



Rewarding Learning

General Certificate of Secondary Education
2013

Centre Number

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Candidate Number

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Science: Physics

Unit P2

Foundation Tier

[GPH21]

MONDAY 24 JUNE, MORNING



GPH21

TIME

1 hour 30 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided. Do not write outside the box, around each page or on blank pages.

Complete in blue or black ink only. **Do not write with a gel pen.**

Answer **all** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 90.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

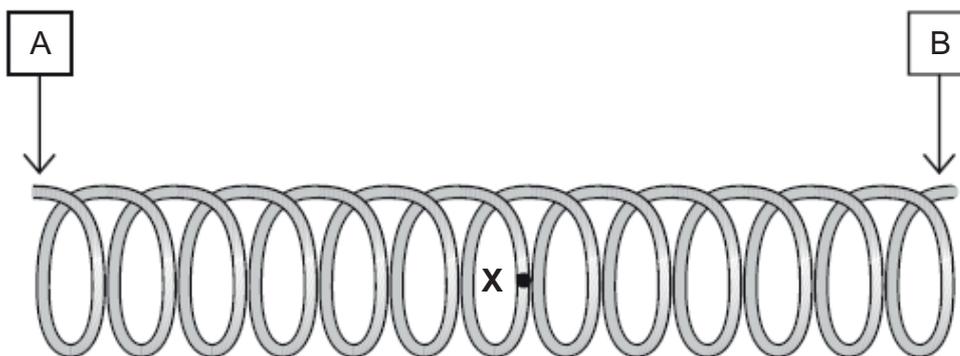
Quality of written communication will be assessed in question **4(b)**.

8005.04R



20GPH2101

- 1 (a) A stretched spring rests on a table.
A wave travels from end A to end B.



Describe **carefully** how point **X** will move when

- (i) a **transverse** wave passes along the spring;

_____ [2]

- (ii) a **longitudinal** wave passes along the spring.

_____ [2]

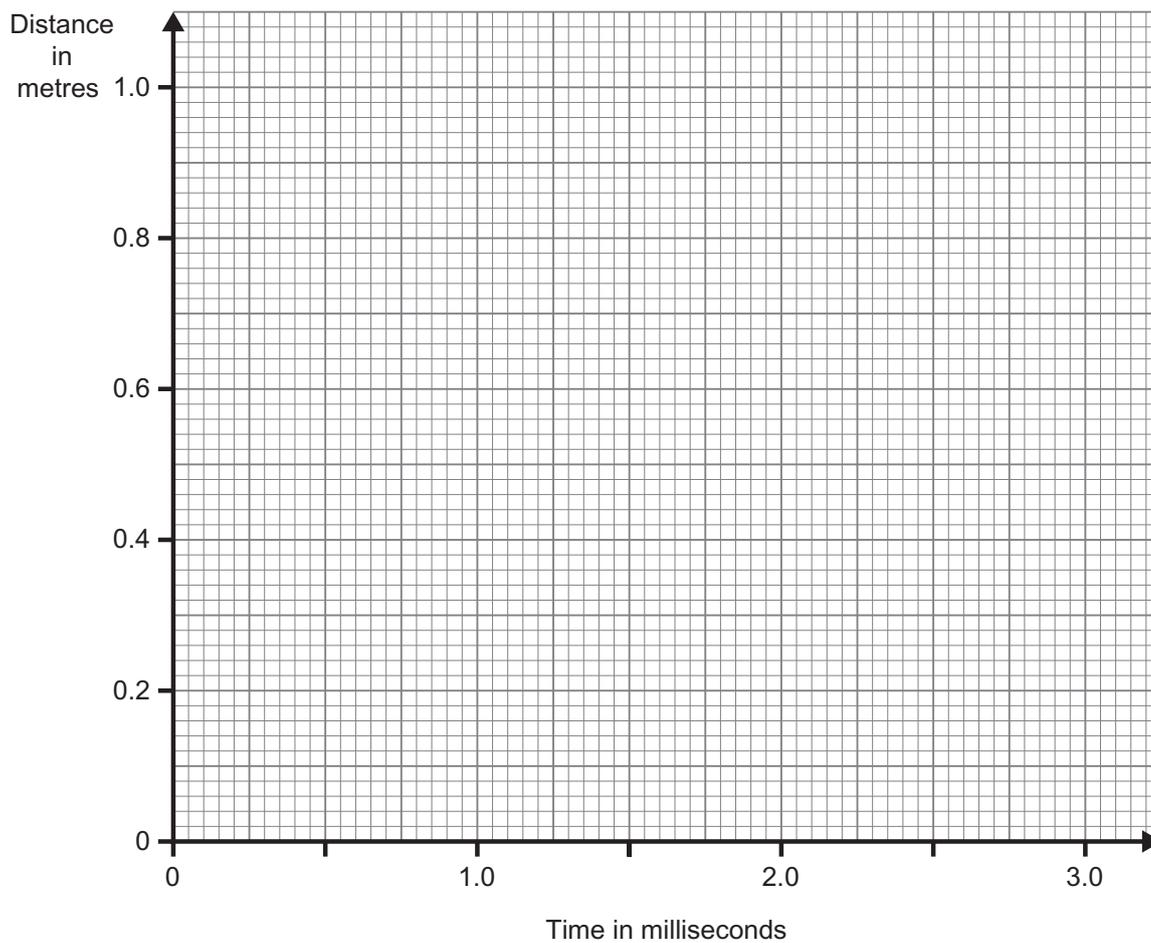
- (iii) Give another example of a transverse wave and another example of a longitudinal wave.

Transverse: _____

Longitudinal: _____ [2]



(iii) Using the grid below plot a graph of distance d (y-axis) against time to travel the distance d (x-axis). Draw a line of best fit through the points. [3]



(iv) The sound emitter was placed at a distance from the object that gave a **round trip** time of 3.0 ms. Using the graph determine the distance d .

Distance d = _____ m [1]

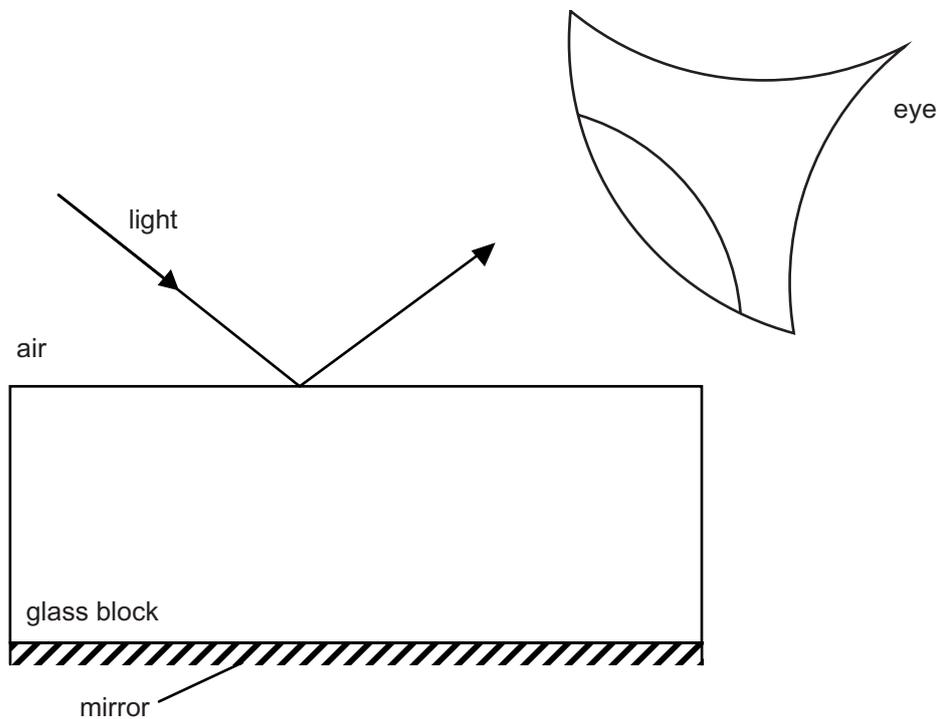
Examiner Only	
Marks	Remark
Total Question 1	

[Turn over



Examiner Only	
Marks	Remark

- 2 (a) The diagram shows a ray of light incident on a glass block. Some of the light is reflected at the top surface and some of the light passes through the glass and is reflected at the opposite side which has a mirrored surface.



- (i) Complete the path of the ray of light through the glass block and back out into the air towards the person viewing it as shown in the diagram. [3]

- (ii) Explain, in terms of the speed of light, why the ray of light takes the path you have drawn in the glass.

_____ [2]

- (iii) What is the relationship between the angle of incidence and the angle of reflection?

_____ [1]



- (c) The photograph shows a girl touching an electrostatic generator. The generator gives the girl's hair a positive charge.



© Ted Kinsman / Science Photo Library

- (i) Describe how her hair acquires a positive charge.

[1]

- (ii) When she touches an object a small spark is seen. What particles are moving in the spark and in what direction do they move?

1. The particles are _____

2. The direction in which they move is _____

[2]

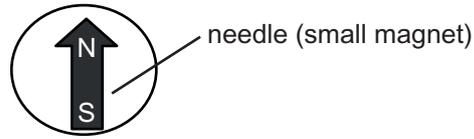
Examiner Only

Marks Remark

Total Question 3

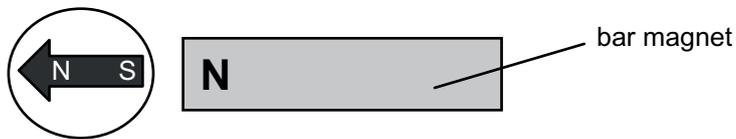


- 4 (a) The diagram below shows a plotting compass which consists of a needle (small magnet) pivoted so that it can move freely. When a magnet is not present it points in the direction shown.



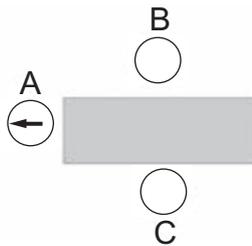
- (i) When the plotting compass is placed close to a bar magnet the needle of the plotting compass points in the direction shown below.

Explain why this happens.



[1]

In the diagram below, a plotting compass shows the direction of the magnetic field of the bar magnet at position A.



- (ii) Draw arrows in the circles to show the directions of the magnetic field at points B and C. [2]
- (iii) Mark with an S, on the diagram, the south pole of the magnet. [1]

Examiner Only

Marks Remark

Marks	Remark

[Turn over



5 (a) (i) Name the generally accepted scientific model which describes the formation of the Universe.

_____ [1]

(ii) According to this model how old is the Universe?

_____ years [1]

(iii) The light from distant galaxies is red shifted. What is meant by red-shift?

_____ [1]

(iv) What is the explanation of this red-shift?

_____ [1]

Examiner Only	
Marks	Remark



Examiner Only	
Marks	Remark

6 The Earth is made up of a number of layers. **Diagram A** below shows the topmost layer. This topmost layer is divided into two layers.

(i) On **Diagram A**, label the topmost layer and the two layers it is divided into. Write the names in the boxes provided.

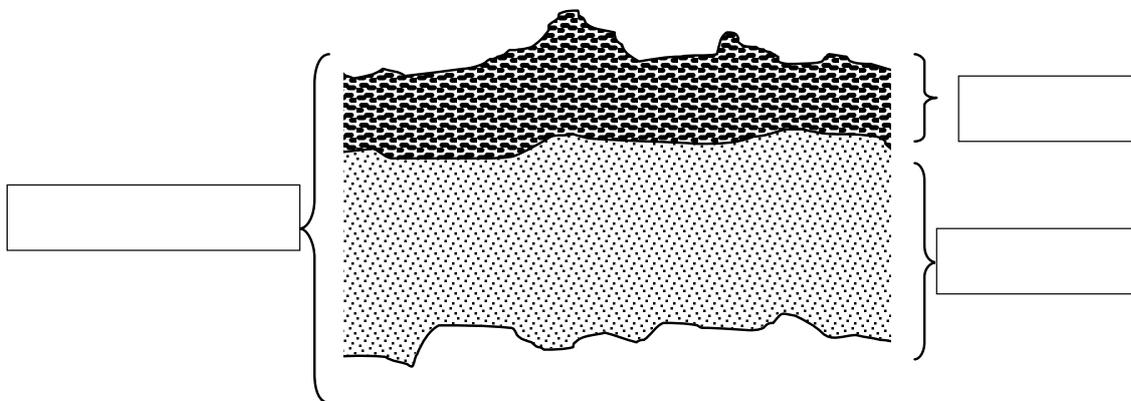


Diagram A

[3]

Diagram B below is a map of the Earth. The dots show the location of Earthquakes and Volcanoes.

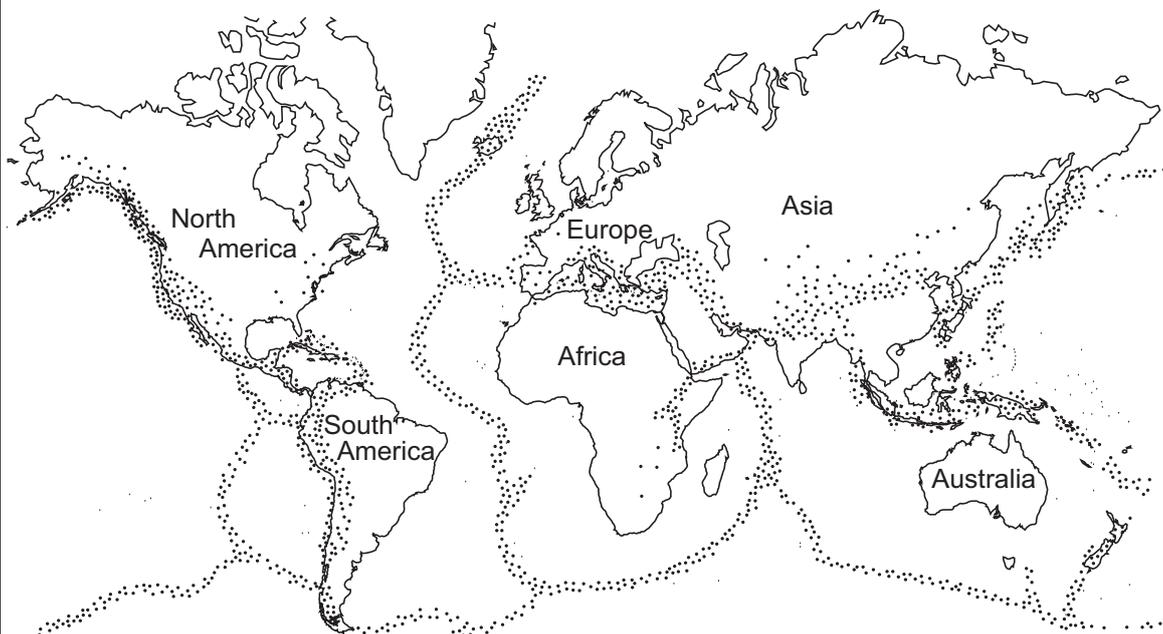


Diagram B

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Question Number	Marks
1	
2	
3	
4	
5	
6	

Total Marks	
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Examiner Number

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