



ALEXANDER ROAD HIGH SCHOOL

MARCH 2016

1 HOUR

PHYSICAL SCIENCE CONTROL TEST

CO, KB, MH

TOTAL = 60

GRADE 10

Instructions

- The question paper consists of 5 questions.
- Answer all the questions.
- Answer section A on the answer sheet provided AND section B on folio sheets.
- Rule off after each question in Section B.
- A non-programmable calculator may be used.
- Number the answers correctly according to the numbering system.
- Round off to two (2) decimal places where necessary.
- Formulas and a periodic table have been included at the end of the question paper

SECTION A

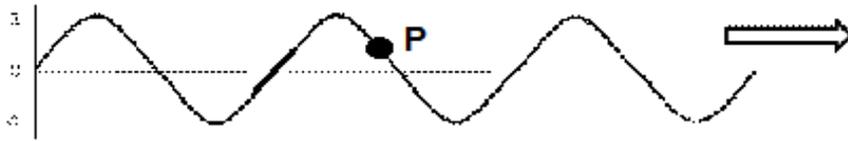
- Answer on the answer sheet -

QUESTION 1: Multiple choice

Four possible options are provided as answers to the following questions. Each question has only 1 correct answer. Choose the correct answer and make a cross (X) over the letter (A – D) next to the relevant question number (1.1 – 1.6)

- 1.1 The current strength in a circuit is
- A the flow of charge
 - B amount of charges flowing past a point in a certain time
 - C the energy transferred per flowing charges
 - D the charges that flow past a point
- 1.2 Resistance to the flow of charge causes
- A charges to heat up in a hot conductor
 - B energy loss in a circuit
 - C electrons to divide if different paths are possible
 - D charges to transfer energy when they experience opposition in a circuit

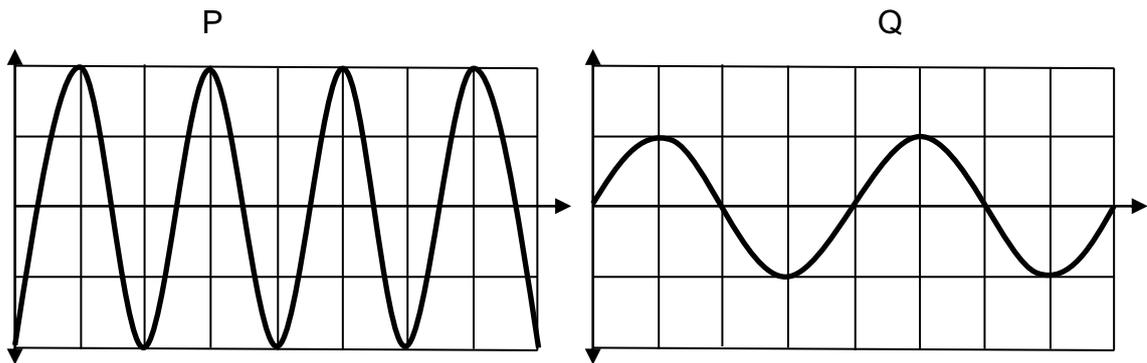
1.3 The wave form is moving left to right in the direction of the arrow.



How is the medium moving at the point marked, P?

- A ↓ B ↑ C ↙ D not moving

1.4 Two sounds, P & Q, are captured by a microphone and their wave forms shown on an oscilloscope as per the diagrams.



The correct relationship between the two sounds is...

	P	Q
A	Faster & louder	Slower & softer
B	Louder & higher pitch	Softer & lower pitch
C	Softer & shorter wavelength	Louder & longer wavelength
D	Slower & higher pitch	Faster & lower pitch

1.5 The scientist to first suggest charges in an atom was...

- A Bohr
 B Rutherford
 C Thompson
 D Dalton

1.6 When a substance changes directly from the gas phase to the solid phase, the process is called...

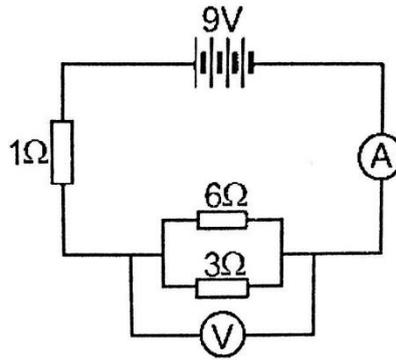
- A sublimation
 B solidification
 C deposition
 D crystallisation

[2 x 6 = 12]

SECTION B

QUESTION 2 (Electricity)

2.1 For the following circuit:



Calculate the...

2.1.1 total resistance (4)

2.1.2 reading on the ammeter (3)

2.1.3 voltmeter reading (2)

2.2.1 Define *potential difference* (2)

2.2.2 Explain the difference between a conductor and a resistor in terms of atomic particles (2)

2.3 Complete the sentences by selecting the correct answer (only write down the answers):

Resistors in series are **(2.3.1) current/voltage** dividers.

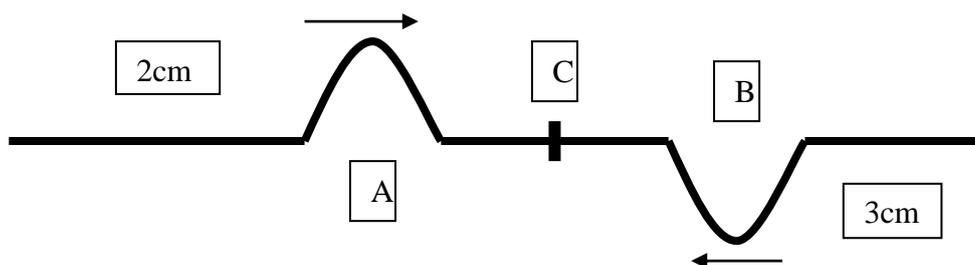
A voltmeter has a **(2.3.2) high/low** resistance.

A combination of resistors in parallel makes the total resistance in a circuit **(2.3.3) lower/higher**. (3)

[16]

QUESTION 3 (Waves and sound)

3.1 Two pulses A and B move toward each other at the same speed. The amplitude of pulse A is **2cm** and the amplitude of pulse B is **3cm**. Pulses meet each other at point C.



3.1.1 What is the name given to the type of interference that occurs at point C? (1)

- 3.1.2 Make a labelled sketch to show what happens at point C. Also show the amplitude of the resultant pulse (in cm) (3)
- 3.2 What is the difference between a transverse wave and a longitudinal wave? (as it relates to the displacement in a medium). (2)
- 3.3.1 The distance between 9 consecutive troughs in a wave is 480mm. If it takes 4 seconds for these 9 consecutive troughs to move past a particular point in the medium. Calculate:
- 3.3.1 The wavelength (2)
- 3.3.2 The period (2)
- 3.3.3 The frequency (2)
- 3.3.4 The speed of the wave (3)
- 3.4 Reflection of sound can be useful for a number of different applications. Name one. (1)

[16]

QUESTION 4 (The Atom and Bonding)

- 4.1 Draw an Aufbau-diagram for magnesium ion. (3)
- 4.2 Write sp-notation for the chloride ion. (3)
- 4.3 What type of bond forms when magnesium reacts with chlorine to form magnesium chloride? (1)
- 4.4 Use Lewis diagrams to illustrate the reaction between magnesium and chlorine. (4)

[11]

QUESTION 5 (Phase Change)

- 5.1 The first assumption made by the kinetic molecular theory is that all matter consists of small particles. State the other two assumptions. (2)
- 5.2 Describe the gas phase in terms of the kinetic molecular theory. (3)

[5]

TOTAL 60 MARKS

