Exercise 2

In this exercise, you will read a passage and then answer the questions that follow. The suggested time for reading the passage and answering the questions is 15 minutes.

A Light Bulb that Lasts

Consider a light bulb — the ordinary, incandescent kind, invented by Thomas Edison in 1879. It is a big improvement on the candle, but it works essentially the same way, by heating something until it glows. This obviously is not the most efficient way to produce light; some 90 per cent of the energy consumed by incandescent bulbs is wasted as heat, and the filament burns out after six to twelve months of normal use. A fluorescent bulb, which produced light by the excitation of phosphor atoms coating the inside of a glass cylinder, eliminates these drawbacks. But the tubular model used in most offices never really caught on in homes. "Compact" fluorescents that screw into ordinary sockets have recently become available, but even they are too big to fit some fixtures and cannot be used with dimmer switches. Last week a small California company announced that it had solved these problems. By next year, it plans to market the "E-(for electronic) Lamp," a bulb that will be completely interchangeable with incandescents, use a quarter as much energy, and last a decade or more.

The secret is a tiny radio-frequency generator in each bulb, transmitting energy to a surrounding cloud of mercury gas and in turn to the fluorescent coating. The principle is not new, the breakthrough lies in shielding the bulb to avoid interference with other electronic devices, especially televisions and radios. Since any ordinary substance that blocks radio waves would also be opaque to light, the solution must be ingenious. Unfortunately, Intersource Technologies, which developed the bulb with backing from Ohio-based American Electric Power Co., the nation's second largest utility, isn't saying how it's done.

This ingenuity comes at a price. Like compact fluorescents, E-Lamps should cost around $15 per bulb at first, less as they go into mass marketing. But counting the cost of the bulb and the electricity to run it, a 25-watt E-Lamp should save around 20 cents a week compared with a 100-watt incandescent, and give the same amount of light. There are some 1.5 billion light sockets in the United States; each incandescent that is replaced by an E-Lamp would save an estimated ton of carbon dioxide from electrical generating stations over the life of the bulb, a small step toward reducing emissions of greenhouse gases.

LIVEWORKSHEETS

Durable Good: As for the high price, Intersource chairman Pierre Villere expects consumers will treat the bulb as a durable good. Eventually, he predicts, it will take its place "next to the hair dryer, the microwave and the food processor" as an indispensable convenience. Since the electronic components last indefinitely, the bulb should fail only when the phosphor deteriorates (or someone knocks the lamp off the table). And instead of burning out with a "pop", the new bulbs will gradually become less bright. Someday lamps and fixtures may have the electronic components built into their base, and consumers will just slip on a cheap replaceable glass jacket containing the mercury and phosphor. Then we will truly have come a long way from the candle. As Villere puts it: "It's almost inconceivable that an invention that is so much a part of our lives as the light bulb has been around since Edison with so little innovation."

Questions 1-2

1. How does the incandescent light bulb work?

   _____

2. How does a fluorescent bulb work?

   _____

Questions 3-7

Identify the following features to incandescent bulb or E-Lamp. Write I for incandescent bul and E for E-Lamp.

_____ 3. Most energy is wasted.

_____ 4. Short life.

_____ 5. Fails only when the phosphor deteriorates.

_____ 6. Eventually reduces house emissions of greenhouse gases.

_____ 7. Works essentially the same way as candles.

Question 8

The principle on which the E-Lamp works lies in

A. excitation of phosphor atoms.
B. transmitting energy to the fluorescent coating.
C. heating something until it glows.
D. generating radio frequency.

LIVEWORKSHEETS