



**GCSE**

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

*Specification A*

**PHY1BP, PH1BSF & PH1BSH**

**Mark Scheme**

*2011 Examination – March 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 candidates' 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  
**PHY1BP (Radiation and the Universe)**  
**March 2011**  
 Foundation Tier

Question	Key			
One	<b>A</b>	infra red		<b>3</b>
	<b>B</b>	microwaves		<b>2</b>
	<b>C</b>	radio waves		<b>1</b>
	<b>D</b>	visible light		<b>4</b>
Two	<b>A</b>	infra red		<b>3</b>
	<b>B</b>	microwaves		<b>2</b>
	<b>C</b>	visible light		<b>1</b>
	<b>D</b>	X-rays		<b>4</b>
Three	<b>A</b>	bacteria		<b>3</b>
	<b>B</b>	cells		<b>2</b>
	<b>C</b>	isotopes		<b>1</b>
	<b>D</b>	particles		<b>4</b>
Four	<b>A</b>	gamma rays		<b>1</b>
	<b>B</b>	infra red rays		<b>3</b>
	<b>C</b>	radio waves		<b>4</b>
	<b>D</b>	ultraviolet rays		<b>2</b>
Five	<b>A</b>	a belief that science cannot disprove		<b>1</b>
	<b>B</b>	a conclusion based on observations of red-shift		<b>3</b>
	<b>C</b>	a theory supported by scientific evidence but not direct observations		<b>4</b>
	<b>D</b>	a theory that science has disproved		<b>2</b>
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Six	<b>1</b>	<b>4</b>	<b>4</b>	<b>1</b>
Seven	<b>1</b>	<b>4</b>	<b>1</b>	<b>2</b>
Eight	<b>1</b>	<b>3</b>	<b>2</b>	<b>1</b>
Nine	<b>4</b>	<b>1</b>	<b>2</b>	<b>2</b>

**GCSE**  
**SCIENCE A (4461) / PHYSICS (4451)**  
 Objective Test Answer Key  
**PHY1BP (Radiation and the Universe)**  
**March 2011**  
 Higher Tier

Question	Key			
One	<b>A</b>	a belief that science cannot disprove		<b>1</b>
	<b>B</b>	a conclusion based on observations of red-shift		<b>3</b>
	<b>C</b>	a theory supported by scientific evidence but not direct observations		<b>4</b>
	<b>D</b>	a theory that science has disproved		<b>2</b>
Two	<b>A</b>	Isotope A		<b>4</b>
	<b>B</b>	Isotope B		<b>1</b>
	<b>C</b>	Isotope C		<b>3</b>
	<b>D</b>	Isotope D		<b>2</b>
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Three	<b>1</b>	<b>3</b>	<b>2</b>	<b>1</b>
Four	<b>4</b>	<b>1</b>	<b>2</b>	<b>2</b>
Five	<b>4</b>	<b>3</b>	<b>4</b>	<b>3</b>
Six	<b>2</b>	<b>3</b>	<b>2</b>	<b>4</b>
Seven	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Eight	<b>3</b>	<b>2</b>	<b>4</b>	<b>2</b>
Nine	<b>2</b>	<b>3</b>	<b>4</b>	<b>3</b>

Unit : PHY1BP PHYSICS UNIT 1B

Centre :

Candidate Number :

UCI :

Series : 3G11

Candidate Name :

02-MAR-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	a belief that science cannot disprove	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1B	a conclusion based on observations of red-shift	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1C	a theory supported by scientific evidence but not.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1D	a theory that science has disproved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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

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

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

QUESTION FIVE		1	2	3	4
5A		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5B		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5C		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5D		<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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# 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	infra red	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1B	microwaves	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1C	radio waves	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1D	visible light	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

QUESTION TWO		1	2	3	4
2A	infra red	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2B	microwaves	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2C	visible light	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2D	X-rays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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

QUESTION FOUR		1	2	3	4
4A	gamma rays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4B	infra red rays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4C	radio waves	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4D	ultraviolet rays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

QUESTION FIVE		1	2	3	4
5A	a belief that science cannot disprove	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5B	a conclusion based on observations of red-shift	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5C	a theory supported by scientific evidence but not...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5D	a theory that science has disproved	<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"/>	

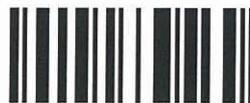
QUESTION SEVEN		1	2	3	4
7A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
7B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
7C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
7D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