

Ce	entre Number
71	
Can	didate Number

General Certificate of Secondary Education 2009–2010

Science: Single Award (Modular)

Electricity, Waves and Communication

Module 5

Foundation Tier

[GSC51]



THURSDAY 20 MAY 2010, AFTERNOON

TIME

45 minutes.

INSTRUCTIONS TO CANDIDATES

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

Write your answers in the spaces provided in this question paper. Answer all six questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 45.

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

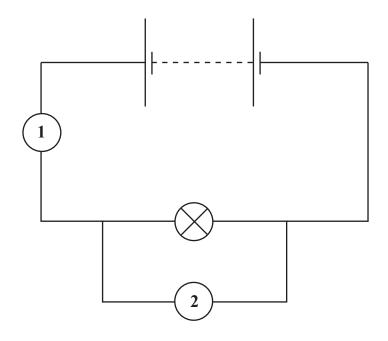
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Question Number	Marks
1	
2	
3	
4	
5	
6	

Total	
Marks	
Maiks	



1 The circuit below was used to measure the current through and the voltage across a bulb.





(a) (i) What type of meter is meter 2?

Choose from:

voltmeter	ohmmeter	ammeter	
			[1]

(ii) Complete the following sentence with **one** word that describes how meter ① is connected.

Meter ① is connected in _____ in the circuit. [1]

(iii) Give two changes you would see if more batteries were added to the circuit above.

1. _____

2. _______[2]

(b) If the voltage in the circuit was 6V and the current was 2A, use the equation :

Examir	Examiner Only		
Marks	Remark		

$$resistance = \frac{voltage}{current}$$

to calculate the resistance of the bulb.

Show your working.

Answer =	Ω	[2]
	1	

(c) Complete the circuit diagram below to show two bulbs connected in parallel.

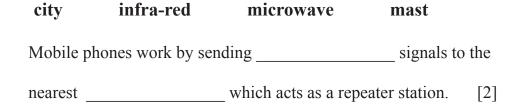


[2]

2 (a) (i) Complete the following sentence about mobile phones.

Examin	er Only
Marks	Remark

Choose from:



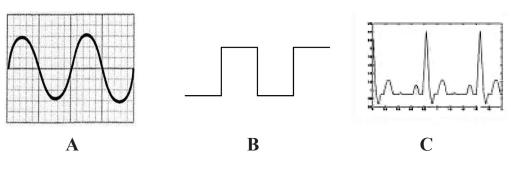
(ii) What is the area around a mast called?

_____[1]

(iii) Name a disease associated with long-term use of mobile phones.

[1]

(b) (i) Which diagram below shows a digital signal?



Answer (A, B or C) [1]

(ii) Digital signals are going to replace analogue signals by the year 2012. Give one **disadvantage** of analogue signals.

4

Circle the correct answer.

can be processed by computers

less interference

more interference

[1]

3 (a) The picture below shows a three pin plug.



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(i) Using lines match each pin with the colour of wire that should be connected to it.

Pin		Colour of wire	
Earth		Blue	
Neutra	1	Green/yellow	
Live		Brown	[2]
(ii) Apart from	the Earth wire,	, name one other safety	feature of this

plug. _____ [1]

(b) For safety reasons manufacturers are now supplying their appliances already fitted with the type of plug shown below.

Examiner Only			
Marks	Remark		

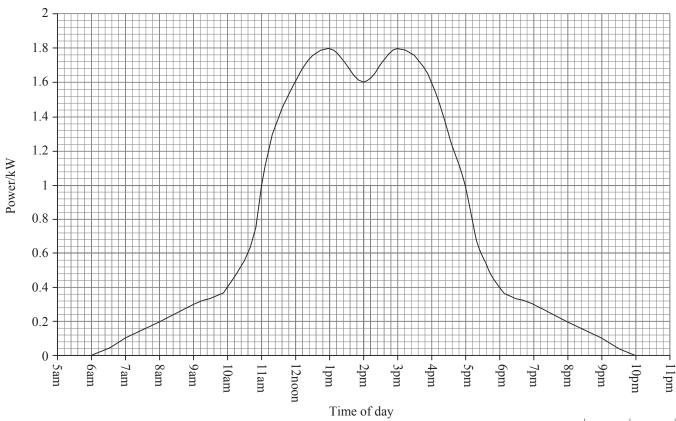


i)	Suggest two reason	ons why this t	ype of plug is	s safer for the u	ıser.
	1				
	2				
					F23
i)	This plug is used laptop requires 3.		aptop compu		s. The
i)	This plug is used laptop requires 3.4 Which fuse should Choose from:	4 amps of cur	aptop compu rent.		s. The
i)	laptop requires 3.4 Which fuse should	4 amps of cur	aptop compu rent.		s. The
i)	laptop requires 3.4 Which fuse should Choose from:	4 amps of curred be used for 3A	aptop compurent. the plug?	ter to the main	
	laptop requires 3.4 Which fuse should Choose from:	4 amps of curred be used for 3A Ans	aptop compurent. the plug? 5A	ter to the main	[1

4 The graph below shows the electrical power output from a solar panel during a typical summer day.

Examiner Only			
Marks	Remark		





(a) (i) Calculate the number of hours that the power output is greater than 1 kW. Show your working out.

Answer hours [2]

(ii) How many watts are in 1 kW?

_____[1]

(iii) Suggest a reason for the drop in power output during midafternoon.

_____[1]

(iv) Draw a line on the graph above to show what the power output might be on a typical winter day. [2]

(b)	(i)	Solar power is described as a renewable energy source.		kaminer On Irks Rem	
		What is meant by the term renewable energy ?	1]		
	(ii)	Explain fully how using renewable energy sources, such as solar power, reduces the amount of air pollution.			
			2]		

5	The spectacles shown in the picture below contain convex (converging)
	lenses.

Examiner Only					
Marks	Remark				



(a) (i) Describe fully what a convex lens does to parallel rays of light.

_____[2]

(ii) Name the other type of lens.

_____[1]

(b) The spectacles above are used to correct long sight.

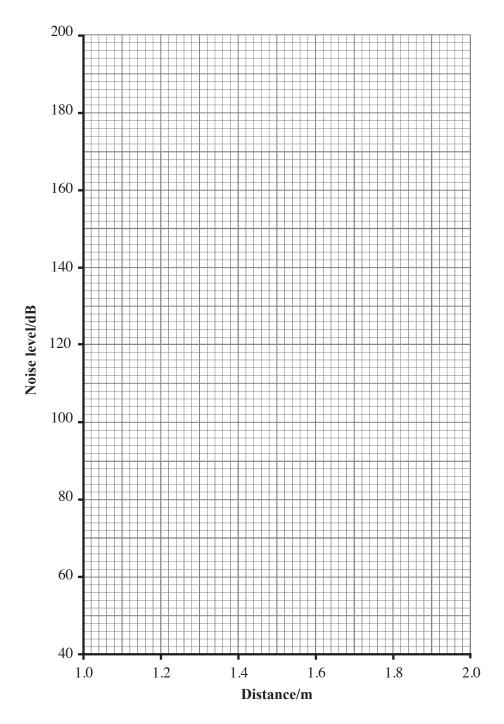
Describe fully the cause of long sight and its effect on vision.

[3]

Distance/m	Noise level/dB
1.0	180
1.2	125
1.4	92
1.6	70
1.8	56

(a) (i) Plot these points on the grid below and draw a smooth curve.

[3]



(ii) State the conclusion that can be drawn from these results.	Examir Marks	er Only Remark
[1]		
(iii) Use the graph to find the distance from the loudspeaker that gives a noise level of 80 dB.		
Answer m [1]		
(iv) Sounds above 100 dB cause hearing damage. Use the graph to find the minimum distance that safety barriers should be placed at a concert.		
Answer m [1]		
The walls of modern concert halls are lined with soft material. Explain fully why this is done.		
[2]		
Humans can hear sounds with a frequency between 20 Hz and 20 kHz. What is the name given to sound with a frequency higher than 20 kHz?		
[1]		
	(iii) Use the graph to find the distance from the loudspeaker that gives a noise level of 80 dB. Answer m [1] (iv) Sounds above 100 dB cause hearing damage. Use the graph to find the minimum distance that safety barriers should be placed at a concert. Answer m [1] The walls of modern concert halls are lined with soft material. Explain fully why this is done. [2] Humans can hear sounds with a frequency between 20 Hz and 20 kHz.	(iii) Use the graph to find the distance from the loudspeaker that gives a noise level of 80 dB. Answer m [1] (iv) Sounds above 100 dB cause hearing damage. Use the graph to find the minimum distance that safety barriers should be placed at a concert. Answer m [1] The walls of modern concert halls are lined with soft material. Explain fully why this is done. [2] Humans can hear sounds with a frequency between 20 Hz and 20 kHz. What is the name given to sound with a frequency higher than 20 kHz?

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