shows a car ride.  
The letters A, B, C, D, E and F show different points along the track.



The car starts from rest at A and travels along the track shown. At E, the car enters a pool of water and stops upon hitting F.

- (a) State **two** points at which the car has **no** kinetic energy.

..... and ..... [1]

Explain your answer.

.....  
..... [1]

- (b) At which point does the car have **maximum** gravitational potential energy?

..... [1]

Explain your answer.

.....  
..... [1]

- (c) The cars are **not** powered by a motor.

What force causes the car to move along the track from B to C?

..... [1]

- (d) The total mass of the car and its passengers is 500 kg. If the velocity of the car at **B** is 40 m/s, calculate its kinetic energy at **B**.

kinetic energy = .....[3]

- (e) As the car enters the water, its kinetic energy decreases. Part of it is converted to heat energy due to friction. State **another** energy conversion that takes place as the car enters the water.

.....[1]

7. A bus starts its journey from rest and accelerates for 20 s until it reaches a maximum speed of 40 m/s. It then moves at this constant speed for a further 35 s.

(a) In the space provided below, sketch a speed-time graph to illustrate the motion of the bus.

[4]

(b) What is the initial speed of the bus?

initial speed = .....[1]

(c) Calculate the acceleration of the bus during the first 20 s.

acceleration = .....[2]

(d) What is the distance travelled by the bus while moving at constant speed?

distance travelled = .....[2]

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