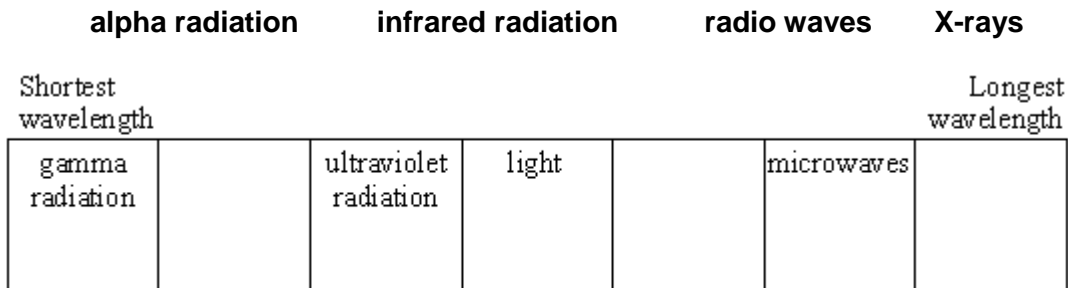
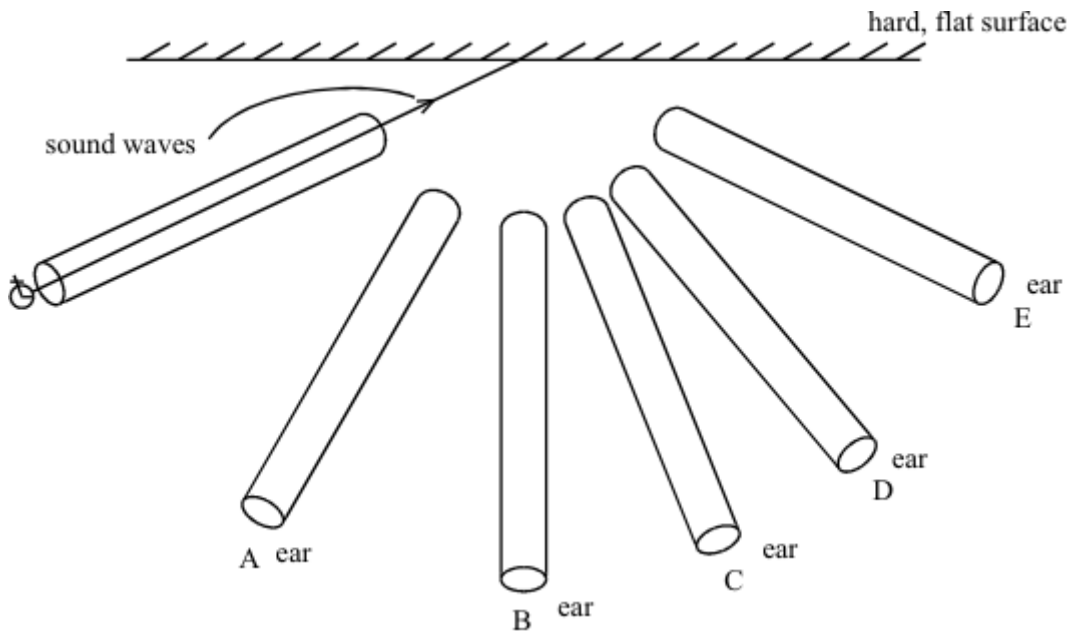


Q1. The diagram shows some of the kinds of waves in the electromagnetic spectrum. Choose words from this list to complete the empty boxes on the diagram.



(Total 3 marks)

Q2. A hard, flat surface reflects sound just like a plane (flat) mirror reflects light.



You want to hear the reflection (echo) of the ticking watch through a tube.

Which is the best position to put the tube?

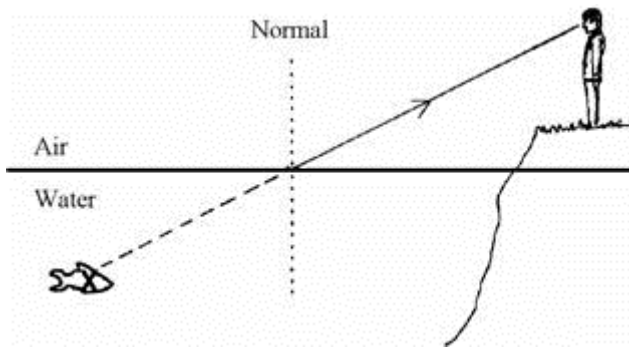
Choose from positions A-E on the diagram

(You may draw on the diagram if you want to.)

(Total 2 marks)

Q3. A man is walking along the bank of a river.

He sees a fish which seems to be at X.



(a) Show, on the diagram, where the fish **really** is.

Complete the ray of light which goes from the fish into the man's eye.

(2)

(b) Complete the sentence.

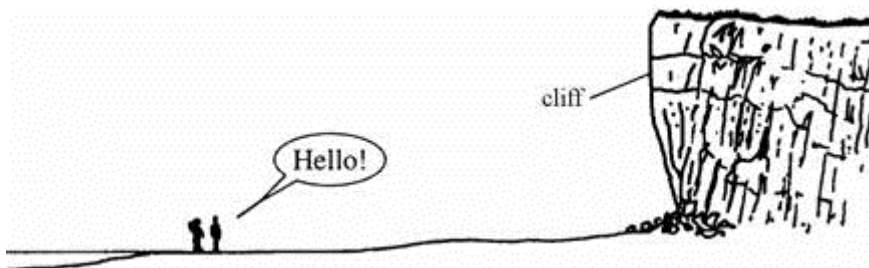
The ray of light is as it passes from the water into the air.

(1)

(Total 3 marks)

Q4. Two friends are standing on a beach.

When they shout they can hear themselves a second later.

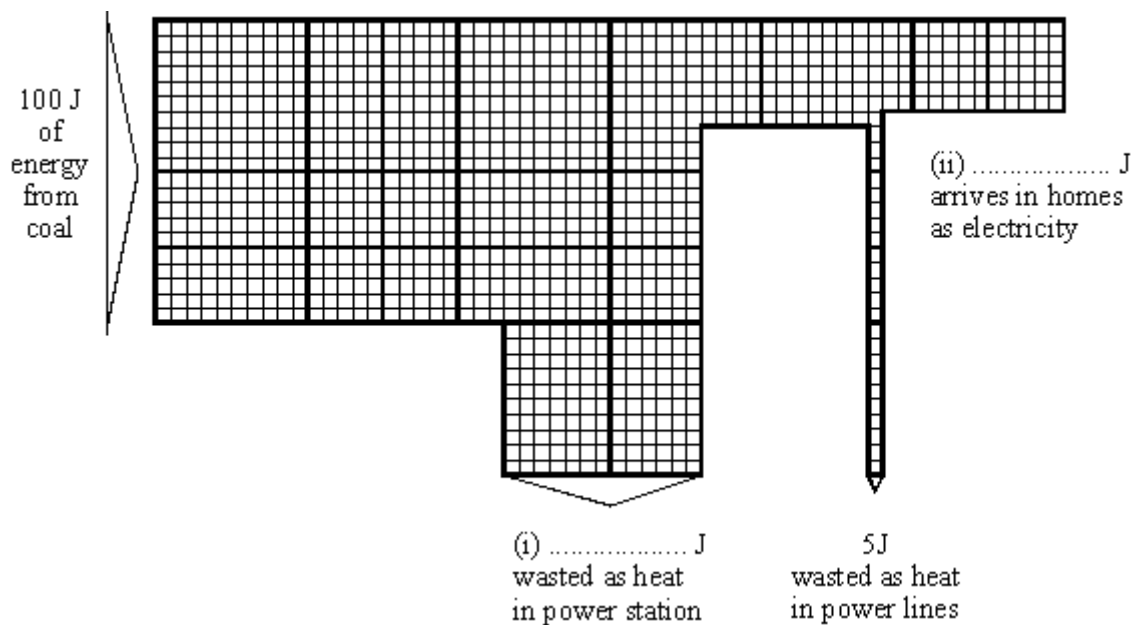


Explain, as fully as you can, why this happens.
 (You may answer on the diagram if you want to.)

.....

(Total 2 marks)

Q5. The diagram shows what happens to each 100 joules (J) of energy from the coal which is burned in a power station.



(a) Put the missing figures in the spaces on the diagram.

(2)

(b) By spending the same amount of money the electricity company could:

either install new power lines which only waste half as much energy as the old ones;

or use a quarter of the heat wasted at the power station to heat schools in a nearby town.

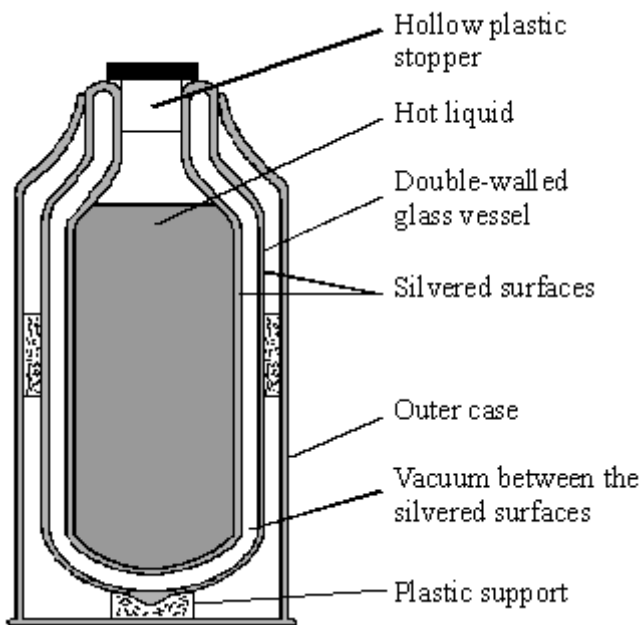
Which of these two things do you think they should do? Give a reason for your

answer.

.....
.....

(2)
(Total 4 marks)

Q6. The drawing shows a section of a vacuum flask.



(a) Heat is slowly “lost” from the hot liquid in the closed flask. It may be transferred by:

conduction	convection	evaporation	radiation
------------	------------	-------------	-----------

Choose from the words above to complete the following sentences. You may use a word once, more than once or not at all.

(i) The vacuum between the glass walls reduces
..... and

(2)

(ii) The silvered surfaces of the glass walls reduce

.....

(1)

(iii) The stopper in the opening of the flask reduces

..... and

(2)

(iv) Heat is transferred by the air molecules, away from the vacuum flask, by

.....

(1)

(v) The plastic of the plastic stopper is preferred to metal because it cuts down

.....

(1)

(b) Mark **X** on the diagram of the vacuum flask where the liquid in the flask is hottest.

(1)

(c) Explain, in terms of particles, how heat is conducted through a glass wall of the vacuum flask.

.....
.....
.....

(2)

(Total 10 marks)

Q7. People do a number of things to reduce the energy loss from their homes.

(a) Describe **one** thing they may do to cut down the energy loss through:

(i) the roof;

.....

(1)

(ii) the outside walls;

.....

(1)

(iii) the glass in the windows;

.....

(1)

(iv) gaps around the front and back doors.

.....

(1)

(b) A house is more difficult to keep warm in cold weather. What other type of weather makes it difficult to keep a house warm?

.....

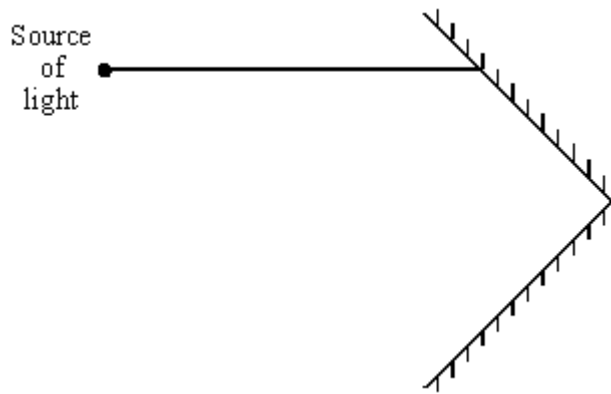
(1)

(Total 5 marks)

Q8. (a) The diagram shows two mirrors at right angles to each other. A ray of light shines onto one mirror as shown.

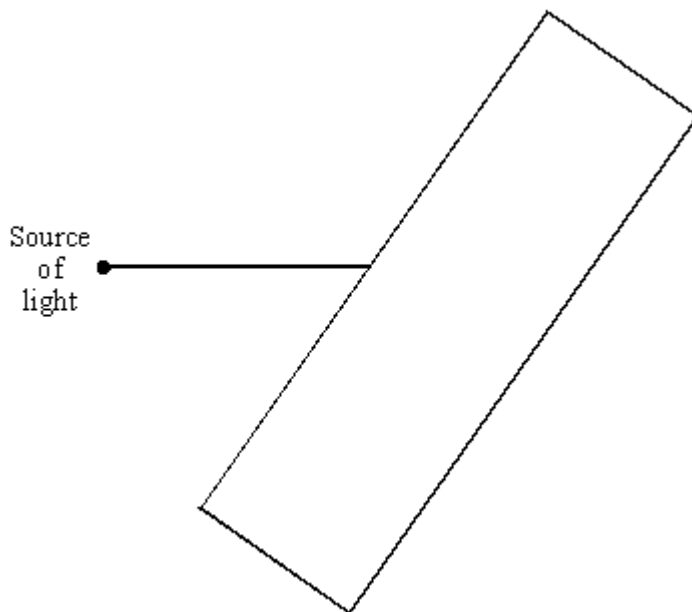
Carefully draw the path of the ray which is reflected from both mirrors.

Draw an arrow on the ray to show the direction of the light.



(3)

- (b) Light can also be made to change direction as it passes into and out from a block of glass. Complete the ray diagram below.



(2)

(Total 5 marks)

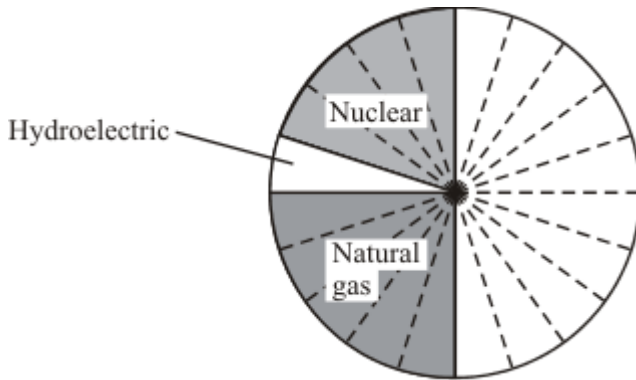
Q9. The table shows the main sources of energy used to generate electricity.

Energy source	Percentage (%)
coal	35

hydroelectric	5
natural gas	25
nuclear	
oil	15

(a) Complete the table by writing in the percentage for nuclear power. (1)

(b) Use the information from the table to complete and label the pie chart below.



(2)

(c) Why can hydroelectric generators be used to meet sudden increases in the demand for electricity?

..... (1)

(d) Gases are released when fossil fuels burn.

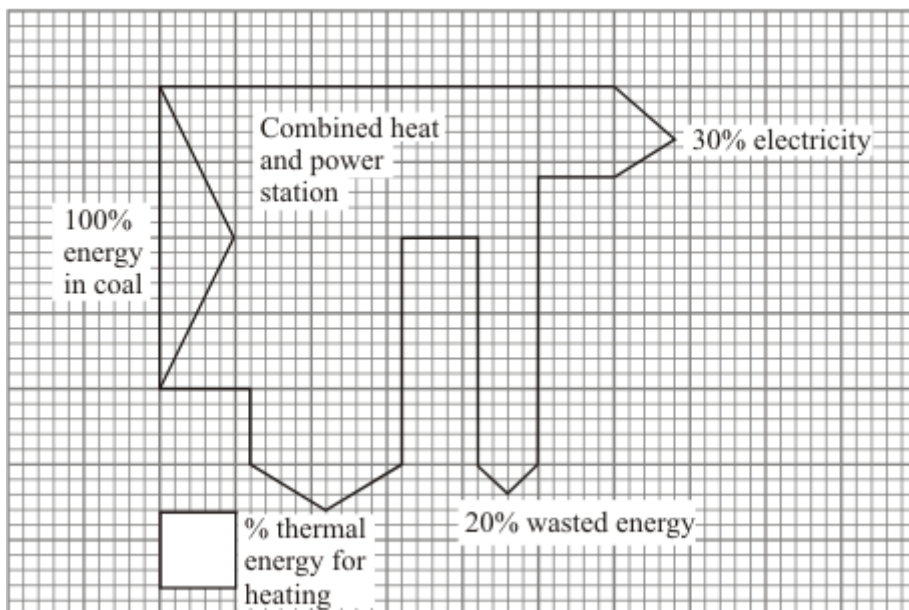
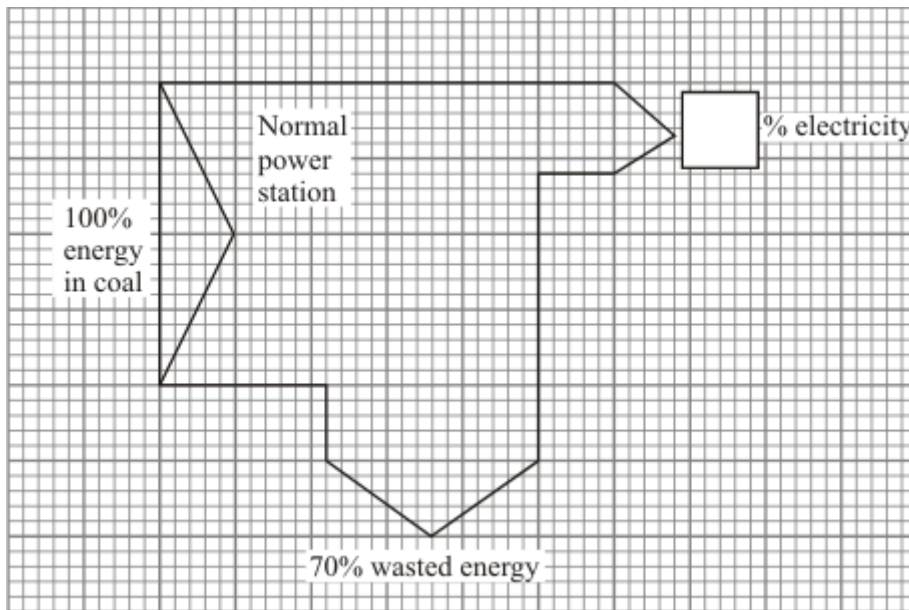
(i) Which **one** of these gases increases the greenhouse effect?

..... (1)

(ii) Which **one** of these gases produces acid rain?

..... (1)

Q10. Power stations are usually not very efficient. A lot of energy is wasted as thermal energy. The diagrams show the percentage of energy transferred by two coal-burning power stations.



(a) Write the **two** missing figures in the boxes on the diagrams.

(2)

(b) Which power station is the most efficient **overall**, the normal power station or the combined heat and power station? Give reasons for your answer.

.....
.....
.....
.....

(2)

(c) Some heat energy released from burning coal on an open fire is emitted by radiation. Tick (✓) the main type of electromagnetic radiation emitted by hot coal.

Type of electromagnetic radiation	Tick (✓)
gamma	
infra red	
ultraviolet	
X-ray	

(1)

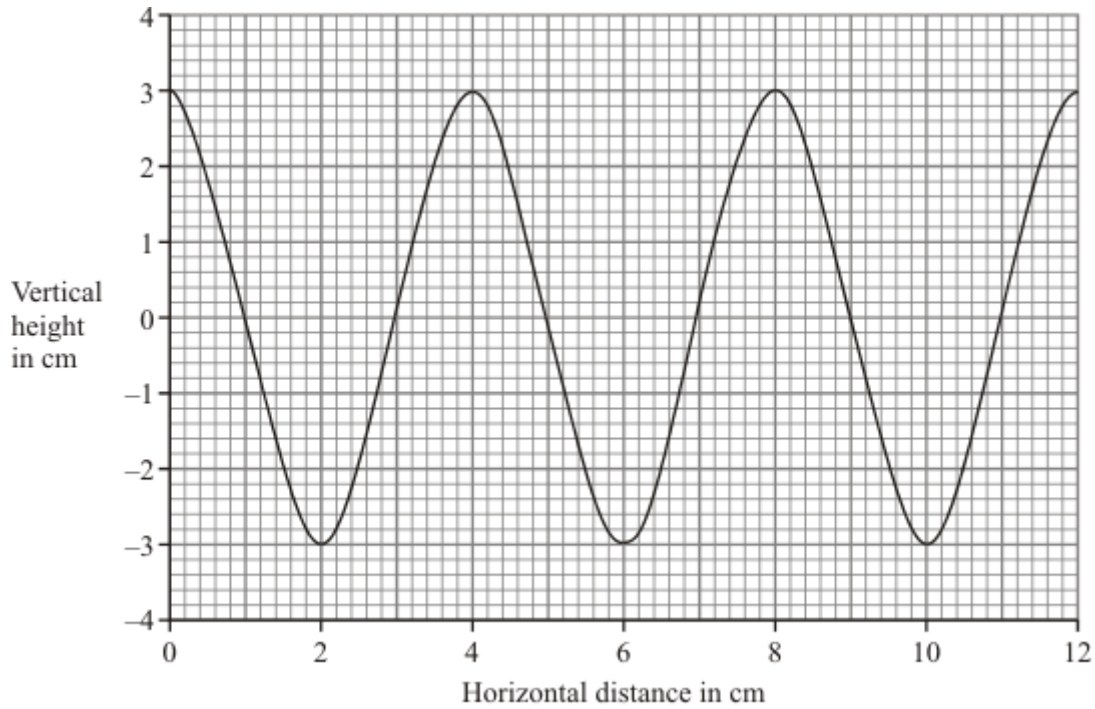
(d) Radiation can be reflected or absorbed when it strikes a surface. What type of surface is a poor reflector but a good absorber of radiation?

.....
.....

(1)

(Total 6 marks)

Q11. The diagram shows a water wave drawn to scale.



(a) What is the wavelength of this water wave? cm (1)

(b) What is the amplitude? cm (1)

(c) Twelve waves pass an observer in four seconds.

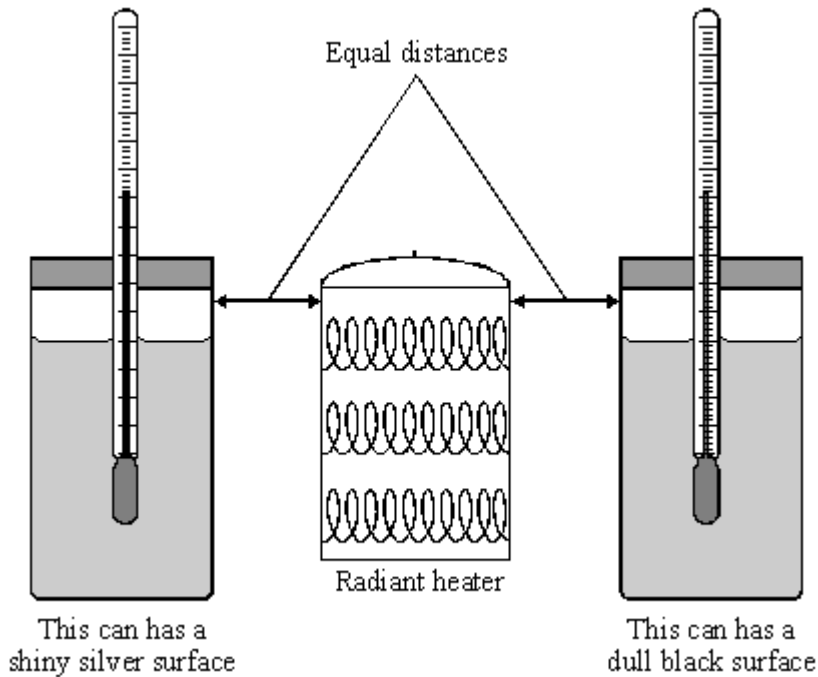
What is the frequency of the waves? Show clearly how you work out your answer and give the unit.

.....

Frequency =

(3)
(Total 5 marks)

Q12. A student did two experiments on radiation. The apparatus he used is shown in the diagram.



Experiment 1

- The student put the same volume of cold water into the two cans.
- He then switched on the heater.
- Ten minutes later the water in the can with the dull black surface was much hotter than the water in the other can.

Experiment 2

- The student filled both cans with boiling water.
- This time he left the heater off.
- Ten minutes later the water in the can with the dull black surface was much cooler than the water in the other can.

Use words from the box to complete the sentences.

absorber	conductor	emitter	reflector
----------	-----------	---------	-----------

Experiment 1 shows that the dull black surface is a good of radiation and that

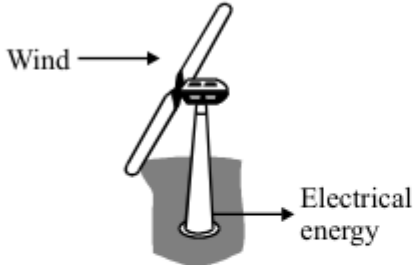
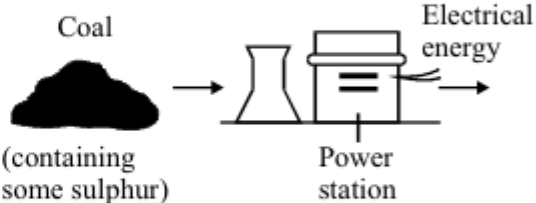
the shiny silver surface is a good of radiation.

Experiment 2 shows that the dull black surface is a good of radiation.

(Total 3 marks)

Q13. Electricity is a useful form of energy.

(a) Different energy sources can be used to generate electricity.

Wind is an energy source	Coal, a fossil fuel, is an energy source
	
<p>This wind turbine generates 1 MW. (1 MW = 1000 kW)</p>	<p>This coal-fired power station generates 1000 MW.</p>
<p>Electricity demand in the UK can be 48 000 MW.</p>	

Give **one** advantage and **one** disadvantage (other than cost) of using each energy source to generate electricity in the UK.

Advantage	Disadvantage
<p>Using wind</p>	<p>Using wind</p>

Using coal	Using coal

(4)

- (b) List **A** shows three electrical devices.
 List **B** gives the type of useful energy transferred.

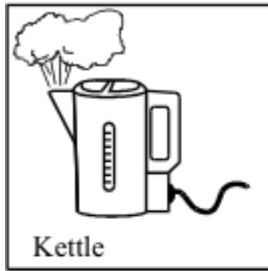
Draw a straight line from each electrical device in List **A** to the useful energy it transfers in List **B**.

List A

List B

Electrical device

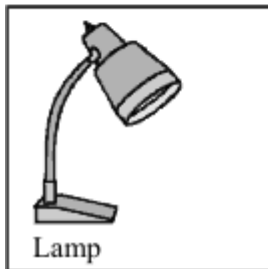
Useful energy transferred



heat



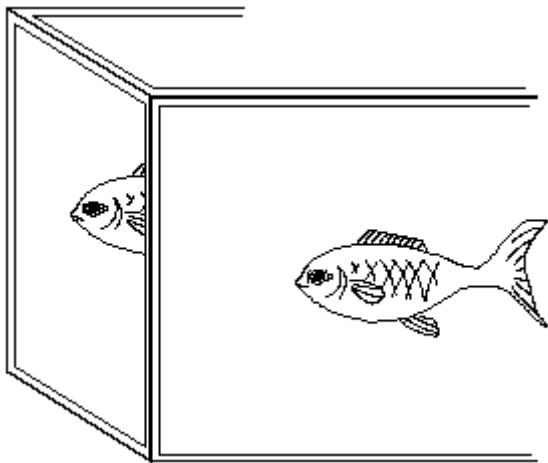
light



sound

(2)
(Total 6 marks)

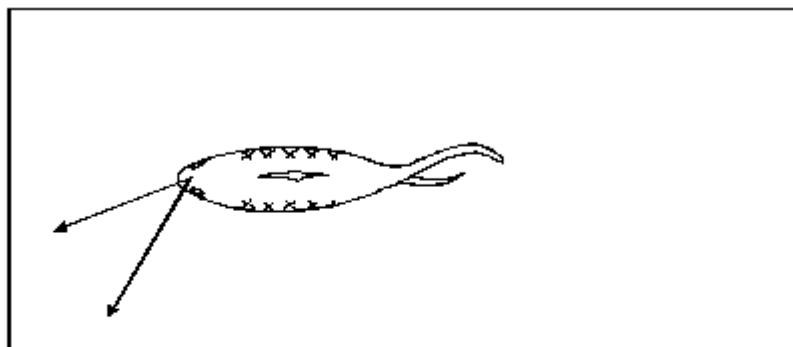
Q14. An aquarium contains only one fish. But if you look at the corner of the aquarium, there seem to be two fish.



The diagram below shows the top of the aquarium.

Two light waves have been drawn from the fish.

(a) Complete the diagram to show how the light waves reach the eye.



(2)

(b) Complete each sentence by using the correct words from the box.

colour	diffraction	longitudinal	reflection
refraction	speed	transverse	

When the light waves pass from glass into the air they change

This causes a change in direction called

Light waves are waves.

(3)
(Total 5 marks)

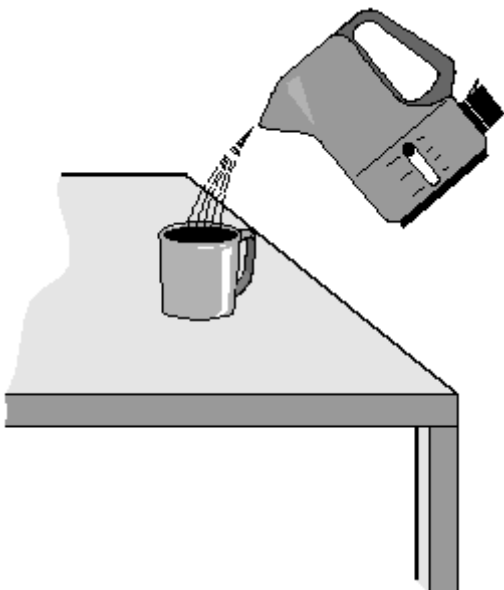
Q15. Complete the following sentences.

A TV set is designed to transfer electrical energy into
energy and energy.

A hair dryer is designed to transfer electrical energy into
energy and energy.

(Total 4 marks)

Q16. (a) The diagram shows hot water being poured into a mug.



(i) Complete the sentence by choosing the correct words from the box. Each

word may be used once or not at all.

air	mug	table	water
-----	-----	-------	-------

Heat energy is being transferred from the to
the

(1)

(ii) When will this transfer of heat energy stop?

.....
.....

(1)

(b) In the box are the names of four types of fuel used to heat homes.

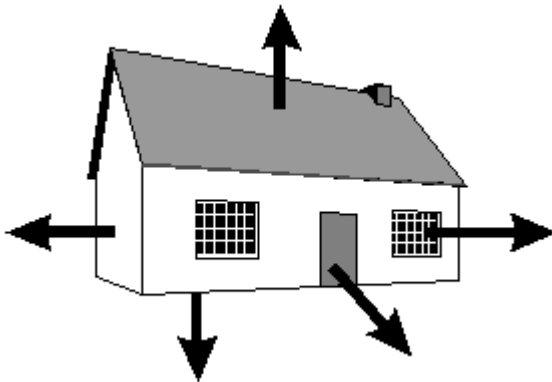
coal	gas	oil	wood
------	-----	-----	------

Which **one** of these types of fuel is renewable?

.....

(1)

(c) The diagram shows where heat energy is lost from a house.



(i) Complete the sentences by choosing the correct words from the box. Each

word may be used once or not at all.

conduction	conductor	convection	electric	evaporation	insulator
------------	-----------	------------	----------	-------------	-----------

The amount of heat energy lost through the windows by
..... can be reduced by using thick curtains.

The
curtains trap a layer of air and air is a good

The curtains will also stop currents pulling
cold air into the room through small gaps in the window.

(3)

(ii) Write down **one** other way of reducing heat loss from a house.

.....
.....

(1)

(Total 7 marks)

##

(a) (i) Complete the sentence by choosing the correct word from the box.

electrons	neutrons	protons
-----------	----------	---------

An electric current is a flow of

(1)

(ii) What is the name and circuit symbol for the instrument used to measure electric current?

Name:

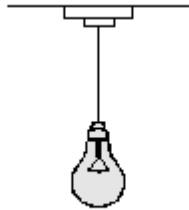
Symbol:

(2)

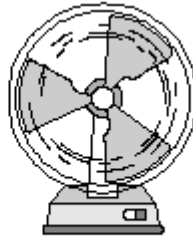
(b) When an electric current flows through a wire, the wire will get hot. **Two** of the following make use of this heating effect. Which **two**?



Microwave oven



Light bulb



Fan



Hairdryer

- 1.
- 2.

(2)

(c) A 0.2 kW light bulb is switched on for 3 hours.

Use the following equation to calculate, in kWh, how many units of electrical energy are transferred to the bulb during the 3 hours.

$$\text{units} = \text{power} \times \text{time}$$

.....

Number of units = kWh

(2)
(Total 7 marks)

Q18. (a) Electricity can be generated using different energy resources.

(i) Draw lines to link each way of producing electricity to a statement about an energy resource.

Method of producing electricity	Energy resource statements
Tidal barrage	Produces only a small amount of electricity
Solar panel	Is built across a river estuary
Wind turbine	Produces a lot of unwanted noise
Nuclear power station	Rough seas are needed
Wave machine	The waste is very dangerous

(4)

(ii) Which **one** of these methods of producing electricity uses a non-renewable energy resource?

.....

(1)

(b) The wind is a renewable energy resource.

(i) **One** of the following statements describes the source of energy that creates a wind. Tick the box next to the correct statement.

- The Earth turning on its axis.
- The gravity pull of the Moon.
- Heat from the Sun.

(1)

(ii) Complete the sentence by choosing the correct word from the box.

heat	kinetic	sound
------	---------	-------

A wind turbine transfers energy to electrical energy.

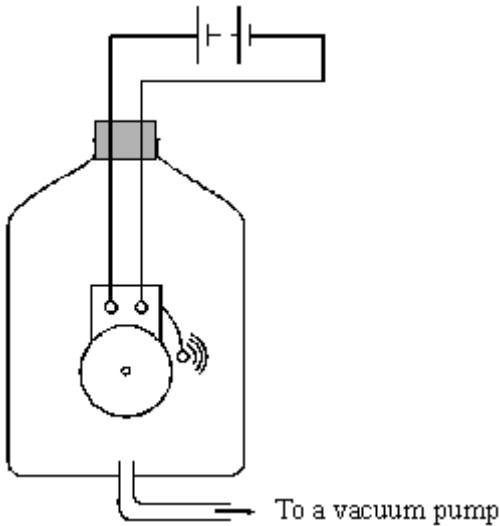
(1)

(iii) A wind turbine does not produce electricity all of the time. Why not?

.....

(1)
(Total 8 marks)

Q19. (a) The diagram shows an electric bell inside a glass jar. The bell can be heard ringing.



In the following sentences, cross out the **two** lines that are wrong in each box.

When all the air has been taken out of the glass jar, the ringing sound will

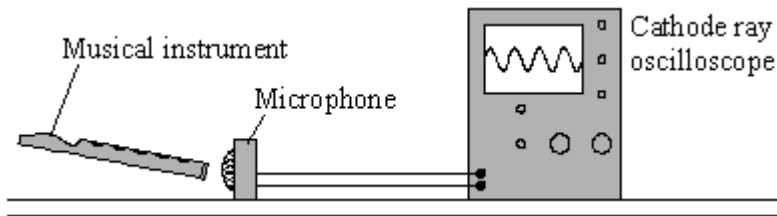
stop.
get louder.
get quieter.

travels faster
travels slower
cannot travel

This is because sound through a vacuum.

(2)

(b) The microphone and cathode ray oscilloscope are used to show the sound wave pattern of a musical instrument.



One of the following statements describes what a microphone does. Tick the box next to the correct statement.

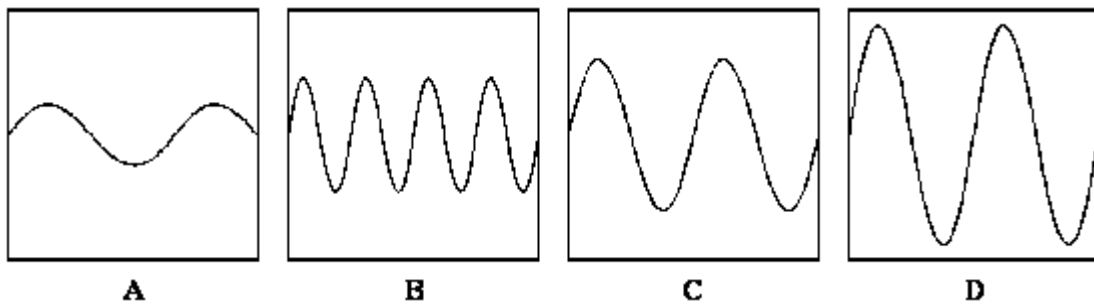
A microphone transfers sound energy to light energy.

A microphone transfers sound energy to electrical energy.

A microphone transfers electrical energy to sound energy.

(1)

(c) Four different sound wave patterns are shown. They are all drawn to the same scale.



(i) Which sound wave pattern has the highest pitch?

.....

Give a reason for your answer.

.....

(2)

(ii) Which sound wave pattern is the loudest?

.....

Give a reason for your answer.

.....
.....

(2)
(Total 7 marks)

Q20. (a) A swimming pool has a wave making machine. The diagram shows the water wave pattern for 3 seconds.



(i) How many water waves are shown in the diagram?

.....

(1)

(ii) What is the frequency of the water waves?

.....

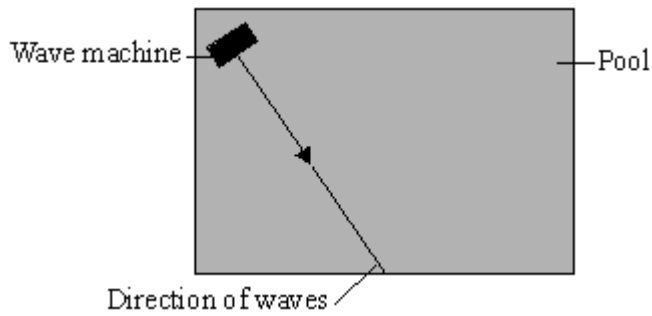
(1)

(iii) Which **one** of the units below is used to measure frequency? Underline your answer.

hertz joule watt

(1)

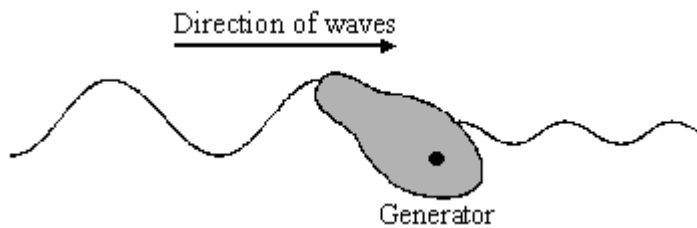
(b) The diagram shows the direction of the waves across the pool. The waves reflect off the side of the pool.



Draw a line on the diagram to show the direction of the waves after they hit the side of the pool.

(1)

- (c) The swimming pool is used to test a model of an electricity generator. The waves make the floating generator move up and down. This energy is transferred to electricity.



- (i) In the following sentence, cross out the **two** lines that are wrong in the box.

The diagram shows that the amplitude of the waves

gets larger
stays the same
gets smaller

 as the waves pass the generator.

(1)

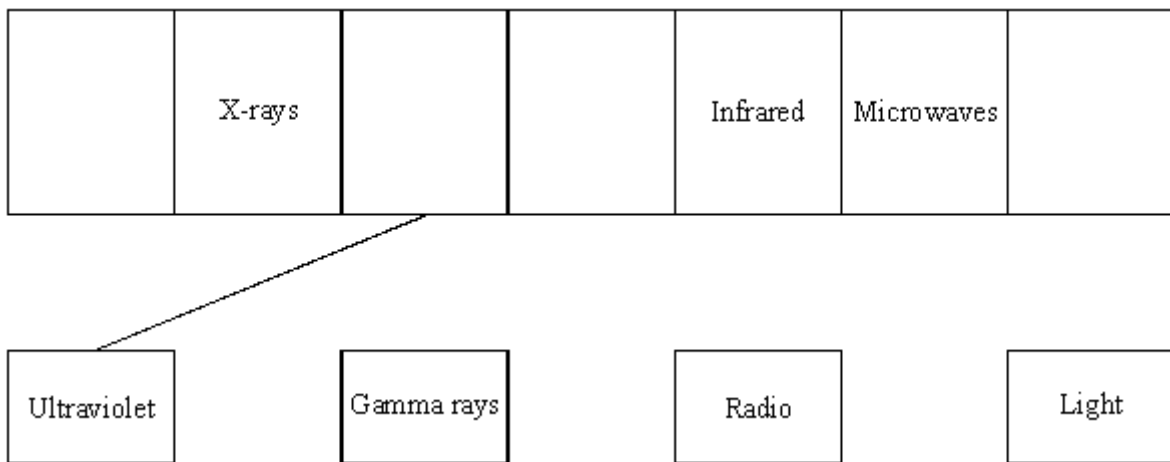
- (ii) What type of energy does the generator transfer to electricity?

.....

(1)

- (iii) Energy from ocean waves could be used to generate electricity. Would this be a renewable or non-renewable energy resource?

Q21. (a) The diagram represents the electromagnetic spectrum. Four of the waves have not been named. Draw lines to join each of the waves to its correct position in the electromagnetic spectrum. One has been done for you.



(2)

(b) Complete the following sentence by choosing the correct answer and crossing out in the box the two lines which are wrong.

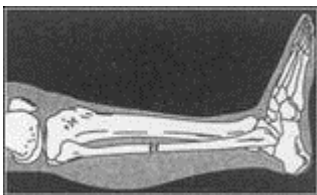
The speed of radio waves through a vacuum is

faster than
the same as
slower than

 the speed of light through a vacuum.

(1)

(d) The diagram shows an X-ray photograph of a broken leg.



Bones show up white on the photographic film. Explain why.

.....
.....

(2)
(Total 5 marks)

Q22. Many people use a sleeping bag when they sleep in a tent. Sleeping bags, designed to keep a person warm, have a fibre filling.



(i) Complete the sentence by choosing the correct words from the box.

conduction	convection	radiation
------------	------------	-----------

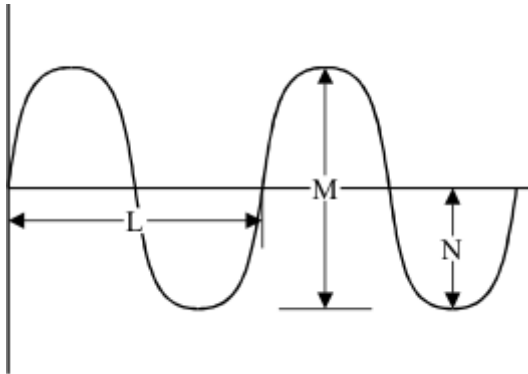
The fibre is designed to reduce heat transfer by and
.....

(ii) Explain why the fibre is good at reducing heat loss from a person sleeping in the bag.

.....
.....
.....
.....

(Total 3 marks)

Q23. (a) The diagram shows a wave pattern.



Which letter, **L**, **M** or **N** shows:

- (i) the wavelength?
- (ii) the amplitude?

(2)

(c) Describe how you could show that visible light travels in straight lines. You may wish to draw a diagram to help explain your answer.

.....

.....

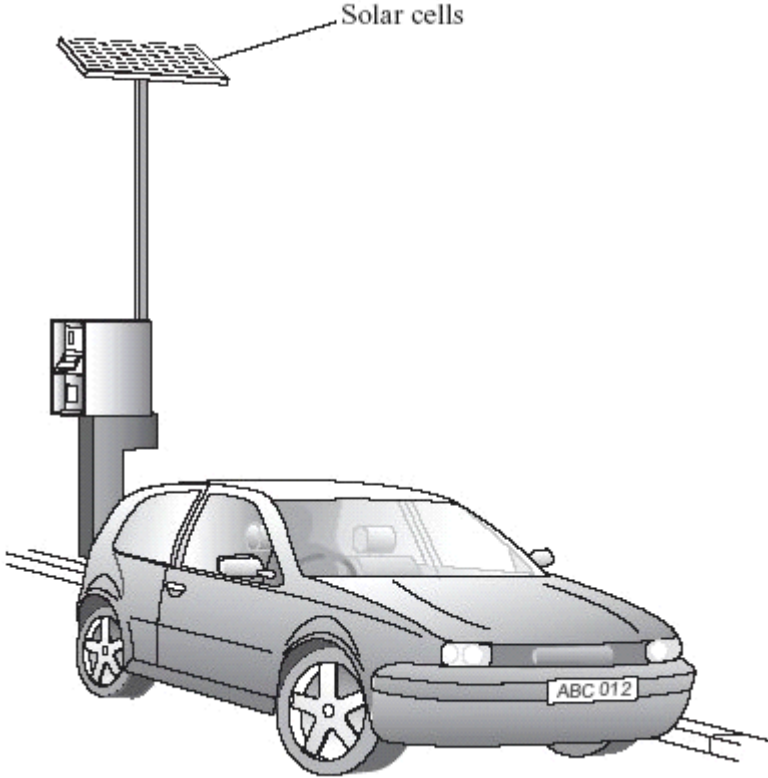
.....

.....

.....

(2)
(Total 4 marks)

Q24. A castle is a long way from the nearest town. Batteries power the car park ticket machine. Solar cells are used to keep the batteries charged.



(a) Complete the following sentences by choosing the correct words from the box. Each word may be used once or not at all.

chemical	electrical	heat	light	sound
-----------------	-------------------	-------------	--------------	--------------

(i) The energy input to the solar cells is energy. (1)

(ii) The useful energy output from the solar cells is energy. (1)

- (b) For every 500 J of energy absorbed by the solar cells, 75 J of energy are transferred to the batteries.

Use the following equation to calculate the efficiency of the solar cells. Show clearly how you work out your answer.

$$\text{Efficiency} = \frac{\text{useful energy transferred by device}}{\text{total energy supplied to device}}$$

.....

Efficiency =

(2)

- (c) Which **one** of the following statements gives the main reason for using solar cells to charge the batteries?

Tick (✓) the box next to your choice.

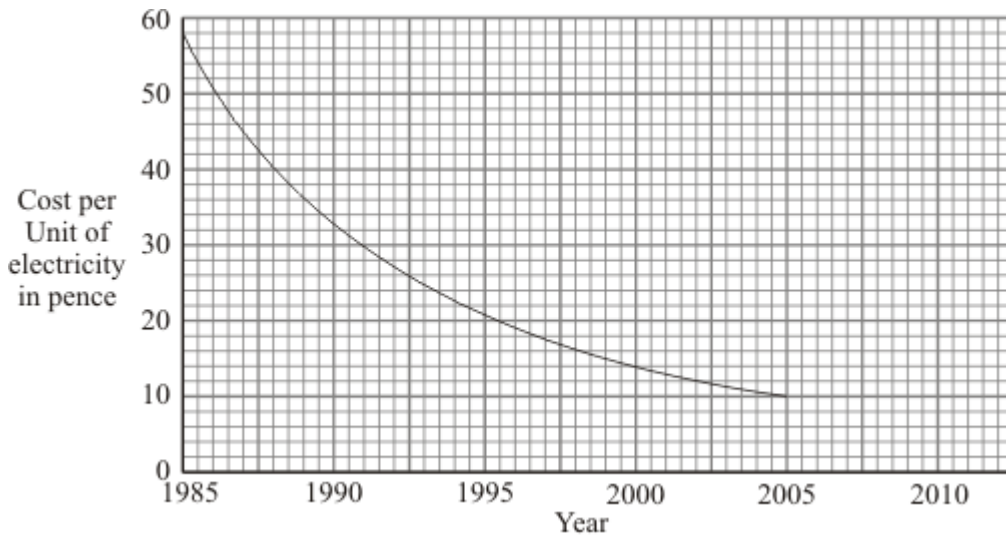
Solar cells give a constant supply of electricity.

A few solar cells can provide a large amount of electricity.

The ticket machine is a long way from other electricity supplies.

(1)

- (d) The graph shows how the cost of producing electricity using solar cells has changed.

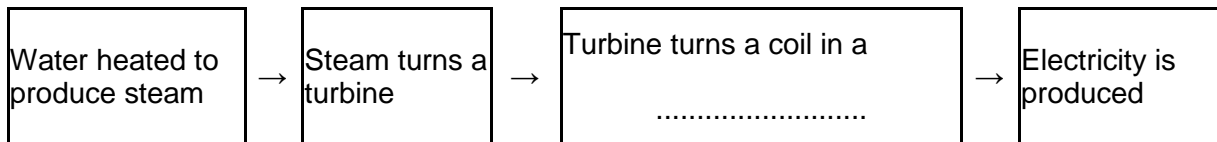


Use the graph to predict the cost of one Unit of electricity in 2010.

.....
(1)
(Total 6 marks)

##

- (a) In Britain most power stations burn fuel to produce heat. The diagram shows the stages by which the heat is transferred into electrical energy. Complete the diagram by filling in the missing word.



(1)

- (b) A fuel burning power station uses 2000 joules of fuel energy to generate 600 joules of electrical energy. The rest of the fuel energy is wasted as heat.

- (i) For every 600 joules of electrical energy generated, how much fuel energy is wasted as heat?

.....
.....

(1)

- (ii) Use the following equation to calculate the efficiency of the power station. Show clearly how you work out your answer.

$$\text{efficiency} = \frac{\text{useful energy transferred by device}}{\text{total energy supplied to device}}$$

.....
.....

efficiency =

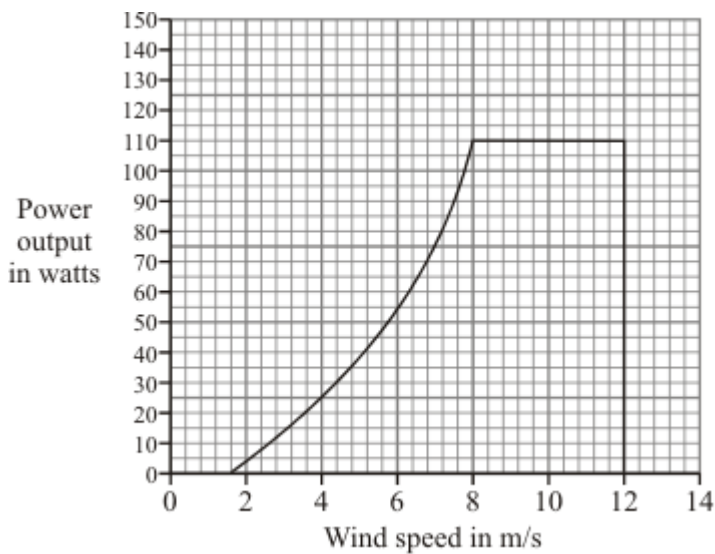
(2)

- (c) List **A** gives three energy resources used to generate electricity. List **B** gives environmental problems that may be caused by using different energy resources. Draw a straight line from each energy resource in List **A** to the environmental problem it may cause in List **B**. Draw **three** lines only.

List A	List B
Energy resource	Environmental problem that may be caused
Wind	Destroys the habitat of wading birds in river estuaries
Tides	Produces a lot of noise
Falling water (hydroelectricity)	Produces the gas sulphur dioxide
	Floods land used for farming or forestry

(3)

- (d) A small wind generator is used to charge a battery. The graph shows the power output of the generator at different wind speeds.



- (i) What is the maximum power produced by the generator?

..... watts

(1)

- (ii) The generator is designed to stop if the wind speed is too high.

At what wind speed does the generator stop working?

..... m/s (1)

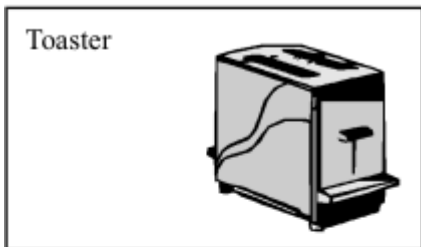
(iii) Give **one** disadvantage of using a wind generator to charge a battery.

.....
..... (1)
(Total 10 marks)

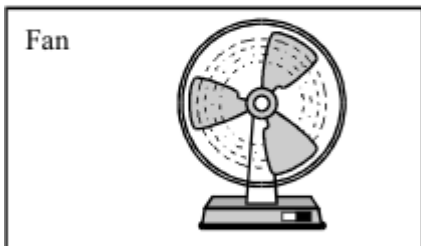
Q26. (a) List **A** shows three electrical devices. List **B** gives different forms of useful energy. Draw a straight line from each of the devices in List **A** to the useful energy form it produces in List **B**. Draw only **three** lines.

List A
Device

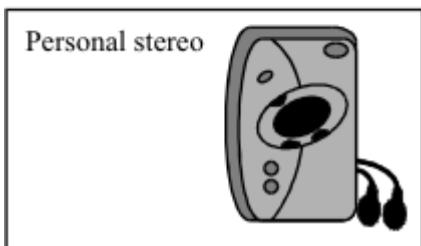
List B
Useful energy



Light



Kinetic



Sound

Heat

(3)

(b) The power of each device is given in the table.

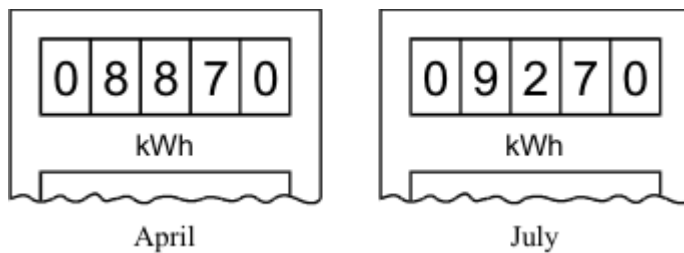
Device	Power
Toaster	1.2 kW
Fan	30 W
Personal Stereo	10 W

Which **one** of the devices will transfer the most energy in 10 minutes?

.....

(1)

(c) The diagrams show the readings on a domestic electricity meter in April and July.



(i) How many Units (kWh) of electricity were used between the two meter readings?

.....

Number of Units =

(1)

(ii) One Unit costs 6p.

Use the following equation to calculate the cost of the electrical energy used between the two meter readings. Show clearly how you work out your answer.

$$\text{total cost} = \text{number of Units} \times \text{cost per Unit}$$

.....
.....

Cost =

(2)

(d) A 3000 watt electric cooker is switched on for 2 hours.

Use the following equation to calculate the number of Units of energy transferred by the cooker. Show clearly how you work out your answer.

$$\begin{array}{ccccccc} \text{energy transferred} & = & \text{power} & \times & \text{time} \\ \text{(kilowatt-hour, kWh)} & & \text{(kilowatt, kW)} & & \text{(hour, h)} \end{array}$$

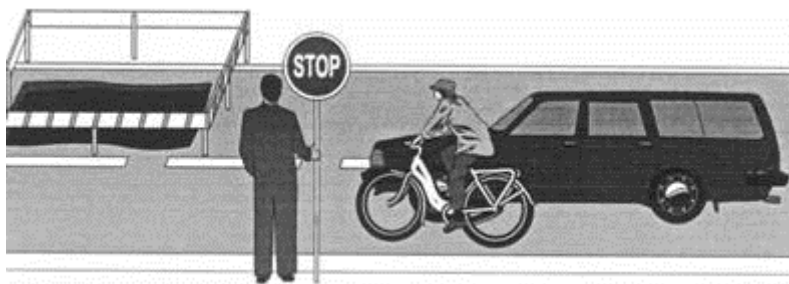
.....
.....
.....

Energy transferred =kWh

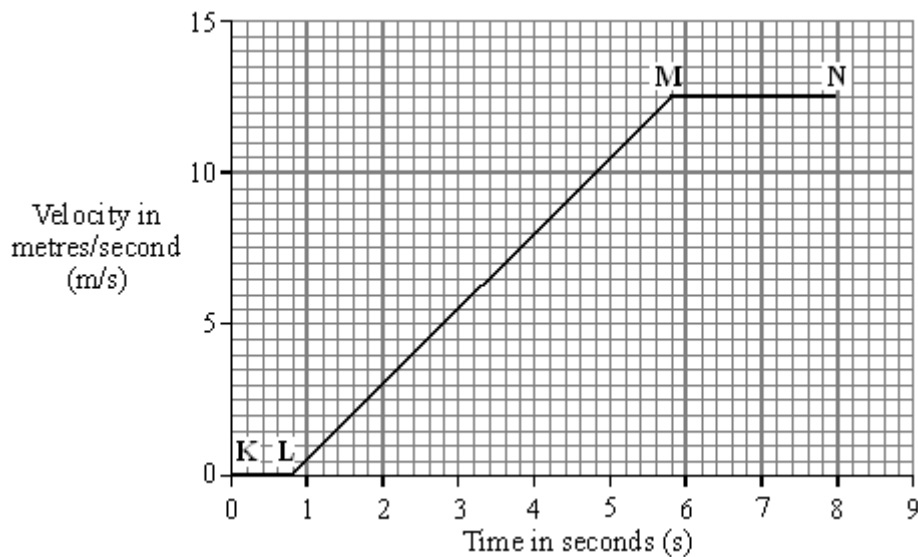
(2)

(Total 9 marks)

Q27. A car and a bicycle are travelling along a straight road. They have stopped at road works.



The graph shows how the velocity of the car changes after the sign is changed to GO.



- (a) Between which two points on the graph is the car moving at constant velocity?

.....

(1)

- (b) Between which two points on the graph is the car accelerating?

.....

(1)

- (c) Between the sign changing to GO and the car starting to move, there is a time delay. This is called the reaction time.

- (i) What is the reaction time of the car driver?

Reaction time = seconds

(1)

- (ii) Which **one** of the following could increase the reaction time of a car driver? Tick the box next to your choice.

Drinking alcohol

Wet roads

Worn car brakes



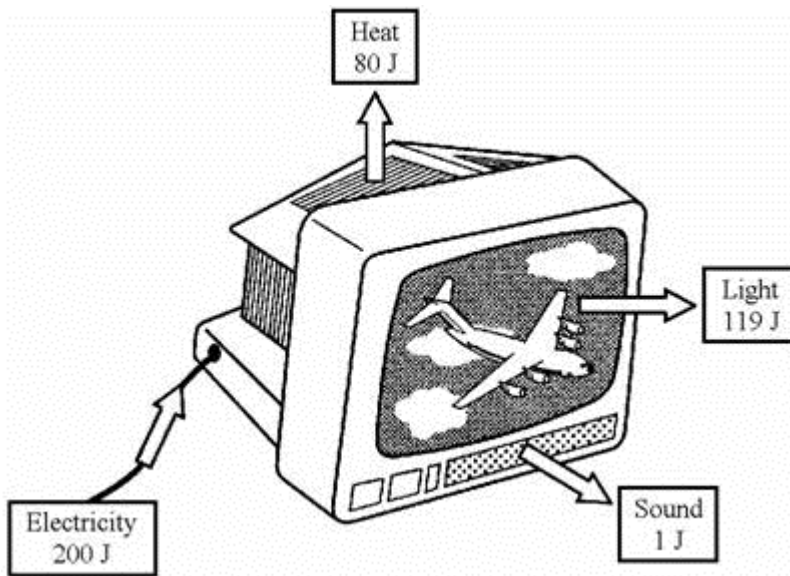
(1)

- (d) The cyclist starts to move at the same time as the car. For the first 2 seconds the cyclist's acceleration is constant and is greater than that of the car.

Draw a line on the graph to show how the velocity of the cyclist might change during the first 2 seconds of its motion.

(2)
(Total 6 marks)

- Q28.** (a) The drawing shows the energy transferred each second by a television set.



- (i) What form of energy is transferred as waste energy by the television set?

.....

(1)

- (ii) What effect will the waste energy have on the air around the television set?

(1)

(iii) Use the following equation to calculate the efficiency of the television set.

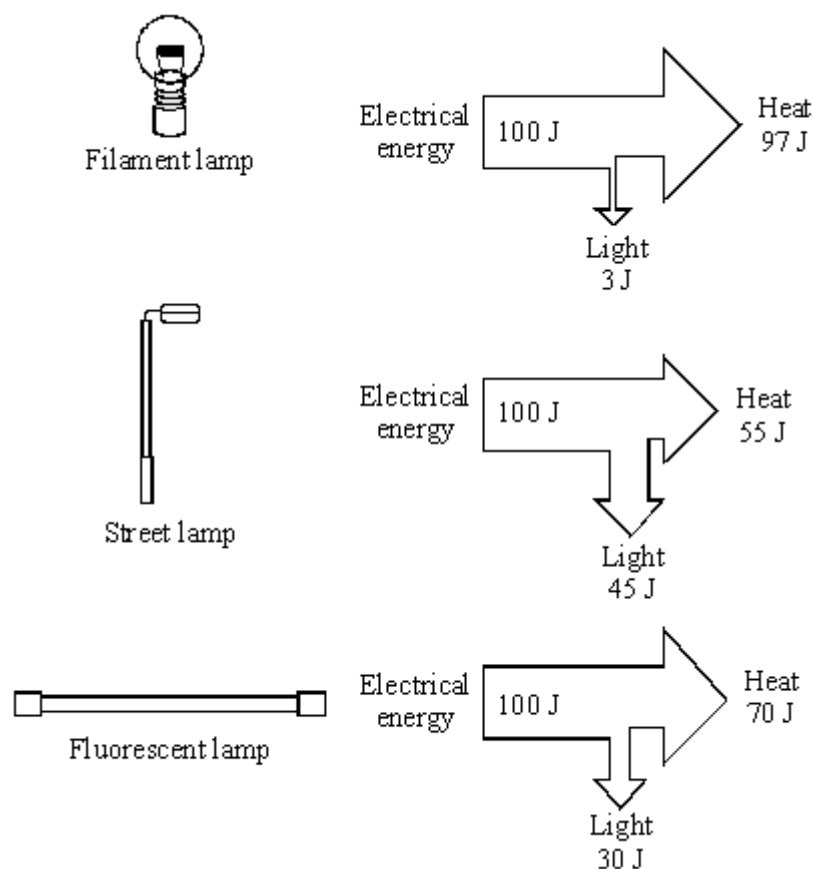
$$\text{efficiency} = \frac{\text{useful energy transferred by device}}{\text{total energy supplied to device}}$$

.....
.....

Efficiency =

(2)

(b) The diagrams show the energy transferred each second for three different types of lamp. For each lamp the electrical energy input each second is 100 joules.



Which type of lamp is the most efficient?

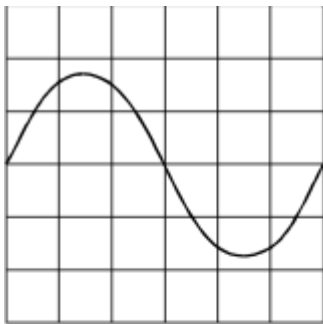
.....

.....
 Give a reason for your choice.

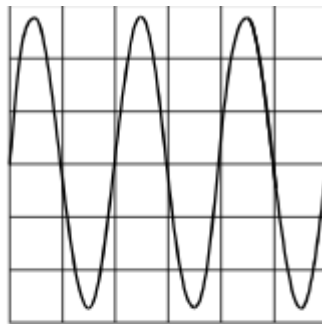
.....

(2)
 (Total 6 marks)

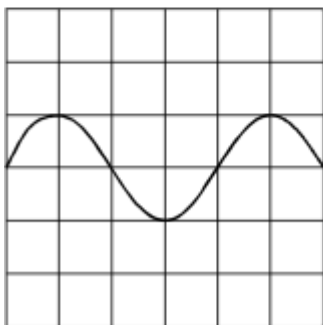
Q29. The diagram shows four oscilloscope wave traces. The controls of the oscilloscope were the same for each wave trace.



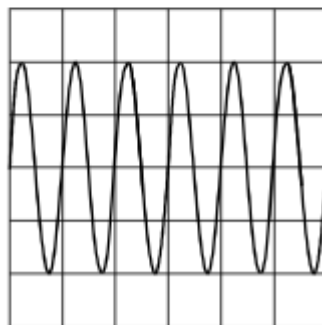
A



B



C



D

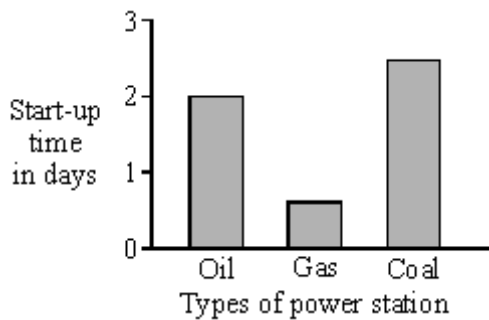
Which **one** of the waves traces, **A**, **B**, **C** or **D**, has:

(i) the largest amplitude,

(1)

- (ii) the lowest frequency? (1)
(Total 2 marks)

Q30. (a) The bar chart shows the start-up time for different types of fuel-burning power stations.



Which type of power station would be the quickest to start producing electricity?

..... (1)

(b) A fuel-burning power station is more reliable than a wind generator at producing electricity. Explain why.

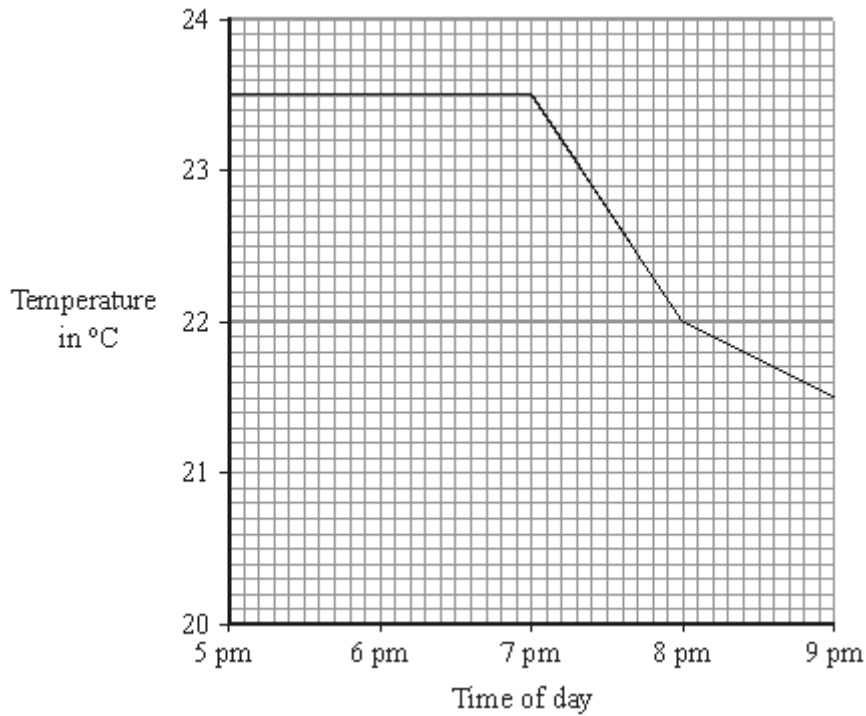
.....

 (2)

(c) Fuel-burning power stations may produce air pollution. Why does a wind generator not produce any air pollution?

.....
 (1)
(Total 4 marks)

- Q31.** (a) The graph shows the temperature inside a flat between 5 pm and 9 pm. The central heating was on at 5 pm.



- (i) What time did the central heating switch off?

.....

(1)

- (ii) Closing the curtains reduces heat loss from the flat.

What time do you think the curtains were closed?

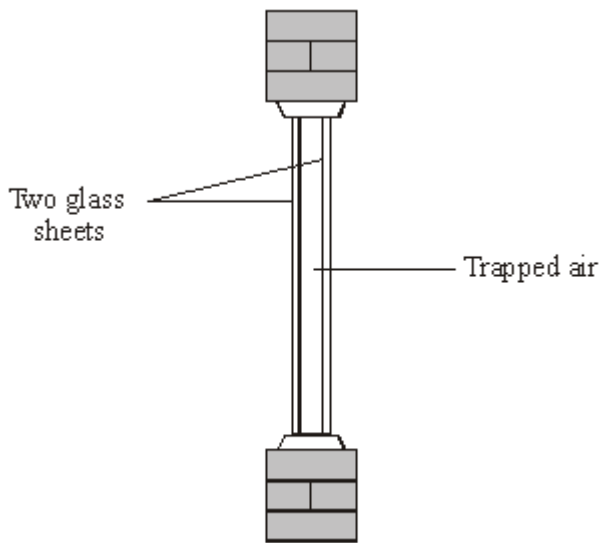
.....

Give a reason for your answer.

.....

(2)

- (b) Less heat is lost through double-glazed windows than through single-glazed windows.



A double-glazed window

Complete the following sentences by choosing the correct words from the box. Each word may be used once or not at all.

conduction conductor convection evaporation insulator radiation

Air is a good When trapped between two sheets of glass it

reduces heat loss by and

(3)

- (c) The table gives information about three types of house insulation.

Type of insulation	Cost to install	Money save each year on heating bills	Payback time
Double glazing	£4000	£200	20 years
Loft insulation	£300	£100	3 years
Cavity wall insulation	£600	£150	

- (i) Use the information in the table to calculate the payback time for cavity wall insulation.

.....

(1)

- (ii) Explain why people often install loft insulation before installing double glazing or cavity wall insulation.

.....

.....

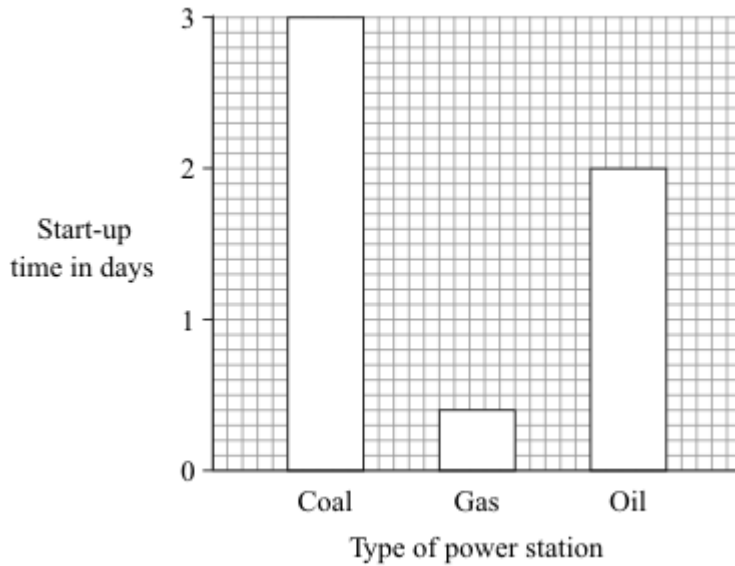
.....

.....

(2)
(Total 9 marks)

Q32. Much of the world's electricity is generated in power stations that burn fossil fuels.

- (a) The bar chart shows the start-up times for the three types of fossil fuel power station.



Which of these power stations would take the longest to start generating electricity?

.....

(1)

- (b) Which **two** of the following statements are good reasons for using fossil fuels to generate electricity?

Put a tick (✓) in the box next to each of your choices.

Supplies of fossil fuels are limited.

Fossil fuels can be used to generate electricity at any time.

Fossil fuels are non-renewable.

A few large power stations can generate the electricity for a million homes.

Burning fossil fuels produces carbon dioxide.

(2)

- (c) Electricity can be generated using energy from the wind.

- (i) Why does a wind-powered generator **not** produce carbon dioxide?

.....
.....

(1)

- (ii) Which form of energy is transferred from the wind to generate electricity?

Draw a ring around your answer.

heat kinetic light sound

(1)

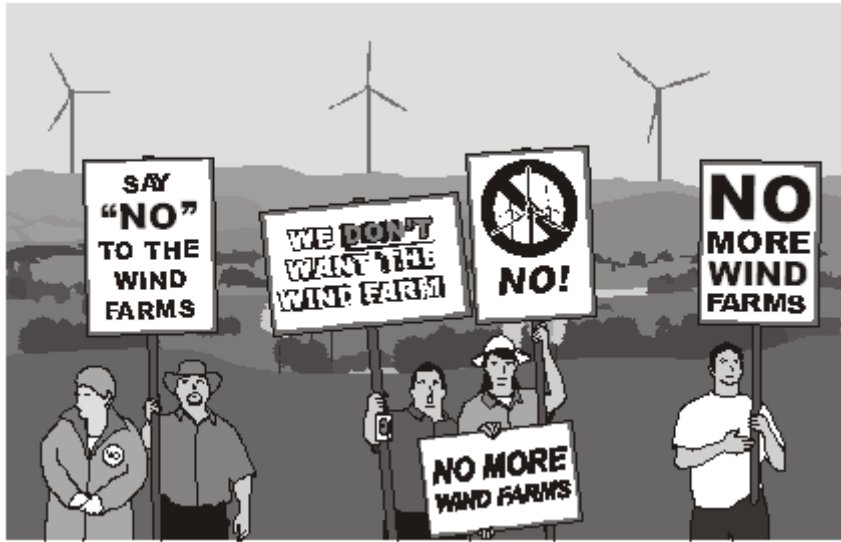
- (iii) Many people say that wind-powered generators are a good idea because:

“when the wind blows they generate electricity”

“they produce no pollution”

“they generate electricity cheaply”

But not everyone wants more wind-powered generators to be built.



What reasons may be given by the people who think that wind-powered generators are **not** a good idea?

.....

.....

.....

.....

(2)
(Total 7 marks)

What reasons may be given by the people who think that wind-powered generators are **not** a good idea?

.....

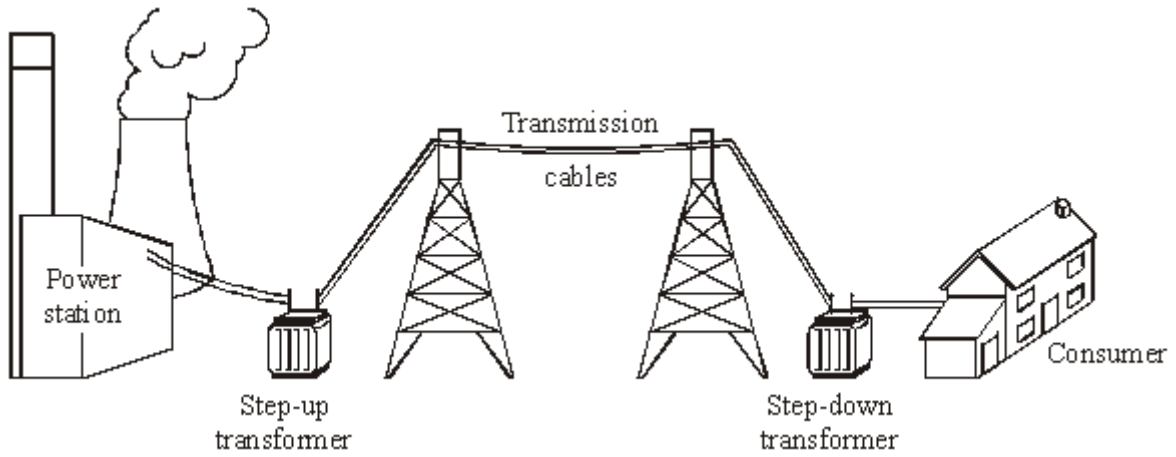
.....

.....

.....

(2)
(Total 7 marks)

Q33. The diagram shows how electricity gets from power stations to consumers.



(a) Complete the following sentences by drawing a ring around the correct line in each box.

(i) The network of cables and transformers linking power stations to consumers is

called the national	grid
	line
	network

(1)

(ii)

A step-up transformer	decreases voltage
	increases current
	increases voltage

(1)

(iii)

Electricity is supplied to consumers' homes at	230 V
	25 000 V
	400 000 V

(1)

(iv)

Making the current in the cables smaller will	increase make no difference to reduce	the
---	---	-----

energy lost in the cables.

(1)

(b) Transformers always waste some energy.

(i) What effect does the waste energy from a transformer have on the air around the transformer?

.....

(1)

(ii) Which **one** of the following describes the efficiency of a transformer?

Draw a ring around your answer.

always 100 % less than 100 % more than 100%

(1)
(Total 6 marks)

Q34. (a) The picture shows a new washing machine.



Complete the following sentence using **one** of the words in the box.

kinetic light sound

A washing machine is designed to transform electrical energy into heat and
 energy

(1)

(b) The instruction booklet for the washing machine contains the following information.

Wash cycle	Average power during cycle	Time taken to run cycle
HOT	1.5 kW	2 hours
COOL	1.1 kW	1½ hours
FAST	1.0 kW	¾ hour

(i) Use the following equation to calculate the energy transferred, in kilowatt-hours, to the washing machine during the HOT wash cycle. Show how you work out your answer.

$$\text{energy transferred} = \text{power} \times \text{time}$$

.....

Energy transferred = kWh

(2)

- (ii) Why does it cost more to use the washing machine on the HOT cycle than on the COOL or FAST cycle?

.....
.....

(1)

- (iii) Before buying a washing machine, a householder researched several makes to find out which washing machine was the most energy efficient.

Write down **one** way that he could have done this research.

.....
.....

(1)

(Total 5 marks)

- Q35. (a) The picture shows a new washing machine.



Complete the following sentence using **one** of the words in the box.

kinetic	light	sound
----------------	--------------	--------------

A washing machine is designed to transform electrical energy into heat and

..... energy

(1)

(b) The instruction booklet for the washing machine contains the following information.

Wash cycle	Average power during cycle	Time taken to run cycle
HOT	1.5 kW	2 hours
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FAST	1.0 kW	¾ hour

- (i) Use the following equation to calculate the energy transferred, in kilowatt-hours, to the washing machine during the HOT wash cycle. Show how you work out your answer.

$$\text{energy transferred} = \text{power} \times \text{time}$$

.....
.....

$$\text{Energy transferred} = \text{..... kWh}$$

(2)

- (ii) Why does it cost more to use the washing machine on the HOT cycle than on the COOL or FAST cycle?

.....
.....

(1)

- (iii) Before buying a washing machine, a householder researched several makes to find out which washing machine was the most energy efficient.

Write down **one** way that he could have done this research.

.....
.....

(1)

(Total 5 marks)

