Energy Sources

Question Paper 2

Level	Edexcel
Subject	Physics
Exam Board	GCSE(9-1)
Topic	Conservation of Energy
Sub Topic	Energy Sources
Booklet	Question Paper 2

Time Allowed: 39 minutes

Score: /32

Percentage: /100

Generating electricity

The photograph shows a small generator.

When the handle is turned the current produced lights a lamp.

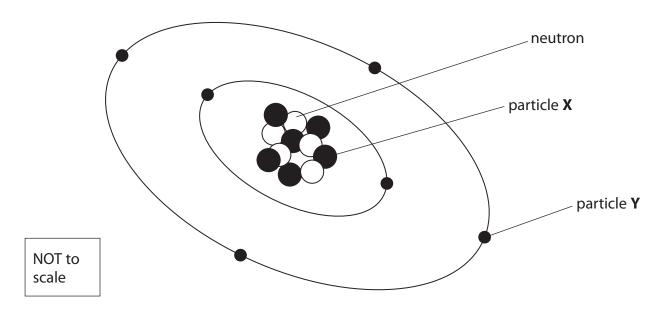


(a) (i) Complete the sentence by putting a cross (☒) in the box next to your ar	nswer.
 ■ A usually comes from a battery ■ B always has the same frequency ■ C is always the same size ■ D is usually alternating in direction 	(1)
(ii) State the unit in which electric current is usually measured.	(1)
(b) (i) Describe what happens inside the generator to produce the current.	(3)

	(ii) State one way in which the size of the current could be increased.	(1)
*(c)	The National Grid is supplied with electricity from large-scale electrical generators.	
	These generators may be driven using different energy sources.	
	Compare the use of a non-renewable energy source with the use of a renewable energy source to produce electricity for the National Grid.	
		(6)
	(Total for Question 5 = 12 ma	arks)

Radioactive material

2 (a) The diagram represents an atom of carbon.



(i) State the name of particle **X**.

(1)

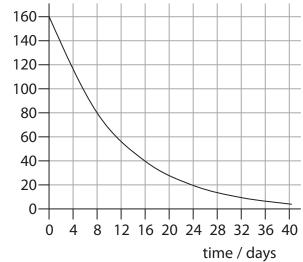
(ii) State the name of particle Y.

(1)

(b) Iodine-131 is a radioactive isotope of iodine.

The graph shows how the activity of a sample of iodine-131 decreases with time.





	(i)	Use the graph to calculate the half-life of iodine-131.		(2)	
		hal	f-life =		days
	(ii)	Another sample of iodine-131 has an activity of 800 Bq.			
		Calculate how long it will take before its activity decreases to 200 Bq.		(2)	
			time =		days
*(c)		ere are plans to build more nuclear power stations to supply electricity t tional Grid.	to the		
		scuss the advantages and disadvantages of using nuclear power to gene ectricity.	erate		
				(6)	
••••••					
					••••••

(Total for Question 5 = 12 marks)

Investigating electric motors

,	Some stu	dents investigate the efficiency of electric motors.	
	(a) (i)	The students find that one electric motor has an efficiency of 60%.	
		Explain in terms of energy what is meant by an efficiency of 60%.	(2)
	(ii)	The students use some motors to lift weights.	
	, ,	The students measure the input power and output power of two motors.	
		Complete the sentence by putting a cross (in the box next to your answer.	
		The power of a motor is the rate at which it transfers	
	×	A current	(1)
	×	B energy	
	×	C voltage	
	\boxtimes	D charge	
	(iii)	The first motor has a power rating of 20 W.	
		The motor is used for 15 s.	
		Calculate the energy supplied to the motor.	(2)
			(2)
		energy supplied to the motor =	J

(iv)	ро	the second motor, the useful output power was 18 W when the input wer was 24 W. Iculate the efficiency of this motor.	
			(2)
		efficiency =	%
4 > 5			
		f the students states that all of the energy supplied to a motor is transferred ther forms.	
	mpl swe	ete the following sentence by putting a cross (\boxtimes) in the box next to your r.	
Th	is st	atement is one example of the idea of	(4)
X	Α	renewable energy	(1)
×	В	conservation of energy	
		•	
×	C	non-renewable energy	
X	D	sustainable energy	
		(Total for Question 2 = 8 mar	ks)