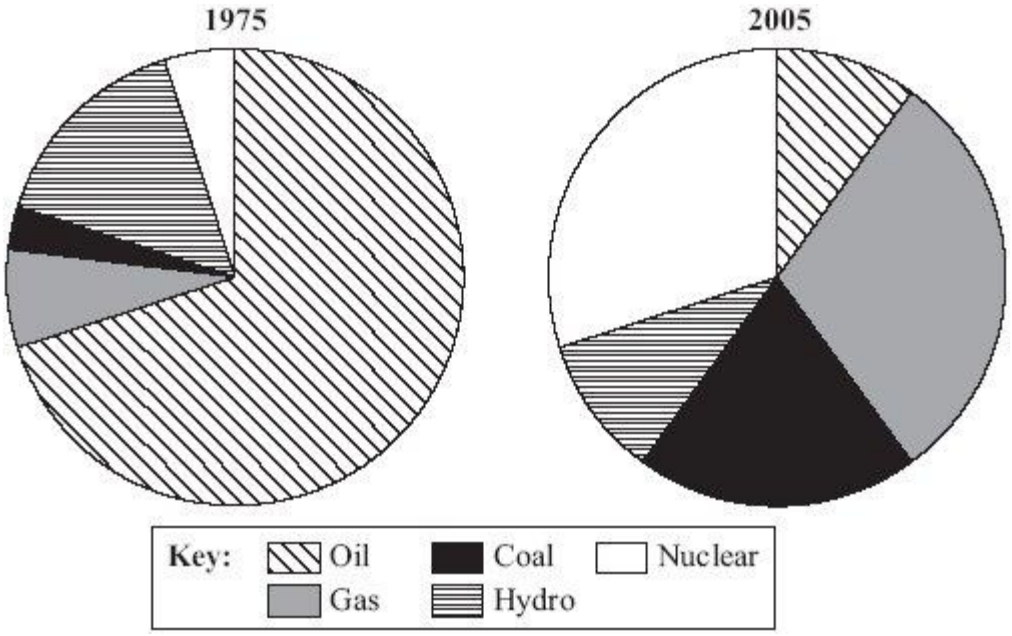
Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Q1.

The pie charts show the relative proportions of electricity generated in Japan from different energy sources in 1975 and 2005.



(a) Describe the main differences in the energy sources used in 2005 compared with 1975.

_____

_____

(1)

(b) In the UK, nuclear fuels are used to generate about 21% of the total electricity supply.

(i) What is the name of the process by which a nuclear fuel produces heat?

_____

(1)

(ii) Explain how the heat released from a nuclear fuel is used to generate electricity in power stations.

_____

_____

_____

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_____

(2)

(iii) Some people have suggested that more nuclear power stations should be built in the UK.

Give **two** reasons to support this suggestion.

1. _____

_____

2. _____

_____

(2)

(iv) Nuclear power stations create dangerous waste.

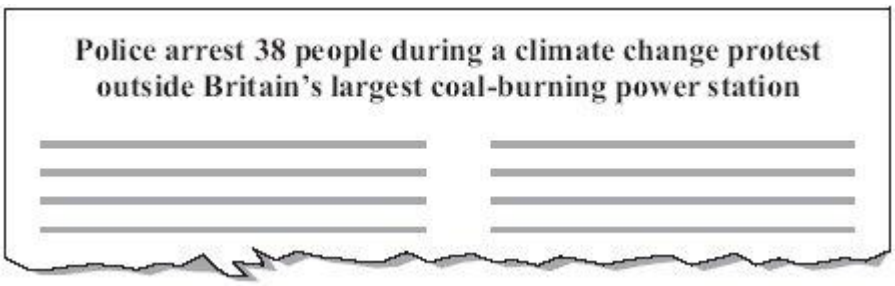
Why is the waste from a nuclear power station dangerous?

_____

_____

(1)

(c) A headline from a newspaper article is shown below.



Explain the possible link between *climate change* and *coal-burning power stations*.

_____

_____

_____

_____

(2)

(Total 9 marks)

Q2.

(a) Solar energy is a *renewable* energy source that can be used to generate electricity.

(i) What is meant by an energy source being *renewable*?

_____

(1)

(ii) Name **two** further renewable energy sources used to generate electricity.

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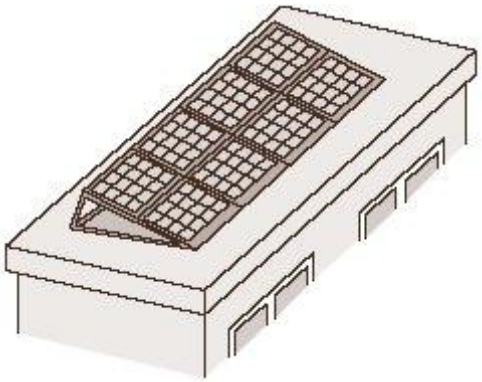
1. _____

2. _____

(1)

(b) A householder uses a bank of solar cells to generate electricity for his home.
The solar cells are tilted to receive the maximum energy input from the Sun.



The data in the table gives the average energy input each second (in J/s), to a 1 m^2 area of solar cells for different angles of tilt and different months of the year.

Month	**Angle of tilt**			
	20°	30°	40°	50°
February	460	500	480	440
April	600	620	610	600
June	710	720	680	640
August	640	660	640	580
October	480	520	500	460
December	400	440	420	410

(i) Use the data in the table to describe how the average energy input to the solar cells depends on the angle of tilt.

_____

_____

_____

_____

(2)

(ii) The bank of solar cells used by the householder has an area of 8 m^2.

The efficiency of the solar cells is 0.15

Calculate the average **maximum** electrical energy available from the bank of solar cells each second in June.

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Show clearly how you work out your answer.

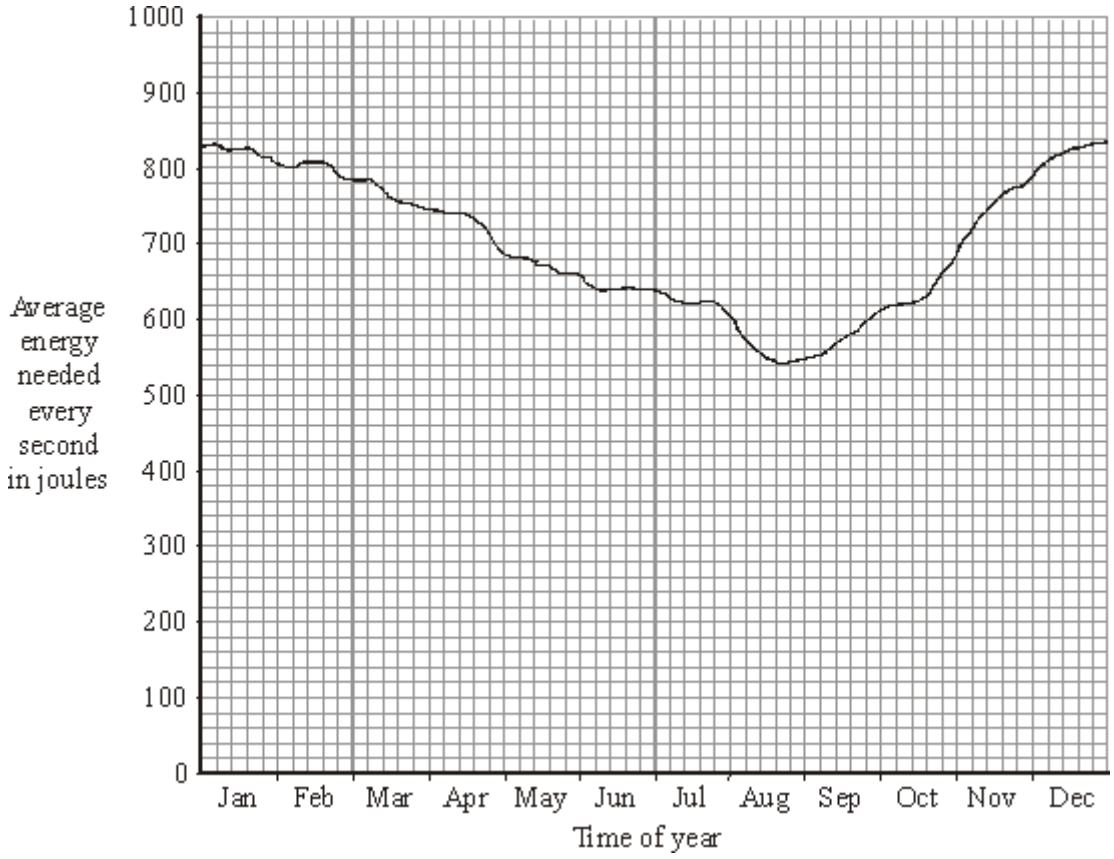
_____

_____

Maximum energy = _____ joules/second

(3)

(c) The graph shows how the householder's electrical energy needs change over one year.



Why would it be advisable for the householder to remain connected to the National Grid?

_____

_____

(1)

(Total 8 marks)

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