IELTS Academic Reading Sample 72 - An Era of Abundance

An Era of Abundance

Our knowledge of the complex pathways underlying digestive processes is rapidly expanding, although there is still a great deal we do not fully understand. On the one hand, digestion, like any other major human biological system, is astonishing in its intricacy and cleverness. Our bodies manage to extract the complex resources needed to survive, despite sharply varying conditions, while at the same time, filtering out a multiplicity of toxins.

On the other hand, our bodies evolved in a very different era. Our digestive processes in particular are optimized for a situation that is dramatically dissimilar to the one we find ourselves in. For most of our biological heritage, there was a high likelihood that the next foraging or hunting season (and for a brief, relatively recent period, the next planting season) might be catastrophically lean. So it made sense for our bodies to hold on to every possible calorie. Today, this biological strategy is extremely counterproductive. Our outdated metabolic programming underlies our contemporary epidemic of obesity and fuels pathological processes of degenerative disease such as coronary artery disease, and type II diabetes.

Up until recently (on an evolutionary time scale), it was not in the int erest of the species for old people like myself (I was born in 1948) to use up the limited resources of the clan. Evolution favored a short life span – life expectancy was 37 years only two centuries ago – so these restricted reserves could be devoted to the young, those caring for them, and laborers strong enough to perform intense physical work.

We now live in an era of great material abundance. Most work requires mental effort rather than physical exertion. A century ago, 30 percent of the U.S. work fo rce worked on farms, with another 30 percent deployed in factories. Both of these figures are now under 3 percent. The significant majority of today's job categories, ranging from airline flight attendant to web designer, simply didn't exist a century ago.

Our species has already augmented the "natural" order of our life cycle through our technology: drugs, supplements, replacement parts for virtually all bodily systems, and many other interventions. We already have devices to replace our hips, knees, shoulders, elbows, wrists, jaws, teeth, skin, arteries, veins, heart valves, arms, legs, feet, fingers, and toes. Systems to replace more complex organs (for example, our hearts) are beginning to work. As we're learning the principles of operation of the hum an body and the brain, we will soon be in a position to design vastly superior systems that will be more enjoyable, last longer, and perform better, without susceptibility to breakdown, disease, and aging.

In a famous scene from the movie, The Graduate, Benjamin's mentor gives him career advice in a single word: "plastics." Today, that word might be "software," or "biotechnology," but in another couple of decades, the word is likely to be "nanobots." Nanobots – blood-cell-sized robots – will provide the means to radically redesign our digestive systems, and, incidentally, just about everything else.

In an intermediate phase, nanobots in the digestive tract and bloodstream will intelligently extract the precise nutrients we need, call for needed additiona l nutrients and supplements through our personal wireless local area network, and send the rest of the food we eat on its way to be passed through for elimination.

If this seems futuristic, keep in mind that intelligent machines are already making their way into our blood stream. There are dozens of projects underway to create blood -stream-based "biological microelectromechanical systems" (bioMEMS) with a wide range of diagnostic and therapeutic applications. BioMEMS devices are being designed to intellig ently scout out pathogens and deliver medications in very precise ways.

For example, a researcher at the University of Illinois at Chicago has created a tiny capsule with pores measuring only seven nanometers. The pores let insulin out in a controlled manner but prevent antibodies from invading the pancreatic Islet cells inside the capsule. These nanoengineered devicesmhave cured rats with type I diabetes, and there is no reason that the same methodology would fail to work in humans. Similar systems could precisely deliver dopamine to the brain for Parkinson's patients, provide blood - clotting factors for patients with hemophilia, and deliver cancer drugs directly to tumor sites. A new design provides up to 20 substance- containing reservoirs that can release their cargo at programmed times and locations in the body. A new world is on the horizon and you will be part of it.

Questions 1-8

Complete the summary below.

Choose ***NO MORE THAN THREE WORDS*** *from the passage for each answer.*

In the past it was essential to hoard our calories for as long as possible because our food source was mainly restricted to 1 __________ and 2 __________ which brought in irregular supplies. However, these reserves were intended for 3 __________ because they had the powe and energy to work hard. Nowadays, the focus has moved away from jobs on 4 __________ and in 5 __________ to jobs that weren't available 6 __________ . Through technology, it has now become possible to replace many body 7 __________ and as techniques improve we will be able to develop better 8 __________ .

Questions 9-12

*Complete the summary using the list of words, **A-J**, below.*

In the future, a nanobot's ability to redesign our digestive system will be 9 __________ . One function is the intel ligent 10 __________ of the exact nutritional requirements needed. If this all seems to be fantasy, consider a tiny machine already developed that has now been used in the treatment of 11 __________ However, this has not been tried on 12 __________

A Parkinson's B haemophilia C diabetes D humans E radical

F rats G extract H radically I extraction J cells

Answer:

1. foraging 2. hunting (1 and 2 in any order) 3. labourers 4. farms 5. factories 6. a century ago 7. parts 8. systems 9. radical 10. extraction 11. diabetes 12. humans