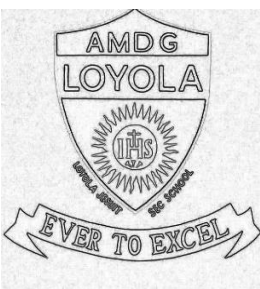


LOYOLA JESUIT SECONDARY SCHOOL**2020 MSCE MOCK EXAMINATIONS****PHYSICS**

Subject Number: M131/I

Time Allowed: 2 hours

**Thursday 26th March 2020 PAPER I**

(100 marks)

Instructions

1. This paper contains 11 printed pages. Please
check
2. Answer all the 20 questions in this paper.
3. The maximum number of marks for each answer
is indicated against each question.
4. Write your answer in the spaces provided on the question
paper.
5. Scientific calculators may be used.
6. All working must be clearly shown
7. Write your examination number at the top of each page
of your question paper in the spaces provided

Question Number	Tick if answer	Do not write in these columns	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			

SECTION A (70 marks)

1. a. Differentiate between distance and displacement.

(2 marks)

b. Sketch a graph of displacement – time graph which shows a body moving in the reverse at constant velocity.

(3 marks)

c. A Trolley X, of 8kg, travelling at 2.5m/s hits another stationary trolley Y, of mass 2kg, they stick and move together. Calculate their common velocity after the collision.

(6 marks)

2. a. A recovery vehicle tows a breakdown car for a distance of 60m to the garage pit. If the total work done in towing the car is 120 000J, what was the tensional force in the chain used for towing?



(3 marks)

- b. Explain why there would be loss of some energy in the work done when a body is being pushed or pulled.

(2 marks)

3. a. State any **two** characteristics of a wave.

(2 marks)

- b. Draw and label how constructive interference occurs that would show that two waves are in phase.

(4 marks)

4. a. Name any **one** application of expansion in solids.

_____ (1 mark)

b. Explain briefly how anomalous expansion of water affects substances like weathering of rocks.

_____ (3 marks)

5. **Figure 1** below is a diagram of electrical resistors. Use it to answer the questions that follow.

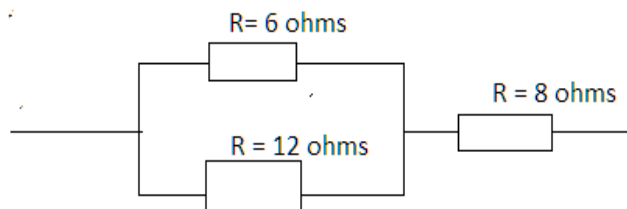


Figure 1

(i) If the potential difference to the circuit is 24V, what would be the effective resistance in the network?

(4 marks)

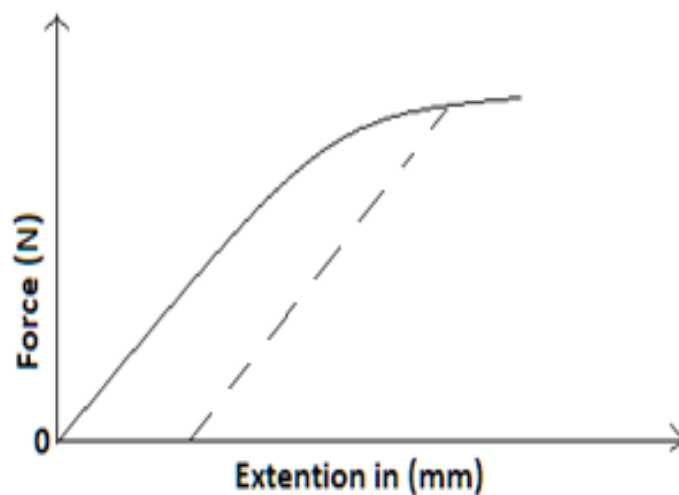
(ii). Calculate the current in the 8Ω resistor.

(3 marks)

6. a. State Hooke's law.

(2 marks)

b. **Figure 2** is the graph of a spring that obeys Hooke's law. Study it and label the following on the graph: yield point (X), permanent extension (Z), and elastic limit (Y).



(3 marks)

Figure 2

7. a. Mention any **two** effects of electric current on a current-carrying conductor.

 _____ (2marks)

b. (i) **Figure 3** is the diagram below for the direction of magnetic field. Complete the diagram showing the direction of the field.

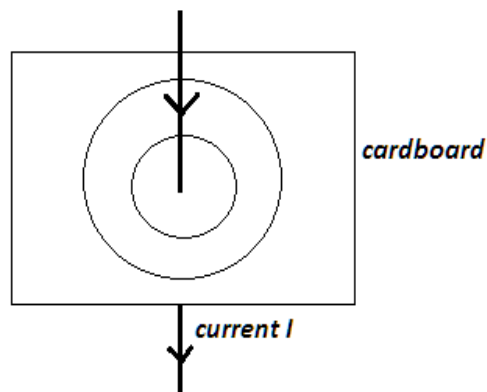


Figure 3 (2 marks)

(ii). Name the rule for determining the direction of the magnetic field in the question 7b (i) above.

 _____ (1 mark)

c. Explain why current in a simple cell decreases rapidly when in use.

 _____ (3 marks)

8. a. Give any **two** factors that affect the size of frictional force.

 _____ (2 marks)

b. Explain any way of reducing friction.

(2 marks)

c. A stone is thrown 200m at an angle of 65° above the horizontal surface. Calculate its vertical displacement.

(4 marks)

d. Two forces are moving in opposite direction as shown in **figure 4** below.

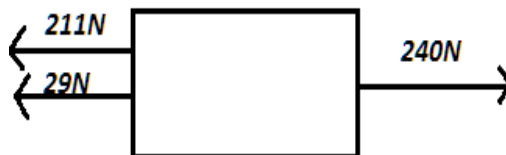


Figure 4

(i). What will be total net force acting on the body?

(2 marks)

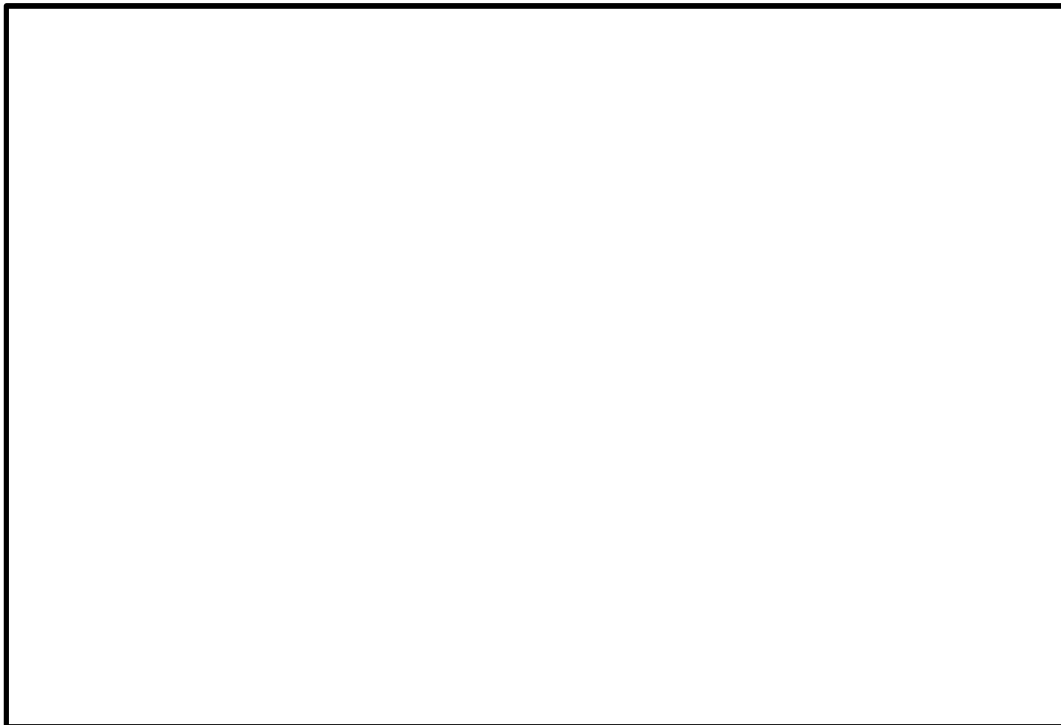
(ii). If the body was moving the direction of **240N**, in which direction will the body move if the two opposite forces hit the body?

_____ (2 marks)

9. a. (i). Differentiate between angular displacement and angular velocity.

_____ (2 marks)

(ii). A racing car wheel makes 3000 revolutions per minute (rpm). Calculate the angular velocity of the wheel.



(6 marks)

b. Give any **one** application of uniform circular motion.

_____ (1 mark)

10.a. Mention any **two** types of radiations.

_____ (2marks)

b. Explain any **two** applications of radioactivity.

_____ (4 marks)

SECTION B (30 marks)

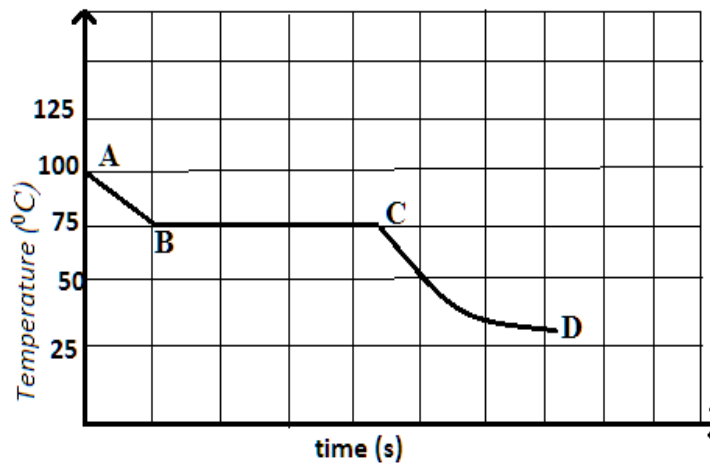
11.a. Explain how you would determine the density of cooking oil in the laboratory.

_____ (6 marks)

b. With aid of a diagram, explain how you would verify Charles' law of gases.

_____ (4 marks).

12.a. Explain each and every stage of the solidification of naphthalene liquid as shown in the graph below.

[illegible]

(6 marks)

b. Describe how you can show that impurities like salt increase the boiling point of water.

_____ (4 marks)

13.a. Explain how a person with short – sightedness can be helped to correct the eye defect.

_____ (5 marks)

b. With the help of a diagram and a truth table, explain how **NOT logic gate** functions.

_____ (5 marks)

END OF QUESTION PAPER

