次の英文は *The New York Times* の記事 “Attached to Technology and Paying a Price”（2010年6月6日）に基づいている。これを読んで次の設問に答えなさい。

（Ⅰ）下線部（1）の本文中の意味ともっとも近いものを下から選び，記号で答えなさい。

（A）breaks down his equipment

（B）dismantles his smartphone

（C）rewires his computer

（D）shuts off his devices

（Ⅱ）下線部（2）を日本語に訳しなさい。

（Ⅲ）下線部（3）を日本語に訳しなさい。

（Ⅳ）［ （4） ］に入るもっとも適切な語句を下から選び，記号で答えなさい。

（a）barking of a pet dog

（b）chime of incoming e-mail

（c）sound of a screaming child

（d）demands of a spouse

（Ⅴ）下線部（5）の意味を本文に即して20字以内の日本語で説明しなさい。

（Ⅵ）枠内①～③の3つのパラグラフは順序を変えてある。適切な順序に並べ替え，数字で答えなさい。

（Ⅶ）下線部（6）を日本語に訳しなさい。

（Ⅷ）“Multitasking” がもたらす負の面のうち主なもの3つを100字以上120字以内の日本語で説明しなさい。

（Ⅸ）次の日本語を英語に訳しなさい。

昔の人々は異文化を理解することに苦労したが，現代的なコミュニケーションの技術を持つ我々もまた同様である。

When one of the most important e-mail messages of his life landed in his in-box a few years ago, Kord Campbell overlooked it. Not just for a day or two, but 12 days. He finally saw it while sifting through old messages: a big company wanted to buy his Internet start-up. "I stood up from my desk and said, 'Oh my God, oh my God, oh my God,' " Mr. Campbell said. "It's kind of hard to miss an e-mail like that, but I did."

The message had slipped by him amid an electronic flood: two computer screens alive with e-mail, instant messages, online chats, a web browser and the computer code he was writing. While he managed to salvage the $1.3 million deal after apologizing to his suitor, Mr. Campbell continues to struggle with the effects of the deluge of data. Even after he (1) unplugs, he craves the stimulation he gets from his electronic gadgets. He forgets things like dinner plans, and he has trouble focusing on his family. His wife, Brenda, complains, "It seems like he can no longer be fully in the moment."

This is your brain on computers.

Scientists say juggling e-mail, phone calls and other incoming information can change how people think and behave. They say our ability to focus is being undermined by bursts of information. These play to a primitive impulse to respond to immediate opportunities and threats. The stimulation provokes excitement—a dopamine squirt—that researchers say can be addictive. In its absence, people feel bored. The resulting distractions can have deadly consequences, as when cellphone-wielding drivers and train engineers cause wrecks. And for millions of people like Mr. Campbell, these urges can inflict nicks and cuts on creativity and deep thought, interrupting work and family life.

While many people say multitasking makes them more productive, research shows otherwise. Heavy multitaskers actually have more trouble focusing and shutting out irrelevant information, scientists say, and they experience more stress. And scientists are discovering that even after the multitasking ends, fractured thinking and lack of focus persist. In other words, this is also your brain *off* computers. "The technology is rewiring our brains," said Nora Volkow, Director of the National Institute of Drug Abuse and one of the world's leading brain scientists. (2) She and other researchers compare the lure of digital stimulation less to that of drugs and alcohol than to food and sex, which are essential but counterproductive in excess.

Technology use can benefit the brain in some ways, researchers say. Imaging studies show the brains of Internet users become more efficient at finding information. And players of some video games develop better visual acuity. More broadly, cellphones and computers have transformed life. They let people escape their cubicles and work anywhere. They shrink distances and handle countless mundane tasks, freeing up time for more exciting pursuits.

For better or worse, the consumption of media, as varied as e-mail and TV, has exploded. Recent research indicates that people consume three times as much information each day as they did in 1960. And they are constantly shifting their attention. Computer users at work change windows or check e-mail or other programs nearly 37 times an hour. The nonstop interactivity is one of the most significant shifts ever in the human environment, said Adam Gazzaley, a neuroscientist at the University of California, San Francisco. "We are exposing our brains to an environment and asking them to do things we weren't necessarily evolved to do," he said. "We know already there are consequences."

Mr. Campbell, 43, came of age with the personal computer, and he is a heavier user of technology than most. But researchers say (3) the habits and struggles of Mr. Campbell and his family typify what many experience—and what many more will, if trends continue. Mr. Campbell's life revolves around computers. He goes to sleep with a laptop or iPhone on his chest, and when he wakes, he goes online. Major spats have arisen between Mr. Campbell and Mrs. Campbell, 39, because he escapes into video games during tough emotional stretches. On family vacations, he has trouble putting down his devices. When he rides the subway to San Francisco, he knows he will be offline 221 seconds as the train goes through a tunnel.

Their 16-year-old son, Connor, tall and polite like his father, recently received his first poor grades, which his family blames on distraction from his gadgets. Their 8-year-old daughter, Lily, like her mother, playfully tells her father that he favors technology over family. "I would love for him to totally unplug, to be totally engaged," says Mrs. Campbell, who adds that he becomes "crotchety until he gets his fix." But she would not try to force a change. She says, "He loves it. Technology is part of the fabric of who he is. If I hated technology, I'd be hating him, and a part of who my son is, too."

Mr. Campbell loves the rush of modern life and keeping up with the latest information. "I want to be the first to hear when the aliens land," he said, laughing. But other times, he fantasizes about living in pioneer days when things moved more slowly: "I can't keep everything in my head." No wonder. As he came of age, so did a new era of data and communication.

At home, people consume 12 hours of media a day on average, when an hour spent with, say, the Internet and TV simultaneously counts as two hours. That compares with five hours in 1960, say researchers at the University of California, San Diego. Moreover, computer users visit an average of 40 web-sites a day.

As computers have changed, so has the understanding of the human brain. Until 15 years ago, scientists thought the brain stopped developing after childhood. Now they understand that its neural networks continue to develop. So not long after Eyal Ophir arrived at Stanford in 2004, he wondered whether heavy multitasking might be leading to changes in a characteristic of the brain long thought immutable: humans can process only a single stream of information at a time.

Going back a half-century, tests had shown that the brain could barely process two streams, and could not simultaneously make decisions about them. But Mr. Ophir, a student-turned-researcher, thought multitaskers might be rewiring themselves to handle the load. In a test created by Mr. Ophir and his colleagues, test subjects were divided into two groups: those classified as heavy multitaskers based on their answers to questions about how they used technology, and those who were not. Subjects at a computer were briefly shown an image of red rectangles. Then they saw a similar image and were asked whether any of the rectangles had moved. It was a simple task until the addition of a twist: blue rectangles were added, and the subjects were told to ignore them.

The multitaskers then did a significantly worse job than the non-multitaskers at recognizing whether red rectangles had changed position. In other words, they had trouble filtering out the blue ones—the irrelevant information. Other tests showed multitaskers tended to search for new information rather than accept a reward for putting older, more valuable information to work.

Researchers say these findings point to an interesting dynamic: multitaskers seem more sensitive than non-multitaskers to incoming information. The results

also illustrate an age-old conflict in the brain, one that technology may be intensifying. A portion of the brain acts as a control tower, helping a person focus and set priorities. More primitive parts of the brain, like those that process sight and sound, demand that it pay attention to new information, bombarding the control tower when they are stimulated.

Researchers say there is an evolutionary rationale for the pressure this barrage puts on the brain. The lower-brain functions alert humans to danger, like a nearby lion, overriding goals like building a hut. In the modern world, though, for those like Mr. Campbell, the [(4)] can override the goal of writing a business plan or playing catch with the children. Clifford Nass, a communications professor at Stanford, says these studies are important because they show multitasking's lingering effects: "The scary part for guys like Kord is, they can't shut off their multitasking tendencies when they're not multitasking."

But not all of the findings are necessarily negative. Preliminary research shows some people can more easily juggle multiple information streams. These "supertaskers" represent less than 3 percent of the population, according to scientists at the University of Utah. Other research shows computer use has neurological advantages. In imaging studies, Dr. Gary Small observed that Internet users showed greater brain activity than nonusers, suggesting they were growing their neural circuitry.

At the University of Rochester, researchers found that players of some fast-paced video games can track the movement of approximately 33% more objects on a screen than non-players. They say the games can improve reaction and the ability to pick out details amid clutter. "In a sense, those games have a very strong rehabilitative and educational power," said the lead researcher, Daphne Bavelier, who is working with others in the field to channel these changes into real-world benefits like safer driving.

There is a vibrant debate among scientists over whether technology's influence on behavior and the brain is good or bad, and how significant it is. "The bottom line is, the brain is wired to adapt," said Steven Yantis, a professor of brain sciences at Johns Hopkins University. "There's no question that rewiring goes on all the time," he added. But he said it was too early to say whether the changes caused by technology were materially different from others in the past.

Mr. Ophir is loath to call the cognitive changes bad or good, though the impact on analysis and creativity worries him. He is not just worried about other people. Shortly after he came to Stanford, a professor thanked him for being the one student in class paying full attention and not using a computer or phone. But he recently began using an iPhone and noticed a change; he felt its pull, even when playing with his daughter. "The media is changing me," he said. "I hear this (5) internal ping that says: check e-mail and voice mail. I have to work to suppress it."

Kord Campbell does not bother to suppress it, or no longer can.

Researchers worry that constant digital stimulation creates attention problems for children with brains that are still developing, who already struggle to set priorities and resist impulses. Connor Campbell, Kord's son, started having troubles late last year. He could not focus on homework. No wonder, perhaps. On his bedroom desk sit two monitors, one with his music collection, one with Facebook and Reddit, a social site with news links that he and his father love. His iPhone availed him to relentless texting with his girlfriend. When he studied, "a little voice would be saying, 'Look up at the computer,' and I'd look up," Connor said. "Normally, I'd say I want only to read for a few minutes, but I'd search every corner of Reddit and then check Facebook."

For spring break, the family rented a cottage in Carmel, California. Mrs. Campbell hoped everyone would unplug. But the day before they left, the new iPad from Apple came out, and Mr. Campbell snapped one up. The next night, their first on vacation, "We didn't go out to dinner," Mrs. Campbell mourned. "We just sat there on our devices."

① Technology use is growing for Mrs. Campbell as well. She checks e-mail 25 times a day, sends texts and uses Facebook. Recently, she was baking peanut butter cookies for Teacher Appreciation Day when her phone chimed in the living room. She answered a text, then became lost in Facebook, forgot about the cookies and burned them. She started a new batch, but heard the phone again, got lost in messaging, and burned those, too. Out of ingredients and shamed, she bought cookies at the store.

② She rallied the troops the next day to the aquarium. Her husband joined them for a bit but then begged out to do e-mail on his phone. Later she found him playing video games. His behavior brought about a discussion between them. Mrs. Campbell said he told her that he was capable of logging off, citing a trip to Hawaii several years ago that they called their second honeymoon. "What trip are you thinking about?" she said she asked him. She recalled that he had spent two hours a day online in the hotel's business center.

③ On Thursday, their fourth day in Carmel, Mr. Campbell spent the day at the beach with his family. They flew a kite and played whiffle ball. Connor unplugged, too. "It changes the mood of everything when everybody is present," Mrs. Campbell said. The next day, the family drove home, and Mr. Campbell disappeared into his office.

She feels less focused and has trouble completing projects. Some days, she promises herself she will ignore her device. "It's like a diet—you have good intentions in the morning and then you're like, 'There went that,'" she said.

(6) Mr. Nass at Stanford University thinks the ultimate risk of heavy technology use is that it diminishes empathy by limiting how much people engage with one another, even in the same room. "The way we become more human is by paying attention to each other," he said. "It shows how much you care." That empathy, Mr. Nass said, is essential to the human condition. "We are at an inflection point," he said. "A significant fraction of people's experiences are now fragmented."