S.G. Physics Homework 1 **After Activity 8** **Energy Matters Unit**

Name _____ **Class** _____ **Date Due** _____

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1. Write down the names of the three main fossil fuels.

(1)

2. Fossil fuels are finite. Explain what this means and why.

(1)

3. State one way of conserving energy at home.

(1)

4. State one way of conserving energy in transport.

(1)

5. State one way of conserving energy in industry.

(1)

6. Put the following sources of energy under the correct headings:
'solar energy' 'natural gas' 'wind power' 'hydro-electricity' 'oil' 'coal' 'geothermal energy'

Renewable	Non-renewable

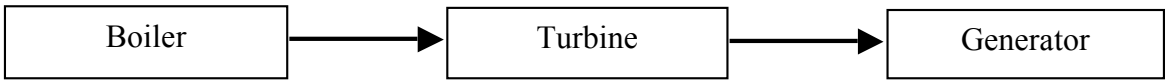
(2)

7. Write down three renewable energy sources and list advantages and disadvantages for each.

Source	Advantage	Disadvantage

(3)

8. Complete the following diagram by stating the energy change at each stage.



_____ _____ _____

(3)

9. Why are used fuel rods from a nuclear power station dangerous?

(1)

10. a) Describe the stages in a pumped hydro-electric scheme.

(2)

b) Give an advantage of such a scheme.

(1)

11. One tonne of coal contains 2.8×10^{10} J of energy.
A power station can produce 9.8×10^{9}J of electrical energy from each tonne of coal.
What percentage is this of the energy originally stored in the coal?

(2)

19

S.G. Physics Homework 2 **After Activity 14** **Energy Matters Unit**

Name _____ **Class** _____ **Date Due**_____

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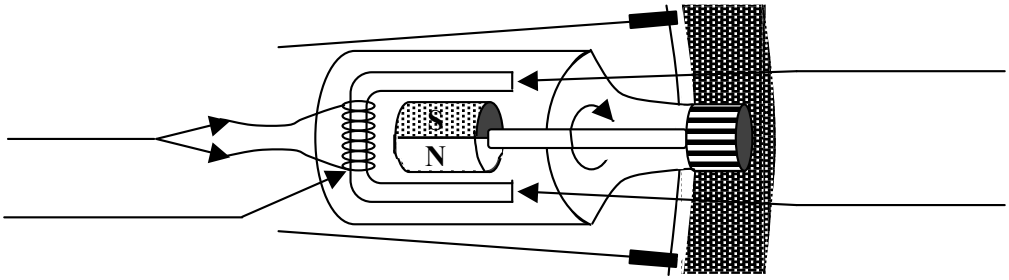
1. Given a piece of conducting wire and a horseshoe magnet, what would you have to do to produce a voltage at the ends of the wire?

(1)

2. Name the parts on the following diagram of a bicycle dynamo.



(2)

3. Give 2 differences between a bicycle dynamo and a commercial a.c. generator.

i) _____

ii) _____

(2)

4. Write down 3 things you could do in designing and using a generator in order to produce as high an output voltage as possible.

i) _____

ii)_____

iii)_____

(3)

5. Sketch a transformer and label its parts.

(3)

6. Transformers are mainly used to _____

_____

(2)

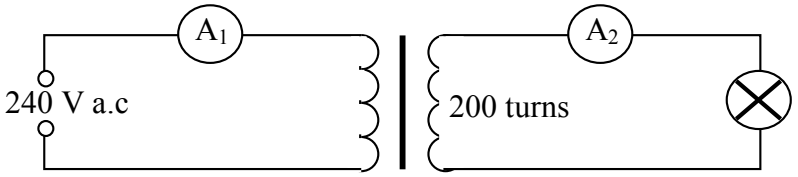
___

13

S.G. Physics Homework 3 After Activity 17 Energy Matters Unit

Name _____ Class _____ Date Due_____

1.



The lamp in the above circuit operates at its 12 V, 36 W ratings.

a) Calculate the reading on A2.

(2)

b) Calculate the number of turns of the left hand coil.

(2)

c) Calculate the reading on A2.

(1)

d) What assumption have you made about the transformer?

(1)

2. Write down and explain two ways in which a transformer loses energy.

i) _____

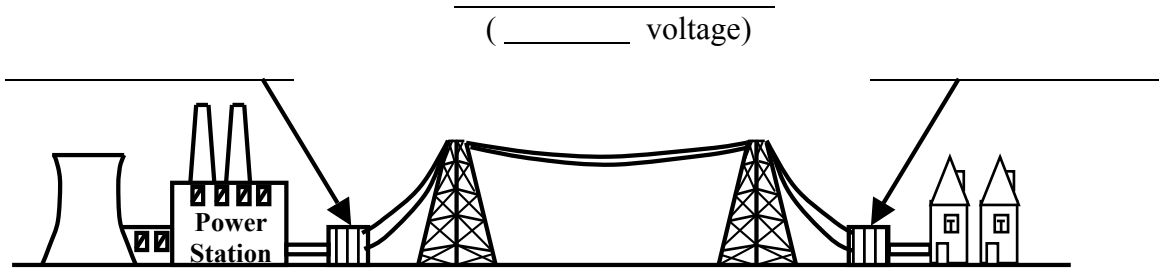
_____

ii) _____

_____

(2)

3. The following diagram illustrates the distribution of electricity from a power station to homes. Label the parts indicated.



(3)

4. A certain transformer has a primary current of 2A and a primary voltage of 20V. If the secondary current is 7A at a voltage of 5V, calculate

i) The input power.

(2)

ii) The output power.

(1)

iii) The percentage of input power which has been lost,

(2)

16

S.G. Physics Homework 4 After Activity 22 Energy Matters Unit

Name _____ Class _____ Date Due_____

_____

1. Write a sentence explaining the meaning of each of the following terms:

‘temperature’ ‘heat’ ‘celsius’

_____

_____

_____

_____

_____

_____(3)

2. a) State two ways of reducing heat loss from our homes.

i)_____

_____

ii) _____

_____(2)

b) Explain how each method works using the following words correctly:

‘conduction’ ‘convection’ ‘radiation’

(3)

3. The structures of neighbouring houses ‘A’ and ‘ B’ are identical, but one has been heated more,

House A House B

i) Compare the amount of heat lost by each house, every hour.

(1)

ii) Explain your answer.

(1)

4. A 2.5kg block of concrete has its temperature changed from 5oC to 17oC. How much energy is required ? (specific heat capacity of concrete = 850 $Jkg^{-10}C^{-1}$)

(2)

5. A substance of mass 0.5kg has its temperature changed from 11°C to 45°C when supplied with 53 550J of energy. Calculate the specific heat capacity of the substance.

(2)

14

S.G. Physics Homework 5 After Activity 26 Energy Matters Unit

Name _____ Class _____ Date Due_____

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1. Complete the following sentences correctly:-

When heat energy is supplied to a substance there are two possible results:

i) the substance may undergo a change of temperature or _____

ii) the substance may _____.

The amount of heat energy needed to change the temperature of 1kg of a substance by 1^oC is called the _____.

The amount of heat energy needed to evaporate 1kg of a substance at its melting point is called _____.

The amount of heat energy needed to evaporate 1kg of a substance at its boiling point is called _____.

(2)

2. a) Liquid A has a specific heat capacity of 3200J/kg ^oC. How much energy is required to raise the temperature of 1.5kg of this substance from -10^oC to 5^oC?

(2)

b) Solid B has a specific latent heat of fusion of 5.6×10^5J/kg. How much energy is needed to change 1.5kg of this substance from solid to liquid at its melting point of 2^oC?

(2)

c) Explain which of A or B would be better to use to keep cool the contents of an insulated picnic box?

(2)

3. State whether energy is gained, lost or neither by each of the following substances. (Tick the appropriate column)

		GAINED	LOST	NEITHER
a)	Water rising in temperature in a kettle			
b)	An ice-lolly melting			
c)	Water freezing at 0^oC constant temperature			
d)	A hot water bottle cooling down			
e)	A cold can of pepsi sitting in a warm room			
f)	Water changing to steam			
g)	Perfume evaporating from a bottle			
h)	Steam condensing onto a cold window			

(4)

4. A car mass of 500kg, travelling at $25ms^{-1}$ brakes to a halt.

a) How much kinetic energy has it lost?

(2)

b) What happened to this kinetic energy?

(1)

c) If each of its four brake discs has a mass of 2kg and a specific heat capacity of $450Jkg^{-10}C^{-1}$, how much of a temperature change occurs?

(3)

18