Тест начат	Среда, 21 февраля 2024, 21:09
Состояние	Завершенные
Завершен	Среда, 21 февраля 2024, 21:09
Прошло времени	49 сек.
Оценка	10,00 из 10,00 (100%)

Вопрос **Инфо**

1. Imagine 3d printers and answer the questions. Write your answers in E-workbook. Unit 3.

1. Observing a 3d printer work astonished journalists call it something magical that can create objects out of thin air. How would you call 3d printers?
2. Today it is quite possible to 3D print a gun. A Japanese man has already been sentenced to prison for manufacturing a 3D-printed gun. Why do you think he did it?
3. Policemen around the world are worried about the threat of 3D-printed weapons. They think that 3D printing future is a future of crime. Do you agree with them or disagree? Prove your point of view.
4. If you had a chance to 3D print the only object now, what object would you 3D print? And why?
5. The experts say that in the future our foodstuff can be 3D printed. How do you feel about that kind of food?
6. A 3D printed car has already been a reality. Would you like to be an owner of such a car? Why?
7. The first object has already been 3D printed in the International Space Station. Can you guess what it might be? (a certain kind of tool, a food stuff, a piece of clothing) Why do you think it was 3D printed?

Вопрос **Инфо**

2. Make up a dialogue between a spaceman and newspaper reporter about using a 3D printer in the space station. (*Prepare 5 or 6 sentences from each side. The following text might be used as a prompt*).

On 17 November 2014 the 3D printer was installed and, on 25 November, it was used to print its first object. Now, the ISS crew has printed a socket wrench using instructions sent by e-mail.
Station commander Barry Wilmore had requested the wrench, which would previously have taken months to arrive on a resupply vessel. Instead, the ground crew was able to design the tool using CAD and e-mail the instructions to the ISS for printing. The entire process is far quicker and cheaper than sending parts by rocket, and NASA plans to send a total of 21 objects to the ISS in this way. 3D printing has grown to the point where it has numerous practical applications, even in outer space. Hardly a week goes by without someone finding an innovative new way to exploit the technology and the possibilities seem endless.

sourse: http://www.printware.co.uk/Blog/389/3D-Printing-is-Out-of-This-World-.html

Вопрос **Инфо**

3. Pair work. Talk about the following:

Is there anything you can't print with a3D printer? Not much, it seems.

Students A believe that in the future there will be no factories at all. They will be replaced by 3D printers.

Students B strongly believe the opposite.

Вопрос **Инфо**

4. See the dialogue between a company that produced a 3D printed car and its clients. Some parts of the dialogue are lost. Restore them on your own and act out the dialogue.

- Will I be able to purchase a 3D-printed car someday?

- ---- .

- .....?

- The 3D-printed car is made from ABS plastic that has been reinforced with carbon fiber. Material for these experiments has been donated to Local Motors, Oak Ridge National Laboratory, and Cincinnati Incorporated by SABIC.

- .....?

- Everything on the car that could be integrated into a single material piece has been printed. This includes the chassis/frame, exterior body, and some interior features.

- .....?

Hell yeah. Once the 3D-printed car is cleared by U.S. vehicle rules and regulations, it will be drivable on public roads; our goal is to complete this in 2015.

- How long does it take to 3D print the Strati?

- ---- .

- .....?

- BAAM (big area additive manufacturing) is 3D printing, just much bigger. We use a similar process to most desktop 3D printers that use plastic filament. That process and ours is referred to as FDM (fused deposition modeling).

- .....?

- To our knowledge, we are the first to attempt to print the body and chassis components of a vehicle together. We are the first to eliminate a car's "frame" and integrate all exterior and interior features into a drastically part reduced automotive creation.

Вопрос 1

Верно

Баллов: 10,00 из 10,00

5. **Read and fill in the gaps with the phrases in the table.**

crime scene	ancient and priceless	short run custom	healthcare	multi-colored
tens of thousands of	three dimensional structures	to create prototypes for	biotechnology firms and academia	inkjet techniques

Applications of 3D printing

Applications include design visualization, prototyping/CAD, metal casting, architecture, education, geospatial, (1) healthcare ✔ and entertainment/retail.

Other applications would include reconstructing fossils in paleontology, replicating (2) ancient and priceless ✔ artifacts in archaeology, reconstructing bones and body parts in forensic pathology and reconstructing heavily damaged evidence acquired from (3) crime scene ✔ investigations.

In 2007 the use of 3D printing technology for artistic expression was suggested. Artists have been using 3D printers in various ways.

As of 2010 3D printing technology was being studied by (4) biotechnology firms and academia ✔ for possible use in tissue engineering applications where organs and body parts are built using (5) inkjet techniques ✔ . Layers of living cells are deposited onto a gel medium and slowly built up to form (6) three dimensional structures ✔ . Several terms have been used to refer to this field of research like: organ printing, bio-printing, and computer-aided tissue engineering.

In the last couple of years the term 3D printing has become more known and the technology has reached a broader public. Still most people haven't even heard of the term, while the technology has been in use for decades. Especially manufacturers have long used these printers in their design process (7) to create prototypes for ✔ traditional manufacturing and research purposes. Using 3D printers for these purposes is called **rapid prototyping**.

Why use 3D printers in this process you might ask yourself. Now, fast 3D printers can be had for (8) tens of thousands of ✔ dollars and end up saving the companies many times that amount of money in the prototyping process. For example, Nike uses 3D printers to create (9) multi-colored ✔ prototypes of shoes. They used to spend thousands of dollars on a prototype and wait weeks for it. Now, the cost is only in the hundreds of dollars, and changes can be made instantly on the computer and the prototype reprinted on the same day.

Besides rapid prototyping, 3D printing is also used for **rapid manufacturing**. Rapid manufacturing is a new method of manufacturing where companies are using 3D printers for (10) short run custom ✔ manufacturing. In this way of manufacturing the printed objects are not prototypes but the actual end user product. Here you can expect more availability of personally customized products.

Вопрос **Инфо**

6. Look through the 3D Printing News (A-D). Give your opinion to each piece of news - not less than 30 words, write your answers in E-workbook.

A. Boeing wants to patent 3d printing of aircraft parts

Boeing applied for a patent and the documentation was recently published by the U.S. Patent and Trademark Office (USPTO) showing it is patent application for 3d printing of aircraft parts and that they are already massively using this technology in active aircraft!

Besides Boeing trying to patent the 3d printing of aircraft parts it is also trying to patent the entire system around it including: "a parts library, a database, a parts management system, and a three dimensional printing system." Boeing describes a method and apparatus for requesting, authorizing, printing, and even paying for aircraft parts under the simple title: "Three Dimensional Printing of Parts". Simple title, HUGE impact and implications!

In a news article by GeekWire, Boeing spokesperson Nathan Hulings stated:

"When production 3D printed parts need replacing, we use 3D printed parts. Right now the company only uses non-metallic 3D printed parts on production programs. (...) We have approximately 300 different part numbers on 10 different aircraft production programs, which amounts tomore than 20,000 non-metallic additive manufactured parts that are on vehicles that we have delivered to our customers. The F/A-18 Super Hornet has approximately 150 parts in the forward fuselage area that have been produced through selective laser sintering."

Not only are they applying for some future applications, but Boeing has actually already installed over 20,000 3d printed parts in flying airplanes! The parts currently used are not metallic, but the application is covering "a variety of different materials such as polymers, plasters, metals, and metal alloys".

Since the application of 3d printing is well known in aerospace industry and 3d printed parts are being used in many technologically advanced countries, question remains how will this patent affect complex and intertwined global industry relations? Will there be some counter action by other companies? Will it trigger patent wars? Only future will tell ...

http://3dprinting.com/news/boeing-wants-to-patent-3d-printing-of-aircraft-parts/

B. American Company 3D Printed an Entire Car in 44 Hours

3D printers really seem to be able to do anything. Earlier on this year, a Chinese company managed to 3D print an entire house in just 24 hours. Now, during the International Manufacturing Technology Show 2014 in Chicago, an Arizona-based company called Local Motorsmanaged to top up the wow effect, by creating a working car in 44 hours.

The car, Strati, costed 18,000 dollars to produce and it's an ecologically approached vehicle as well: the vehicle uses battery-power to speed up. It has a battery range of between 120 and 150 miles. In addition, while regular cars use 20,000 components, Strati only uses 40 parts. However, it's not a fast car, as Strati has a top speed of only 40 miles per hour.

Not all parts were made using 3D printing technology. The frame of the car was fully 3D printed, but other parts such as the electric motor, the seats and tires were made on a conventional way. The 3D printed part consists of layers of black plastic and was strengthened with carbon fiber.

It's the company's goal to sell their 3D printed cars for prices ranging from 18,000 to 30,000 dollars. The more features a preferred car will have, the more expensive it will be. The company already exists from 2007 and for this car their 3D printer was supplied by a machine tool maker, which enabled them to print much larger objects.

http://3dprinting.com/products/american-company-3d-printed-entire-car-44-hours/

C. Students Create Chewing Gum 3D Printer

Food printing is one of the segments of 3D printing technology to amaze time after time. On a global scale, people are working on chocolate printers, candy printers and even pancake printers. There are also more healthy experiments with food printing, by companies such as Natural Machines. A new kind of food printing to be added to the ever growing list of 3D printed foods is 3D printed chewing gum. Yes, that's right: chewing gum which comes from a 3D printer.

Meet the GumJet: a 3D printer able to print out chewing gum. Two London-based students - Chia-Ling Lin and Maria Nelson - created their food printer themselves. How they did it, they rather don't reveal, as the printer is still being patented. Nevertheless, the printer is capable of printing out a pretty good looking piece of chewing gum. Their project is called GumLab.

For the same reason, they don't want to spoil any details about their chewing gum filament. However, if you take a look at the video (below) of the process, you'll see exactly how it works. The printer prints the material - gum resin with a flavor - on a layer-by-layer base. Because of this approach, they are able to print pieces of gum in any kind of shape.

It is the variety of shapes that makes their chewing gum pieces worth the try, say the students. Because they are able to create chewing gum with any kind of texture, you can feel the textures in your mouth. The taste of the gum, then? Is it any good? It seems to be the same as normal chewing gum - again: so they say. The team is currently searching for start-ups and foundings to collaborate with them on building a next generation chewing gum printer. It could therefore take a while before we can buy our chewing gum filament online and print out out own gum. A gum printer: would you go for that?

http://3dprinting.com/3dprinters/students-create-chewing-gum-3d-printer/

D. 3D printer that could print billions of organic compounds

Martin D Burke and his team from the University of Illinois have studied and synthesized small molecules with protein-like structures for quite some time. These molecules are in fact the basis of the human body's regulation of biological processes and even make up for the majority of drugs taken by us.

This week, Sciencemag.org reported that Dr Burke and his team developed a 3d printer for chemicals which could simplify the very complex process of chemical synthesis and the creation molecules.

The "3d printer for chemicals" can break down complex molecules to its basic chemical building blocks. The machine is able to identify and analyse each and every different blocks of the molecules which allows the machine break down the complicated structure of the molecules.

The machine is then able to connect all the chemical blocks together one by one, while releasing the unwanted byproducts simultaneously to manage over 200 chemical building blocks. The ability of the machine to manage these blocks enables it to control thousands of molecules, thus making it possible for the machine to print billions of organic compounds.

http://3dprinting.com/products/medical/3d-printer-that-could-print-billions-of-organic-compounds/

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