

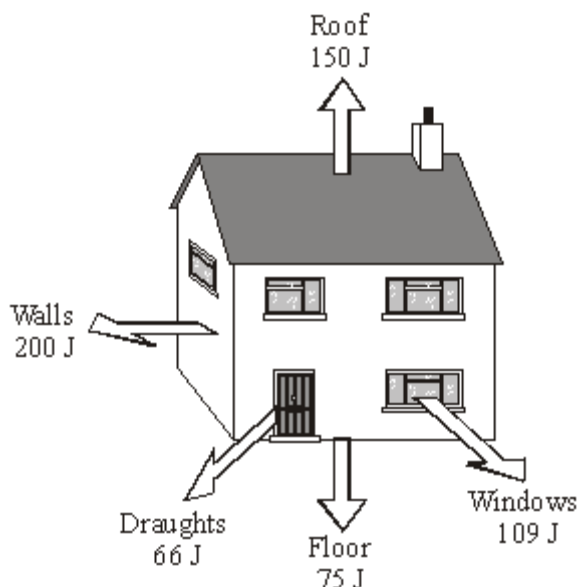
Name of the Student: \_\_\_\_\_

Max. Marks : 20 Marks

Time : 20 Minutes

**Q1.**

- (a) The diagram shows how much heat is lost each second from different parts of an uninsulated house.



- (i) Each year, the house costs £760 to heat.

How much money is being wasted because of heat lost through the roof?

Show clearly how you work out your answer.

\_\_\_\_\_

\_\_\_\_\_

(2)

- (ii) Insulating the loft would cut the heat lost through the roof by 50 %.

The loft insulation has a payback time of  $1\frac{1}{2}$  years.

How much did the loft insulation cost to buy?

\_\_\_\_\_

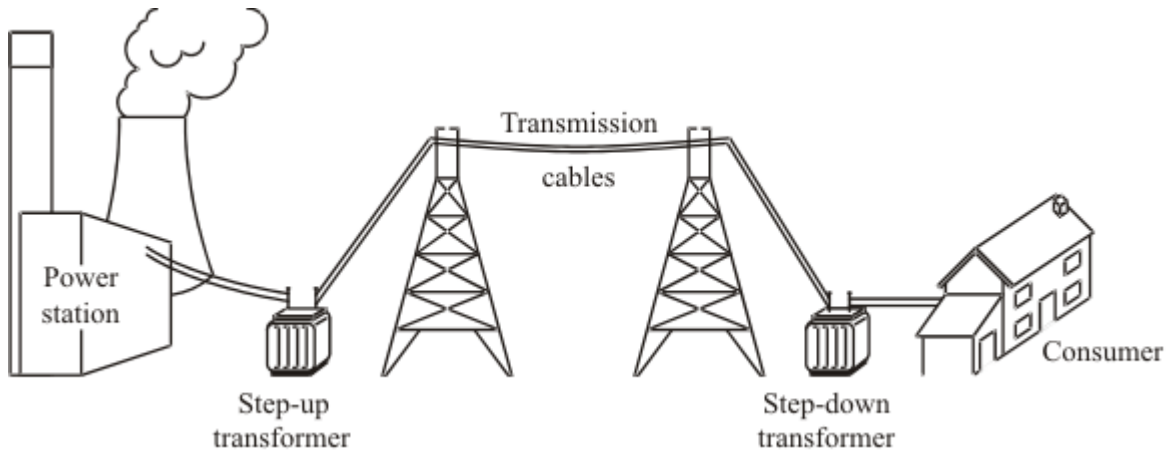
Cost of loft insulation = £ \_\_\_\_\_

(1)

- (b) What happens to the wasted energy?

**Q2.**

The diagram shows how electricity is distributed from power stations to consumers.



- (a) (i) What name is given to the network of cables and transformers that links power stations to consumers?

\_\_\_\_\_

(1)

- (ii) What does a step-up transformer do?

\_\_\_\_\_

(1)

- (iii) Explain why step-up transformers are used in the electricity distribution system.

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

(2)

- (b) Most of the world's electricity is generated in power stations that burn fossil fuels.

State **one** environmental problem that burning fossil fuels produces.

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

(1)

- (c) Electricity can be generated using energy from the wind. A company wants to build a new wind farm. Not everyone thinks that this is a good idea.



- (i) What arguments could the company give to persuade people that a wind farm is a good idea?

---

---

---

---

(2)

- (ii) What reasons may be given by the people who think that wind farms are **not** a good idea?

---

---

---

---

(2)

(Total 9 marks)

### Q3.

There is an increasing demand for electricity and the reserve of fossil fuels is decreasing. A way to meet increasing demand for electricity is to build new nuclear power stations. Some people feel that no new nuclear power stations should be built because of the risks associated with nuclear fuels.

- (a) Outline the arguments that a scientist working in the nuclear power industry could use to justify the building of more nuclear power stations in the future.

---

---

---

---

---

(3)

- (b) Nuclear waste is a problem that must be dealt with. One possible solution would be to bury the waste deep underground.

Suggest **one** reason why some people are against burying nuclear waste.

---

---

(1)

- (c) Electricity can also be generated using renewable energy sources.

Look at this information from a newspaper report.

- |   |
|---|
| <ul style="list-style-type: none"><li>• The energy from burning bio-fuels, such as woodchip and straw, can be used to generate electricity.</li><li>• Plants for bio-fuels use up carbon dioxide as they grow.</li><li>• Farmers get grants to grow plants for bio-fuels.</li><li>• Electricity generated from bio-fuels can be sold at a higher price than electricity generated from burning fossil fuels.</li><li>• Growing plants for bio-fuels offers new opportunities for rural communities.</li></ul> |
|---|

Suggest why, apart from the declining reserves of fossil fuels, power companies should use more bio-fuels and less fossil fuels to generate electricity.

---

---

---

---

---

---

---

(3)

(Total 7 marks)