Centre No.				Paper Reference			Surname		Initial(s)				
Candidate No.								/	5	P	Signature		
		-	r Reference	50	668	/5P	1					Examir	ner's use only

Edexcel GCSE

Science: Double Award B (1536)

Physics B (1549)

(Modules 11 and 12)

Paper 5P

Higher Tier

Wednesday 13 June 2007 – Morning

Time: 30 minutes

Materials required for examination

Items included with question papers

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature, and complete the paper reference.

Check that you have the correct question paper.

Answer ALL the questions. Write your answers in the spaces provided in this question paper. Show all stages in any calculations and state the units. Calculators may be used. Include diagrams in your answers where these are helpful.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2). There are 5 questions in this question paper. The total mark for this paper is 30. There are 8 pages in this question paper. Any blank pages are indicated.

Advice to Candidates



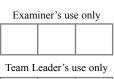
This symbol shows where the quality of your written answer will also be assessed.

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Total Turn over



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Question Number

1

2

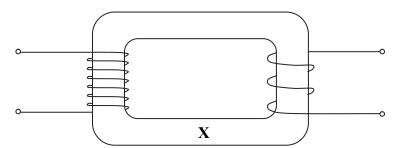
3

4

5

Answer ALL the questions. Write your answers in the spaces provided.

1. (a) The diagram shows a simple transformer.



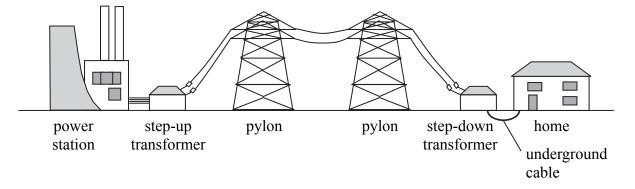
(i) Name part X.

	(1)

(ii) Suggest a suitable material for part X.

 •
(1)

(b) The diagram shows two transformers in part of the National Grid.



(i)	What is	meant hy	a sten-un	transformer?
(1)	vv Hat 15	meant by	ี a รเบบ-นบ	uansioninei :

(1)

(ii) Explain why step-up transformers are used in the National Grid.



(3)

Leave	
blonk	

(c)	High voltage power lines cause electrical and magnetic fields. Many people think that these electrical and magnetic fields are dangerous. Scientists studied the health of people who live near power lines. They concluded that there was no increase in cancer rates.	oia.	n
	Suggest why people may not want to live near overhead power lines, even though they have been told it is safe.		
	(2)	Q1	
	(Total 8 marks)		

2. Adam is competing in a strong-man competition.



Source: www.ontariostrongman.ca

He pulls the truck at a steady speed with a force of 1200 N.

110	buils the truck at a steady speed with a force of 1200 iv.
(a)	What is the size and direction of the frictional force on the truck?
	(1)
` /	Calculate the work done by Adam when he pulls the truck 12 m. State the units in your answer.
	(4)

Q2

(Total 5 marks)



3. The graph shows the speed of a train at different times.

speed in m/s 30 20 40 60 80 100 time in s

(a) Calculate the acceleration of the train while it is slowing down.

..... m/s²

(b) Calculate the distance travelled by the train in the 90 seconds shown on the graph.

Q3

(3)

(Total 6 marks)

4.	A girl uses a plastic comb to comb her hair. This makes her hair stick out.	Leave blank
	The comb has become positively charged.	
	(a) Explain how the comb has become charged.	
	(2)	
	(b) Explain why her hair no longer sticks out when she touches a metal water tap.	
	(1)	
	(c) She holds the charged comb near a bowl of dry puffed rice.	
	Some of the puffed rice sticks to the comb. Explain why the puffed rice sticks to her charged comb.	
	Explain why the pulled fice sticks to her charged como.	
	(1)	Q4
	(Total 4 marks)	

Leave	
hlank	

5	(a)	(i)	Iodine-131	haga	half lifa	of Q	dovic
Э.	(a)	(1)	1001116-131	mas a	nan-me	01.0	uays.

What is meant by the term half-life?	
	(1)

(ii) The activity of a sample of iodine-131 is 80 Bq.
How long will it take for its activity to fall to 10 Bq?

(1)

(b) Radioactive isotopes are used in medicine.

Three important uses are

- to destroy tumours from the inside by putting a radioactive isotope into the tumour
- to destroy tumours from the outside by aiming radiation at the tumour
- to insert a radioactive isotope into the blood to test how well the blood flows

This table gives data about isotopes.

name	half-life	alpha emitter	beta emitter	gamma emitter
cobalt-60	5.27 years		✓	✓
technetium-99	6 hours			✓
palladium-103	17 days			✓
lutetium-177	6.7 days		✓	
bismuth-211	2.14 minutes	✓		
radium-226	1600 years	✓		

This table gives data about each type of radiation.

type of radiation	range in air (cm)	ionisation produced
alpha	10	very high
beta	100	medium/high
gamma	more than 1000	low



(i)	Doctors use cobalt-60 rather than radium-226 when trying to destroy a tumour from the outside. Suggest two reasons for this.
	(2)
(ii)	When doctors use a radioactive isotope inside a patient, they choose an isotope with a short half-life. Suggest a reason for this.
	(1)
(iii	
(1111) Choose the most suitable radioactive isotope to inject into the bloodstream to test how well the blood flows. Explain your choice.
	how well the blood flows. Explain your choice.
	how well the blood flows. Explain your choice. (2)
(how well the blood flows. Explain your choice.
	how well the blood flows. Explain your choice. (2)
	how well the blood flows. Explain your choice. (2) (Total 7 marks) TOTAL FOR PAPER: 30 MARKS

