

Subject: English language

Class: Life Science

Part One: Read the text and then answer the questions that follow:

The Age of the Tiny Tech

- 1- Paul swallows the pills prescribed for his sleeping disorder. It is not a medicine but a tiny machine, and as it travels inside Paul's body, the device transmits a continuous temperature record to a receiver on his belt to help doctors monitor his bodily rhythms. At a nearby hospital, surgeons begin an operation by inserting into Harold's heart a blood-pressure sensor so small that three of the tiny machines could fit on a pinhead.
- 2- These devices along many others, all gaining wider use, are among the first fruits of a major scientific revolution. We are leaving the Industrial Age, when nations took pride in building the biggest machines possible, and entering the Tiny Tech, where power and prosperity will go to who make machines smaller and smaller.
- 3- A few years ago, researchers at the University of California took a giant step into the mini world. They switched on the voltage to an experimental device roughly 3/1000 inch across and, via an electron microscope, watched the first microscopic electric motor start to spin. The motor was fabricated like a computer chip. By this method, a paper-thin silicon wafer four inches in diameter is encased in silicon dioxide and coated with a photo resist, a liquid plastic that breaks down into microscopic patterns when exposed to light. Next, etching chemicals then dissolve unprotected parts of the glass layer, carving circuits onto the silicon wafer. By repeating the same procedure, layer upon layer of interconnected circuits can be built onto the chip. Finally, by fashioning a silicon base, hub, and rotor, and using acid etch to dissolve the glass layer between them, a motor is created.
- 4- "Think what means!" says George Hazelrigg research engineer at the National Science Foundation in Washington, D.C. "Each wafer can contain up to 200 chips, and each chip can carry hundreds of micro-machines. "With this new technology," adds Richard Muller, a director of the Sensor and Actuator Center at the University of California at Berkeley, "can create on the same chip a computer brain and micro-machine sensors and actuators to be the eyes, ears, and the hands of the computer," Within a decade, Hazelrigg predicts, doctors could be using such devices with microscopic cutters and manipulators to perform what it now major surgery does without cutting open a patient's body.
- 5- Micro-machines inhabit a world where the unit of measure is the micrometer roughly one- million of yard. (The average human hair is 70 to 100 micrometers wide.) In this Alice in Micro-land realm, the rules of the big world do not apply_ invisible specks of

airborne dust can become giant monkey wrenches jamming unprotected gears in micro-motors. And those who work in micro-machine labs must put on surgical masks, lest they inadvertently inhale the tiny devices from work surfaces.

- 6- In this coming decade, micro-machines will be able to make your home “smart” too. They will tell your hearing system and air conditioners how to adjust themselves for efficiency and minimal pollution. Sensors will sound an alarm if a child falls into the swimming pool. In earthquake- prone areas, micro-sensors could detect a tremor and automatically disconnect and shut water, electricity, and gas lines to prevent water damage, electrocution, and fires.
- 7- As an old saying goes: shape our tools, and therefore our tools shape us. It is already clear our tiny, new tools will shape the way we live in astonishing manners. By “thinking small”, scientists and dreamers are enlarging the future for all of us.

Reader’s Digest

- A.**
1. What is the basic difference between the Industrial Age and the Tiny Tech Age? (Score:1.5)
 2. Mention three areas (places) where the Tiny Tech will probably seem effective in the above text. (Score:1.5)
 3. In what way(s) will this Tiny Tech influence our lives? (Score:01)
 4. What does the writer mean by, “ In this Alice in Micro-land realm, the rules of the “big” world do not apply- invisible specks In micro-motors.” (paragraph 5) (Score:02)
- B.**
1. What type of introduction (anecdote, general to specific, historical background) does the writer of the above text use? What purpose does it serve? (Score: 02)
 - a. 2. What pattern of organization does the writer use in paragraph 3? Explain. (Score: 02)
- C.** What is the antecedent of each pronoun in bold type in the above text: (Score: 01)
1. Those (para.2)
 2. This (para.4)
 3. We (para. 4)
 4. We (para.7)

Part Two: Writing (Score: 09/20)

Technology is constructive when we are its master. However, it might be very destructive when we become its slave. Discuss the above statement, focusing on a case to show the constructive nature of technology and another opposite case to demonstrate its destructive effect. [Score: 05 for content, 03 for form, and 01 for tidiness and legible handwriting]

Answer key

The Age of the Tiny Tech

- A.
1. The Industrial Age focused mainly on big machines for production and prosperity. In the Tiny Tech Age, power and prosperity “will go to those who make machines smaller and smaller.”
 2. In par. 3, the writer refers to industry “ a motor is created”. In par. 4, he mentions the unbelievable influence of this Tiny Tech on medicine (surgery in particular). And finally, in par. 6, he states the positive effects of the micro machines on our houses.
 3. The writer believes that the tools we shape- the macro machines in this case- reshape us as well. In other words, the new tools will definitely influence our way of life and behavior.
 4. In this Micro land realm (The Tiny Tech Age), which reminds us of Alice’s wonderland, there will be no room for the gigantic objects. Tiny invisible specks will be most dominant and effective.
- B.
1. It’s an anecdote. Such type gives background information about the new scientific revolution, arouses interest and curiosity in the reader, and grabs his/her attention. Finally, it prepares him/her for a thorough discussion on the positive influences of such a revolution on all aspects of life.
 2. Par. 3 is a process writing type. In it, the writer gives the steps needed to create a motor. So, the writer uses time order as a pattern of organization to arrange the steps. The clues : years ago, next, and finally.

1. These par. 2/nations
2. This par.4/the process of creating tiny tech devices
3. We par. 4/ scientists
4. We par. 7/people in general