



**Science Revised Syllabus  
Junior Certificate  
Higher Level**

**Past Exam Questions on  
P Energy**

**Q7 Part (a) 2013**

- (a) The photograph shows a solar array in Germany which produces electricity equivalent to the power output of 20 nuclear reactors working at full capacity.



- (i) By what method of energy transfer does the sun's energy get to the solar array?

Method \_\_\_\_\_

- (ii) Compare, giving a reason, the safety of the solar array with the safety of 20 nuclear reactors.

Compare \_\_\_\_\_  
\_\_\_\_\_

**Q7 Part (b) 2013**

- (b) Calculate the cost of using a washing machine rated at 1 kW for 5 hours per week for 7 weeks. (The net cost of one unit is 20 cent.)

Calculate \_\_\_\_\_

**Q7 Part (d) 2012**

- (d) The conversions of chemical energy to kinetic energy to potential energy occurs when you walk up a stairs. Give two more everyday examples of energy conversions and the contexts in which they occur.

1 \_\_\_\_\_

\_\_\_\_\_

2 \_\_\_\_\_

\_\_\_\_\_

**Q7 Part (h) 2012**

(h) Renewable energies are shown in the picture.

Pick any two of the energies shown in the picture and name your selection.

Energy one \_\_\_\_\_

Energy two \_\_\_\_\_

(i) Give one advantage associated with each energy you've selected.

Two **different** reasons must be given.

Energy one \_\_\_\_\_

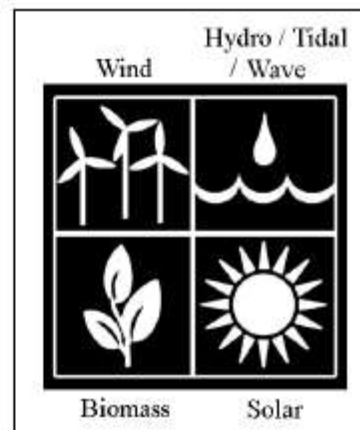
Energy two \_\_\_\_\_

(ii) Give one disadvantage associated with each energy you've selected.

Two **different** reasons must be given.

Energy one \_\_\_\_\_

Energy two \_\_\_\_\_



**Q8 part (b) 2012**

(b)



The kilowatt-hour is the unit of electrical energy used by electricity suppliers. The photograph shows a kWh (kilowatt-hour) meter. This meter is connected into the electricity consumer's domestic circuit and it can measure energy consumption in a selected part of the circuit, the total energy used and cost it. The meter can be wall-mounted in a convenient place.

(i) Give two advantages to the consumer of having this type of meter. (6)

1 \_\_\_\_\_

2 \_\_\_\_\_

(ii) Define the Watt, the unit of power. (6)

Define \_\_\_\_\_

(iii) Give one application of the chemical effect and one application of the the magnetic effect of electric current. (6)

Chemical effect \_\_\_\_\_

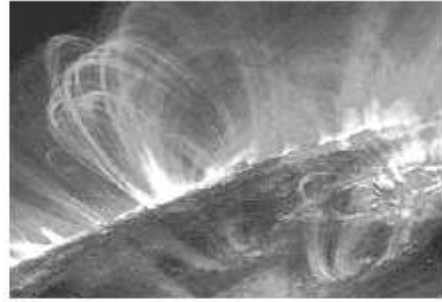
\_\_\_\_\_

Magnetic effect \_\_\_\_\_

\_\_\_\_\_

**Q7 Part (d) 2011**

(d) The photo shows part of the surface of sun. Give two examples showing that the sun is our primary source of energy.



1 \_\_\_\_\_

\_\_\_\_\_

2 \_\_\_\_\_

\_\_\_\_\_

**Q8 Part (b) 2011**

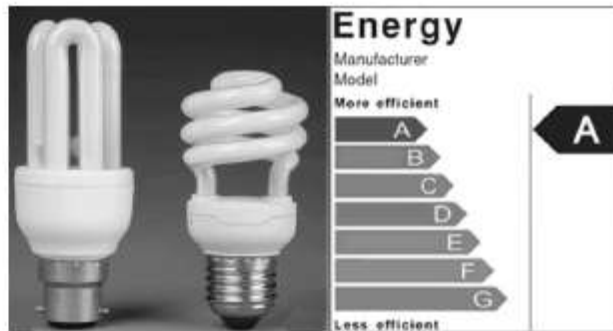
- (b) Compact fluorescent lamps (CFLs) are more energy efficient than incandescent (tungsten filament) bulbs. A 20 W (0.02 kW) CFL bulb has the same light output as a 115 W (0.115 kW) incandescent bulb.



If incandescent (tungsten filament) bulbs were replaced by compact fluorescent lamps (CFLs) in Ireland it is estimated that this would reduce our CO<sub>2</sub> emissions by 700,000 tonnes each year and reduce our household electricity bills by €185,000,000.

- (i) Why would replacing incandescent bulbs lower our CO<sub>2</sub> emissions? (3)

Compact fluorescent lamps (CFLs), shown in the photograph, have a **Grade A** rating (efficiency rating).



Electrical energy is converted into light and one other form of energy in bulbs.

- (ii) Name this second form of energy. (3)

- (iii) Which form of energy does the more efficient bulb produce more of? (3)

A 20 W (0.02 kW) CFL bulb is equivalent to 115 W (0.115 kW) incandescent bulb. Electricity costs 15 cent per kW h.

- (iv) Calculate the cost of using each of these bulbs for 100 hours. (9)

Cost for the CFL \_\_\_\_\_

\_\_\_\_\_

Cost for the incandescent bulb \_\_\_\_\_

\_\_\_\_\_

- (v) Name another electrical appliance where checking the energy efficiency rating would be important to save money on running costs. (3)

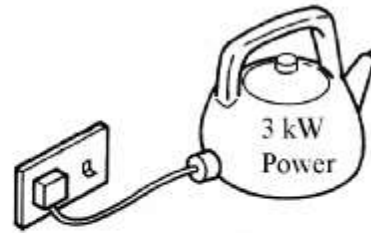


**Q7 Part (d) 2010**

- (d) Name the *unit of electrical energy* that companies supplying electricity use to bill their consumers.

Name \_\_\_\_\_

Calculate the *cost* of using of using the electric kettle, shown in the diagram, for ten hours if a unit of electricity costs 15 cent.



Calculate \_\_\_\_\_  
\_\_\_\_\_

**Q7 Part (a) 2009**

- (a) Give *two useful energy conversions* that occur when the drill shown in the diagram is being used.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_



**Q9 Part (b) 2009**

- (b) The photograph shows a solar panel being installed. Water passing through the panel is heated by the sun.

- (i) How does *heat* from the *sun travel*, through the *vacuum of space*, to the earth? (3)

How? \_\_\_\_\_

- (ii) Give *one advantage or one disadvantage* of fitting solar panels to your home? (3)

Advantage \_\_\_\_\_

**Or**

Disadvantage \_\_\_\_\_



**Q4 Part (g) 2008**

(g) Natural gas is a fossil fuel. What is a *fossil fuel*?

What? \_\_\_\_\_

\_\_\_\_\_

Name the *main constituent* of natural gas.

Name \_\_\_\_\_



**Q7 Part (a) 2008**

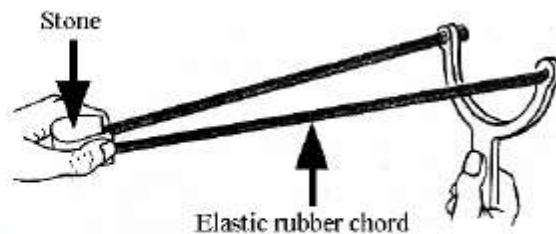
(a) Fill in the *missing words* in both sentences.

(i) The *stretched rubber chord*

has \_\_\_\_\_ energy.

(ii) If the *stone is released* it will

have \_\_\_\_\_ energy.



**Q7 Part (e) 2008**

(e) The Pelamis, shown in the photograph, *converts the energy of waves in seas into electrical energy*. Give **one advantage** and **one disadvantage** of generating electrical power in this way.

Advantage \_\_\_\_\_

Disadvantage \_\_\_\_\_





**Q9 Part (b) 2008**

(b) The top two photographs show the front (left) and the rear (right) of a sign warning motorists approaching a school to take care. The photograph underneath shows the *lights flashing amber alternately*. This happens when the *pupils are coming to school and are going home from school*. The *rectangular panel above the sign* is a *solar (photovoltaic) panel*. It *changes energy from the sun into electrical energy*.



(i) Name the *energy from the sun* that the panel changes into electricity. (3)

\_\_\_\_\_

The electrical energy is then changed into a *form of energy* that can be *stored* in a *battery*.

(ii) Name the *form of energy* that can be stored in a *battery*. (3)

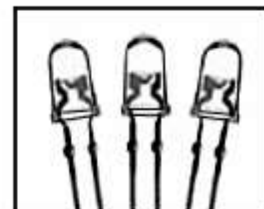
\_\_\_\_\_

In *winter* it may be *dark* when the pupils are going to or coming from school.

(iii) Give *two energy conversions* that occur to produce the flashes of light warning motorists approaching the school on dark mornings. (6)

\_\_\_\_\_  
\_\_\_\_\_

(iv) Identify the *devices* shown in the diagram. (There are three in the diagram; when operating they give out light).



Devices \_\_\_\_\_ (3)

This device is often used instead of bulbs. Give a *reason* for this wide application. (3)

Reason \_\_\_\_\_

**Q7 Part (f) 2007**

- (f) Give **one advantage** and **one disadvantage** of using nuclear energy to generate electricity.

**Advantage** \_\_\_\_\_

**Disadvantage** \_\_\_\_\_

**Q8 Part (b) 2007**

- (b) The driver of a moving car applied the brakes. The brakes produced an average stopping force of 8 kN (8000 N) and the car stopped having travelled 20 m after the brakes were applied. Calculate the *work done* in stopping the car. (6)

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When work is done energy is converted from one form to another. Identify one *energy conversion* that occurred when the car braked. (6)

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**Q8 Part (d) 2006**

(d) In Ireland *90% of electricity is generated by burning fossil fuels* compared to other European countries who have an average of 50% use of fossil fuels and a 30% use of fossil fuels in the USA.

- (i) List two *disadvantages*, excluding acid rain, of this heavy reliance on fossil fuels for the production of electricity. (6)

**Disadvantage one** \_\_\_\_\_

**Disadvantage two** \_\_\_\_\_

- (ii) Suggest two *alternative sources* of energy for the generation of electricity in Ireland. (6)

**Source one** \_\_\_\_\_

**Source two** \_\_\_\_\_