



**GCSE**

**Science A (4461) /  
Physics (4451)**

*Specification A*

**PHY1AP, PH1ASF & PH1ASH**

**Mark Scheme**

*2011 Examination – November Series*

**The blank answer sheet for this component can be found at the end of this document.**

This component is an objective test for which the following list indicates the correct answers used in marking the students' responses.

Further copies of this Mark Scheme are available to download from the AQA Website: [www.aqa.org.uk](http://www.aqa.org.uk)

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**GCSE**  
**SCIENCE A (4461)/PHYSICS (4451)**  
 Objective Test Answer Key  
**PHY1AP (Energy and Electricity)**  
**November 2011**  
 Foundation Tier

Question	Key			
One	<b>A</b>	geothermal	<b>3</b>	
	<b>B</b>	hydroelectric	<b>1</b>	
	<b>C</b>	nuclear fuel	<b>4</b>	
	<b>D</b>	wind	<b>2</b>	
Two	<b>A</b>	chemical	<b>1</b>	
	<b>B</b>	electrical	<b>3</b>	
	<b>C</b>	heat (thermal energy)	<b>4</b>	
	<b>D</b>	kinetic	<b>2</b>	
Three	<b>A</b>	conduction	<b>2</b>	
	<b>B</b>	convection	<b>3</b>	
	<b>C</b>	radiation	<b>1</b>	
	<b>D</b>	reflection	<b>4</b>	
Four	<b>A</b>	coal-fired	<b>2</b>	
	<b>B</b>	geothermal	<b>3</b>	
	<b>C</b>	nuclear	<b>4</b>	
	<b>D</b>	tidal	<b>1</b>	
Five	<b>A</b>	coal	<b>1</b>	
	<b>B</b>	natural gas	<b>3</b>	
	<b>C</b>	nuclear fuel	<b>2</b>	
	<b>D</b>	wind	<b>4</b>	
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Six	<b>4</b>	<b>3</b>	<b>3</b>	<b>1</b>
Seven	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>
Eight	<b>4</b>	<b>2</b>	<b>4</b>	<b>2</b>
Nine	<b>4</b>	<b>1</b>	<b>2</b>	<b>4</b>

**GCSE**  
**SCIENCE A (4461)/PHYSICS (4451)**  
 Objective Test Answer Key  
**PHY1AP (Energy and Electricity)**  
**November 2011**  
 Higher Tier

Question	Key			
One	<b>A</b>	coal		<b>1</b>
	<b>B</b>	natural gas		<b>3</b>
	<b>C</b>	nuclear fuel		<b>2</b>
	<b>D</b>	wind		<b>4</b>
Two	<b>A</b>	stopper to reduce convection		<b>1</b>
	<b>B</b>	shiny surface to reflect radiation back into the drink		<b>4</b>
	<b>C</b>	shiny surface to reduce heat loss by radiation		<b>2</b>
	<b>D</b>	vacuum to reduce conduction and convection		<b>3</b>
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Three	<b>4</b>	<b>2</b>	<b>4</b>	<b>2</b>
Four	<b>4</b>	<b>1</b>	<b>2</b>	<b>4</b>
Five	<b>1</b>	<b>3</b>	<b>4</b>	<b>2</b>
Six	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Seven	<b>4</b>	<b>1</b>	<b>3</b>	<b>4</b>
Eight	<b>3</b>	<b>4</b>	<b>4</b>	<b>2</b>
Nine	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>

The AQA UMS Conversion Calculator can be found at the following web address:

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Unit : PHY1AP PHYSICS UNIT 1A

Centre :

Candidate Number :

UCI :

Series : BG11

Candidate Name :

15-NOV-11

*For completion by the Examination Invigilator.* Please fill this circle if the candidate is absent:

## HIGHER TIER

Instructions on how to complete this answer sheet are given on the question paper. Please make sure you follow them carefully.

Questions **ONE** to **NINE** Choose one response **1 - 4** for each of the parts **A - D**

QUESTION ONE		1	2	3	4
1A	coal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1B	natural gas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1C	nuclear fuel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1D	wind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

QUESTION TWO		1	2	3	4
2A	stopper to reduce convection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2B	shiny surface to reflect radiation back into the drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2C	shiny surface to reduce heat loss by radiation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2D	vacuum to reduce conduction and convection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

QUESTION THREE		1	2	3	4
3A	<input type="radio"/>				
3B	<input type="radio"/>				
3C	<input type="radio"/>				
3D	<input type="radio"/>				

QUESTION FOUR		1	2	3	4
4A	<input type="radio"/>				
4B	<input type="radio"/>				
4C	<input type="radio"/>				
4D	<input type="radio"/>				

QUESTION FIVE		1	2	3	4
5A	<input type="radio"/>				
5B	<input type="radio"/>				
5C	<input type="radio"/>				
5D	<input type="radio"/>				

QUESTION SIX		1	2	3	4
6A	<input type="radio"/>				
6B	<input type="radio"/>				
6C	<input type="radio"/>				
6D	<input type="radio"/>				

QUESTION SEVEN		1	2	3	4
7A	<input type="radio"/>				
7B	<input type="radio"/>				
7C	<input type="radio"/>				
7D	<input type="radio"/>				

QUESTION EIGHT		1	2	3	4
8A	<input type="radio"/>				
8B	<input type="radio"/>				
8C	<input type="radio"/>				
8D	<input type="radio"/>				

QUESTION NINE		1	2	3	4
9A	<input type="radio"/>				
9B	<input type="radio"/>				
9C	<input type="radio"/>				
9D	<input type="radio"/>				

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# FOUNDATION TIER

Instructions on how to complete this answer sheet are given on the question paper. Please make sure you follow them carefully.

Questions **ONE** to **NINE** Choose one response **1 - 4** for each of the parts **A - D**

QUESTION ONE		1	2	3	4
1A	geothermal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1B	hydroelectric	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1C	nuclear fuel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1D	wind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

QUESTION TWO		1	2	3	4
2A	chemical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2B	electrical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2C	heat (thermal energy)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2D	kinetic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

QUESTION THREE		1	2	3	4
3A	conduction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3B	convection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3C	radiation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3D	reflection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

QUESTION FOUR		1	2	3	4
4A	coal-fired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4B	geothermal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4C	nuclear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4D	tidal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

QUESTION FIVE		1	2	3	4
5A	coal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5B	natural gas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5C	nuclear fuel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5D	wind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

QUESTION SIX		1	2	3	4
6A		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6B		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6C		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6D		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

QUESTION SEVEN		1	2	3	4
7A		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7B		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7C		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7D		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

QUESTION EIGHT		1	2	3	4
8A		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8B		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8C		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8D		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

QUESTION NINE		1	2	3	4
9A		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9B		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9C		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9D		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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