**MICROELECTRONICS AND MICROMINIATURIZATION**

The intensive effort of electronics to increase the reliability and performance of its products while reducing their size and cost led to the results that hardly anyone could predict. The evolution of electronic technology is sometimes called a revo­lution: a quantitative change in technology gave rise to qualita­tive change in human capabilities. There appeared a new branch of science — microelectronics.

Microelectronics embraces electronics connected with the realization of electronic circuits, systems and subsystems from very small electronic devices. Microelectronics is a name extremely small electronic components and circuit assemblies, made by film or semiconductor techniques. A microelectronic technology reduced transistors and other circuit elements to dimensions almost invisible to unaided eye. The point of this extraordinary miniaturization is to make circuits long-lasting, low in cost, and capable of performing electronic functions at extremely high speed. It is known that the speed of response depends on the size of transistor: the smaller the transistor, the faster it is. The smaller the computer, the faster it can work.

One more advantage of microelectronics is that smaller de­vices consume less power. In space satellites and spaceships this is a very important factor.

Another benefit resulting from microelectronics is the reduc­tion of distances between circuit components. Packing density increased with the appearance of small-scale integrated circuit, medium-scale 1С, large-scale 1С and very-large-scale 1С. The change in scale was pleasured by the number of transistors on a chip. There appeared a new type of integrated circuits, micro­wave integrated circuit. The evolution of microwave 1С began with the development of planar transmission lines. Then new 1С components in a fineline transmission line appeared. Other more exotic techniques, such as dielectric waveguide integrat­ed circuits emerged.

Microelectronic technique is continuing to displace other modes. Circuit patterns are being formed with radiation having wavelength shorter than those of light.

Electronics has extended man's intellectual power. Microelectronics extends that power still further.

**9. Просмотрите текст еще раз и ответьте на вопросы, ис­пользуя информацию текста.**

1. What would you say about electronics? 2. Why is the de­velopment of electronics called a revolution? 3. What is micro­electronics? 4. What techniques does microelectronics use?

1. What is the benefit of reducing the size of circuit elements?
2. What do you understand by the term of microminiaturiza­  
   tion? 7. What does the speed of the signal response depend on?  
   8. What advantages of microelectronics do you know? 9. What  
   scales of integration are known to you? 10. How are microelec­  
   tronics techniques developing?

**12. Вспомните образование страдательного залога — to be  
(в нужном времени) + 3-я форма глагола.**

***А. Найдите пять случаев употребления страдательного залога в тексте 1 и четыре случая — в тексте 2. Переведи-те предложения.***

***Б. Преобразуйте следующие предложения действительно­го залога в страдательный по образцу:***

***People* widely *use* electronic devices-Electronic devices *are* widely *used* by people.**

1. Electronic devices control the work of power stations. 2. They calculate the trajectories of spaceships. 3. People dis­cover new phenomena of nature due to electronic devices.

1. Scientists designed a variety of tubes for specialized functions.
2. American scientists invented the transistor in 1948. 6. Inte­  
   grated circuits greatly reduced the size of devices. 7. New types  
   of integrated circuits increased packing density. 8. Electronics  
   has extended man's intellectual power. 9. Scientists are looking  
   for new ways for the improvement of integrated circuits tech­  
   nology. 10. Jack Kilby developed the concept of integrating de­  
   vice and built the first 1С in 1958.