**1. Reading Comprehension**

***You will read the part of a lecture on Nanotechnologies.***

***Nanotechnology***

*Nano,* Greek for “dwarf,” means one billionth. Measurement at this level is in *nanometers* (abbreviated “nm”) — billionths of a meter. To put this into perspective, a strand of human hair is roughly 75,000 nm across. On the flipside of the concept, you’d need ten hydrogen atoms lined up end-to-end to make up 1 nm. The word “nanotechnology” proper was coined by Nario Taniguchi in 1974 to describe machining with tolerances of less than a micron.

Nanotechnology can be difficult to determine and define. For example, the realm of nanoscience is not new; scientists will tell you they’ve been doing nanoscience for hundreds of years. Stained-glass windows found in medieval churches contain different-size gold nanoparticles incorporated into the glass — the specific size of the particles creating orange, purple, red, or greenish colors. Einstein, as part of his doctoral dissertation, calculated the size of a sugar molecule as one nanometer. Loosely considered, both the medieval glass workers and Einstein were nanoscientists. What’s new about current nanoscience is its aggressive focus on developing applied technology — and the emergence of the right tools for the job.

Nanotechnology is, at heart, interdisciplinary. You’ll get only part of the story if you just use chemistry to get at the properties of atoms on the nano level — adding physics and quantum mechanics to the mix gives you a truer picture. Chemists, physicists, and medical doctors are working alongside engineers, biologists, and computer scientists to determine the applications, direction, and development of nanotechnology — in essence, nanotechnology is many disciplines building upon one another. Industries such as materials manufacturing, computer manufacturing, and healthcare will all contribute, meaning that all will benefit — both directly from nanotechnological advances.

If you take a look at the world around us, you’ll notice that nature itself designs at the molecular level. Nanotechnology intends to imitate nature by taking advantage of the unique properties of nano-scale matter to come up with more efficient ways of controlling and manipulating molecules. With technology, smaller is better. If you take a look at technical evolution, you’ll notice that we’re continually getting smaller — computers the size of a room in the 1950s now fit on your lap; cellphones the size of a brick in the 1980s now fit in your shirt pocket. Consumer convenience, the economics of resources and competition, and the advantages of faster processing, higher productivity, and better quality all play a part in motivating companies to go small. Technology is not only getting smaller, it’s also evolving faster. As new technologies develop, we build upon previous knowledge. Thanks to the Internet, this knowledge base — and rate of information exchange — is increasing rapidly.

Nanotechnology will increase your standard of living. Done right, it will make our lives more secure, improve healthcare delivery, and optimize our use of limited resources. Mankind has spent millennia trying to fill these needs, because it has always known that these are the things it needs to ensure a future for itself. If nanotechnological applications pan out the way we think they will pan out, we are one step closer to ensuring that future.

***Part 1. For questions 1-5 below choose the best answer (A, B, C or D).***

1. The word ‘nano’ is derived from:
2. Latin
3. Greek
4. Italian
5. Japanese
6. One nanometer is equal to:
7. one millionth of a meter
8. one billionth of a meter
9. one million of meters
10. one billion of meters
11. The nanotechnology as a science incorporates the following disciplines:
12. Chemistry, Physics, Biology and Medicine.
13. Engineering and Computer science.
14. All above mentioned.
15. It’s absolutely autonomous.
16. The main tendency in the nowadays technology is:
17. “getting smaller”.
18. “evolving faster”.
19. Striving for better quality and productivity.
20. It represents a combination of all these factors.
21. The nanotechnological applications will contribute to:
22. making our lives more secure and improve healthcare delivery.
23. making it possible not to use the scarce resources left.
24. all above mentioned.
25. none of above mentioned.

***Part 2. Are the statements true or false?***

1. Approximately ten hydrogen atoms need to be lined up end-to-end to make up 1 nm
2. The word “nanotechnology” proper was coined by Nario Taniguchi in 1874
3. The nanotechnology is a cutting-edge science originating only in the XX th century.
4. Nanotechnology is interdisciplinary.
5. Nanotechnology uses the unique properties of nano-scale matter to manipulate molecules more effectively.
6. **Reading Comprehension**

***2.1. Read the text and decide whether the following statements are true (T) or false (F)***

Nanotechnology will disrupt and enhance the business world in the years to come. The ability to manipulate individual molecules and atoms will create countless product and process opportunities in the microelectronic and biotechnological fields. Nanotechnology will help create smaller, stronger, and more precise products, as well as more effective delivery systems. It will radically affect industries in both the near and long term. The nineteenth century saw an industrial revolution led by an array of inventions. Each creation addressed the shortcomings of its predecessor, fulfilled an unmet need, or developed an entirely new solution. The key contributor to this revolution was technological innovation. The conversion of energy—from heat to steam to movement—spawned many applications, such as the spinning jenny, the steam train, and the combustion engine. The application of that breakthrough became the driving force for improvements in existing infrastructure and the creation of new domains. With rapid progress, however, the development curve eventually reached a plateau, and only marginal improvements could be achieved for mechanical devices.

1. Nanotechnology will change and improve the business world in the near future.
2. Inventions are caused by failure of their predecessors.
3. The conversion of energy from heat to steam to movement hampered the development of many applications.
4. Mechanical devices were significantly improved due to the rapid progress of innovations in the nineteenth century.
5. Technological innovation was the main factor of the industrial revolution.

***2.2. Read the text and choose the correct answer to the questions.***

**Computers in everyday life**

Computers make all modern communication possible. They operate telephone switching systems, coordinate satellite launches and operations, help generate special effects for movies, and control the equipment in all phases of television and radio broadcasts. Local-area networks (LANs) link the computers in separate departments of businesses or universities, and larger networks, such as the Internet, permit modems telecommunication devices that transmit data through telephone lines to link individual computers to other computers anywhere in the world. Journalists and writers now use word processors to write books and articles, which they then submit to publishers on magnetic disks or through telephone lines. The data may then be sent directly to computer-controlled typesetters, some of which actually design the layout of printed pages on computer screens.

Computers are used by scientists and researchers in many ways to collect, store, manipulate, and analyze data. Running simulations is one of the most important applications. Data representing a real-life system is entered into the computer, and the computer manipulates the data in order to show how the natural system is likely to behave under a variety of conditions. In this way scientists can test new theories and designs or can examine a problem that does not lend itself to direct experimentation. Computer-aided design, or CAD, programs enable engineers and architects to design three-dimensional models on a computer screen. Chemists may use computer simulation to design and test molecular models of new drugs. Some simulation programs can generate models of weather conditions to help meteorologists make predictions. Flight simulators are valuable training tools for pilots.

Video games are one of the most popular applications of personal computers. The constantly improving graphics and sound capabilities of personal computers have made them popular tools for artists and musicians. Personal computers can display millions of colors, can produce images far clearer than those of a television set, and can connect to various musical instruments and synthesizers. Painting and drawing programs enable artists to create realistic images and animated displays much more easily than they could with more traditional tools. "Morphing" programs allow photographers and filmmakers to transform photographic images into any size and shape they can imagine. High-speed supercomputers can insert life-like animated images into frames of a film so seamlessly that movie-goers cannot distinguish real actors from computer-generated images. Musicians can use computers to create multiple-voice compositions and to play back music with hundreds of variations. Speech processors even give a computer the ability to talk and sing.

1. What are the main features of the modern world?
2. it is the mobility of all services
3. it is the constant need of communication
4. it is the diversity of printing technology
5. What are the basic application of computers?
6. they are used by scientists and researchers
7. they are used by chemists and musicians
8. they are used in our everyday life and every second
9. How do you think what is the most popular application of personal computers?
10. it is video games
11. it is musical synthesizer and producer of sounds
12. it is computer graphics
13. «Morphing» programs are:
14. drawing programs enable artists to create realistic images
15. programs that transform photographic images into any size and shape they can imagine
16. programs which can produce images far clearer
17. Local-area networks are:
18. computer-controlled typesetters
19. the equipments for all phases of television and radio broadcasts
20. networks that link the computers in separate departments of businesses or universities
21. **English in Use.**

***3.1. Read the text and choose the word that best fits each space. Circle the correct letter (a, b, c or d) for each sentence.***

Java is a programming language developed by Sun Microsystems, specially designed to run **1)\_\_\_\_\_\_** the Web. Java programs (called applets) **2)\_\_\_\_\_\_** you watch animated characters and moving text, play music, and interect with information on the screen ( for example, control animations and select options).

Java is an object-oriented language, similar to C++, but more dynamic and 3)\_\_\_\_\_\_ to eliminate possible programming 4)\_\_\_\_\_\_. A Java program is both 5)\_\_\_\_\_\_\_ and 6)\_\_\_\_\_\_\_. First, the 7)\_\_\_\_\_\_\_ code is compiled and converted into a format called bytecode which can then be 8)\_\_\_\_\_\_\_ by a Java interpreter. Compiled Java 9)\_\_\_\_\_\_, known as Java Virtual Machines, for most operating systems.

Java is multi-threaded, meaning a Java program can have multiple parts – that is, many different things processing independently and continuously. This 10)\_\_\_\_\_\_ the program to make the best use of available CPU power.

|  | 1. in | 1. on | 1. for | 1. across |
| --- | --- | --- | --- | --- |
|  | 1. let | 1. allow | 1. permit | 1. give |
|  | 1. complicated | 1. simplified | 1. adapted | 1. monitored |
|  | 1. devices | 1. appliances | 1. inquiries | 1. errors |
|  | 1. coded | 1. threaded | 1. compiled | 1. applied |
|  | 1. interpreted | 1. translated | 1. performed | 1. investigated |
|  | 1. source | 1. bar | 1. access | 1. account |
|  | 1. adapted | 1. executed | 1. oriented | 1. replaced |
|  | 1. code | 1. applets | 1. compilers | 1. intepreters |
|  | 1. lets | 1. converts | 1. overcomes | 1. enables |

***3.2. Read the sentences in English and choose the appropriate translation in Ukraine.***

1. You needn't learn HTML in order to build your own website.

A. Ти можеш не вивчати HTML для того, щоб зробити свій вебсайт.

B. Тобі не потрібно було вивчати HTML для того, щоб зробити свій вебсайт.

C. Якщо хочеш, можеш вивчати HTML для того, щоб зробити свій вебсайт.

D. Тобі не потрібно вивчати HTML для того, щоб зробити свій вебсайт.

2. The delegation of American students was welcomed by everyone at our university.

A. Делегація американських студентів вітала наш університет.

B. Делегацію американських студентів вітали всі у нашому університеті.

C. Наш університет вітав делегацію американських студентів.

D. Bci були раді привітати американських студентів у нашому університеті.

3. By the time she retires, she will have been working for this company for twenty years.

A. До того часу вона вже піде на пенсію, але ще буде працьовати в цій компанії протягом двадцяти років.

B. Вона буде працьовати в цій компанії протягом двадцяти років коли піде на пенсію.

C. До того часу коли вона піде на пенсію, вона буде працювати в цій компанії протягом двадцяти років.

D. До пенсії вона працьовала двадцять років в цій компанії.

4. I can’t believe it. He couldn’t have done this.

A. Я не можу повірити в це, він не здібний зробити це.

B. Не можу повірити, він не міг цього зробити.

C. Не можу повірити, що він колись зробить таке.

D. Не можу повірити, він не зможе зробити це.

5. I know they must have done it.

A. Я знаю, вони повинні були зробити це.

B. Я знаю, вони повинні будуть зробити це.

C. Я знаю, вони напевно зроблять це.

D. Я знаю, це напевно вони зробили.

***3.3. Read the sentences in Ukraine and choose the appropriate translation in English.***

1. Випускник розробив сайт, присвячений основам програмування.

А. The school-leaver developed a site dedicating it to Basics of Programming.

В The graduate has designed a site dedicated to Bacics of Programming.

С. The postgraduate was designing a site that is dedicated to Bacics of Programming.

D. The graduate has dedicated himself to the development of a site ‘Bacics of Programming’.

2. Ми не бачили його з тих пір, як він приїздив до Києва минулої зими.

А. We haven't seen him since he came to Kyiv last winter.

B. We didn't see him since he came to Kyiv last winter.

C. We didn't see him since he had come to Kyiv last winter.

D. We don't see him since he came to Kyiv last winter.

3. Він запитав, чи складатиме вона іспит з англійської мови.

A. He asked her if she will take her English exam.

B. He had asked her if she is going to take her English exam.

C. He asked her if she would take her English exam.

D. He asked her would she take her English exam.

4. Лекції, як правило, відвідуються багатьма студентами.

A. Lectures are usually attended by not many students.

B. Lectures as a rule should not be attended by many students.

C. Lectures won't usually be attended by many students.

D. Lectures are as a rule attended by many students.

5. Скільки треба витратити часу, щоб доїхати до річкового порту?

A. How long does it take to get to the river port?

B. How many hours does it take to reach the river port?

C. How much time will it take to get to the river port?

D. How much time did it take you to get to the river port?

***3.4. Choose the correct answer.***

1. Who \_\_\_\_\_\_ created the Internet.

A. did B. is C. does D. \_\_

1. She’s \_\_\_\_\_\_ university teacher.

A. a B. an C. the D. one

1. Oh! It was such \_\_\_\_\_\_ terrible weather.

A. a B. an C. — D. the

1. I can’t stand this weather. It’s getting \_\_\_\_\_\_.

A. more and more B. worse and worse C. coldest and coldest D. further and further

1. Brian has been working \_\_\_\_\_\_ since he was promoted.

A. much harder B. as harder C. just as hardly D. more hardly

1. This estate has no permanent owner! Who \_\_\_\_\_\_ this time?

A. belonged it B. belongs C. does it belong to D. is belonging it to

1. If I married you, we \_\_\_\_\_\_ unhappy.

A. would have both been B. would both be C. could have been D. will be

1. Tom and Mr. Pitt \_\_\_\_\_\_ a stormy conversation. I wonder what they are talking about.

A. has been having B. have had C. are having D. have

1. Paris is wonderful! I like the food here, and so I \_\_\_\_\_\_ like mad.

A. am eating B. have eaten C. had eaten D. am not eating

1. I’ll never believe another thing that Craig tells me! Last week he told me that he would cut the grass, but he \_\_\_\_\_\_ it yet! It’s still there!

A. didn’t do B. hasn’t done C. hadn’t done D. hardly did

1. The current robot craze \_\_\_\_\_\_ in 1996

A. has started B. started C. had started D. used to start

1. I was tired because I \_\_\_\_\_\_ all day.

A. have been working B. had been working C. worked D. was working

1. The headmaster entered. The boys \_\_\_\_\_\_ for him for a quarter of an hour.

A. waited B. had been waiting C. were waiting D. was waiting

1. Look up in the time-table when the last train \_\_\_\_\_\_ the station.

A. is leaving B. leaves C. will be leaving D. leave

1. By analyzing historical and current data, meteorologists can predict the number of hurricanes that \_\_\_\_\_\_ in the Caribbean in any given year.

A. will appear B. are appearing C. will have appeared D. would appear

1. I liked \_\_\_\_\_\_ you said at the meeting very much.

A. which B. what C. that D. than

1. \_\_\_\_\_\_ I’d like most is a home computer.

A. That B. Which C. What D. Who

1. Unless they \_\_\_\_\_\_ ticket prices, I’m not going to fly anymore. I’m not that rich.

A. don’t lower B. will not lowered C. will lower D. lower

1. Your little robot dog will even bark if you \_\_\_\_\_\_ sound files info his body.

A. put B. had put C. will put D. are put

1. If I had gone to university I \_\_\_\_\_\_ medicine then.

A. would study B. would have studied C. wouldn’t study D. would be studying

***3.5 Choose the correct answer.***

**1**  a world class athlete is a lot harder than it looks.

**a)** For being **b)** To be

**c)** To being **d)** Being

**2** You’d  late for work again or you’ll get fired.

**a)** be better **b)** better not be

**c)** better be **d)** better not being

**3** She went to the doctor because she keeps  headaches.

**a)** on to get **b)** to getting

**c)** to get **d)** getting

**4** She finally stopped  when the price of cigarettes went up again.

**a)** to smoke **b)** the smoke

**c)** smoking **d)** for to smoke

**5** I’ll never  snow for the first time.

**a)** forget seeing **b)** forget to see

**c)** forget to seeing **d)** to forget seeing

**6** Do you ever regret  Canada and returning to your home country?

**a)** to leaving **b)** leaving

**c)** for leaving **d)** to leave

**7** We  a serious accident when you drove through that red light!

**a)** have had **b)** can’t have had

**c)** must’ve had **d)** could’ve had

**8** The neighbours  the music from your party. It was terribly loud. You should go and apologise to them.

**a)** must’ve heard **b)** ’ll hear

**c)** couldn’t hear **d)** can’t have heard

**9** The gym  I go to work out is open twenty-four hours a day.

**a)** when **b)** which

**c)** that **d)** where

**10** I wasn't keen on the restaurant  we went to last weekend.

**a)** what **b)** -

**c)** whose **d)** when

**11** They’re having lunch with his girlfriend’s parents,  live in Brighton.

**a)** they **b)** who

**c)** that **d)** whom

**12** I almost fell over a pile of books  on the carpet.

**a)** that are laid **b)** which lying

**c)** lying **d)** who was lying

**13** A book  by a twelve-year-old girl has won a €10,000 prize.

**a)** wrote **b)** writing

**c)** been written **d)** written

**14**  people’s names has always been something I’ve found incredibly difficult.

**a)** To remember **b)** For remembering

**c)** Remembering **d)** To remembering

**15** If I  to your proposal, when could we sign the contract?

**a)** was agreed **b)** were agreeing

**c)** were to agree **d)** weren’t agree

**16** Children under 15 could attend  they were with an adult.

**a)** providing to **b)** as long as

**c)** if only **d)** as long than

**17** We  show our passports when we left the country.

**a)** mustn't **b)** weren't allowed

**c)** were obliged **d)** didn't have to

**18** We had very little petrol left in the car but we  get home in the end.

**a)** must **b)** managed to

**c)** were able **d)** could

**19** This time tomorrow, they  in San Francisco. How exciting!

**a)** ’ll land **b)** ’ll be landed

**c)** ’ll be landing **d)** have landed

**20** How much do you think he  as director of the company?

**a)** is been paid **b)** has being paid

**c)** ’s being paid **d)** being paid

1. **Writing**

***Write 12-15 sentences on one of the suggested topics:***

* How will technology advance over the next fifty years?
* How important is it to balance technological progress with environmental concerns?
* Technology is improving our lives.