| | |
|---|---|
| **Тест начат** | Среда, 21 февраля 2024, 17:27 |
| **Состояние** | Завершенные |
| **Завершен** | Среда, 21 февраля 2024, 18:23 |
| **Прошло времени** | 55 мин. 55 сек. |
| **Баллы** | 40,00/40,00 |
| **Оценка** | 10,00 из 10,00 (100%) |

Вопрос 1

Верно

Баллов: 10,00 из 10,00

1. Match the 3D printing vocabulary with the definitions.

| | |
|---|---|
| 1. 3D printing | f ✔ |
| 2. Additive manufacturing (AM) | d ✔ |
| 3. Filament | a ✔ |
| 4. SLS | e ✔ |
| 5. FDM | c ✔ |
| 6. Extruder | b ✔ |
| 7. Stereolithography (SLA) | g ✔ |
| 8. Bioprinting | j ✔ |
| 9. Direct Digital Manufacturing (DDM) | h ✔ |
| 10. Material jetting | i ✔ |

**a.** Building material used in 3D printers. E.g. plastic material made into (often 3 mm or 1.75mm) string to be used as raw material in 3D printers.

**b.** A group of parts which handles feeding and extruding of the build material. Consists of two assemblies: a cold end to pull and feed the thermoplastic from the spool, and a hot end that melts and extrudes the thermoplastic.

**c.** This technology works using a plastic filament or metal wire which is unwound from a coil and supplies material to an extrusion nozzle which can turn the flow on and off.

**d.** is an appropriate name to describe the technologies that build 3D objects by adding layer-upon-layer of material, whether the material is plastic, metal, concrete or one day.....human tissue. The term encompasses many technologies including subsets like 3D Printing, Rapid Prototyping (RP), Direct Digital Manufacturing (DDM), layered manufacturing and additive fabrication.

**e.** It utilizes a high powered laser to fuse small particles of plastic, metal, ceramic or glass. During the build cycle, the platform on which the build is repositioned, lowering by a single layer thickness. The process repeats until the build or model is completed. Unlike SLA technology, support material is not needed as the build is supported by unsintered material.

**f.** is any of various processes used to make a three-dimensional object. Additive processes are used, in which successive layers of material are laid down under computer control. These objects can be of almost any shape or geometry, and are produced from a 3D model or other electronic data source.

**g.** The main technology in which photopolymerization is used to produce a solid part from a liquid.

**h.** It involves fabricating physical objects from a data file using computer-controlled processes with little to no human intervention. It includes Additive Manufacturing (AM), 3D printing, rapid prototyping, etc. The technology is advancing rapidly and has the potential to significantly change traditional manufacturing and supply chain industries, including for information and communication technologies (ICT).

**i.** Synonyms are Multijet modeling, DOD, drop on demand, Thermojet, Inkjet printing, polyjet matrix.It is similar to inkjet document printing, but instead of jetting drops of ink onto paper, PolyJet 3D printers jet drops of liquid photopolymer onto the build tray. Multiple print heads jet material simultaneously to create each layer, and UV light is then used to cure the layers. These layers build up one at a time in an additive process to create a 3D model. Fully cured models can be handled and used immediately without additional post-curing. It is the only additive manufacturing technology that can combine different print materials within the same 3D printed model in the same print job.

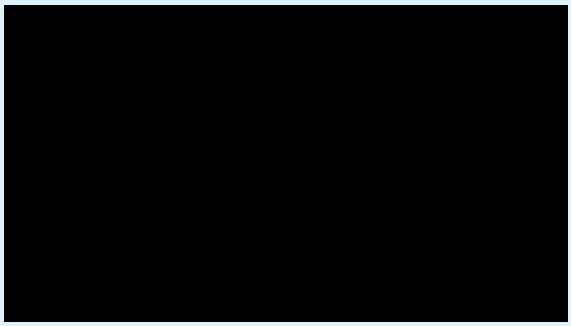
**j.** It is the three-dimensional printing of biological tissue and organs through the layering of living cells. While this area of manufacturing is still in the experimental stage and is currently used primarily in scientific study rather than applied science, the possibility of creating functional replacement tissues or organs could one day transform medical treatment.

Вопрос 2

Верно

Баллов: 10,00 из 10,00

## 2. Watch this video and fill in the gaps with the words in the table.



| | | | | |
|---|---|---|---|---|
| industrial | rock solid | fumes | 3D printing materials | material extrusion 3D printers |
| industrial hardware | hyper filter | wax patterns | brand-new | direct metal printers |

I am at 2014 TCT show in Birmingham, which is a massive 3D printing exhibition with all major industry players present. In addition to software, 3D printing materials ✔ (1) and 3D scanners TCT exhibits a wide range of both personal and industrial ✔ (2) 3D printers. On the personal side we have an all-favoured Ultimaker2 and the Up! Plus 2. Recent favoured by the 5th generation Maker Bot Replicator and XYZprinting da Vinci 2.0 and brand-new ✔ (3) printers including the Threedy from PuzzleShed, Robox from CEL, the Cube 3 from 3D Systems, and the UP BOX from Tiertime. The latter even includes a hyper filter ✔ (4) to stop fumes ✔ (5) escaping from its enclosed in-built area. industrial hardware ✔ (6) at TCT includes direct metal printers ✔ (7) direct metal printers such as the ProX 200 from 3D Systems and M 290 from EOS. There are also specialist industrial printers including the Solidscape Max2 which produses highly detailed wax patterns ✔ (8).

3D printers are based on wide range of technologies with many manufacturers refering to the same process by different names.

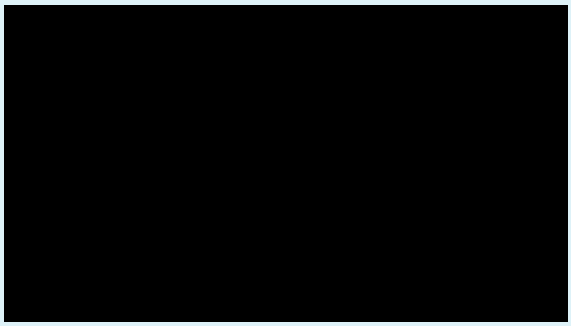
Material extrusion 3D printers ✔ (9) are most common and output melting thermoplastic or same liquid material. Recent and impressive inovation in material extrusion is Mark One from MarkForg3d. This can add a continuous carbon fiber to objects extruded in nylon.As you can see while only nylon prints can easily be flexed, those with enforcement are rock solid ✔ (10).

Вопрос 3

Верно

Баллов: 10,00 из 10,00

## 3. Watch the video and choose the right answer: True, False or Not Stated.



1. TCT exhibition took place in 2015.

- a. False ✔
- b. True
- c. Not Stated

Баллов: 1,00 из 1,00

2. TCT exhibition took place in Silicon Valley in USA.

- a. False ✔
- b. True
- c. Not Stated

Баллов: 1,00 из 1,00

3. Various models of personal 3D printers are exposed at TCT exhibition.

- a. False ✔
- b. True
- c. Not Stated

Баллов: 1,00 из 1,00

4. ProX 200 from 3D Systems is an example of industrial 3D printers.

- a. True ✔
- b. False
- c. Not Stated

Баллов: 1,00 из 1,00

5. To provide some clarity in 2012 the ASTM Standard body placed all 3D printers technologies under 5 categories.

- a. False ✔
- b. True
- c. Not Stated

Баллов: 1,00 из 1,00

6. 3D printing technologies include material extrusion, vat photopolymerization, material jetting, powder bed fusion, sheet lamination, directed energy deposition.

- a. True ✔
- b. False
- c. Not Stated

Баллов: 1,00 из 1,00

7. The first 3D printing technology was Vat photo polymerization.

- a. True ✔
- b. False
- c. Not Stated

Баллов: 1,00 из 1,00

8. Material jetting 3D printers cannot be found at TCT.

- a. False ✔
- b. True
- c. Not Stated

Баллов: 1,00 из 1,00

9. Such printers spray each layer from a print head and set it solid with UV light.

- a. True ✔
- b. False
- c. Not Stated

Баллов: 1,00 из 1,00

10. To build objects from a far wider range of plastical and metal materials powder bed fusion uses a layser, electron beam or other heat sourse to selectively fuse powder granules together.

- a. True ✔
- b. False
- c. Not Stated

Баллов: 1,00 из 1,00

Вопрос 4

Верно

Баллов: 10,00 из 10,00

## 4. Put the word in the correct form to fill in the gaps.

| | |
|---|---|
| 1. The first commercial ✔ 3D printer was based on a technique called stereolithography. | commerce |
| 2. Another 3D printing technology based on the selective ✔ solidification of a tank of liquid — or 'vat polymerization'— is DLP projection. This uses a projector to solidify object layers one complete cross-section at a time, rather than using a laser to trace them out. | select |
| 3. A final 3D printing technology that creates objects by using a light source to solidify ✔ a liquid photopolymer is known generically as 'material jetting', or commercially as 'polyjet matrix'. | solid |
| 4. Rather than solidifying a photopolymer, another category of 3D printer hardware is based on material extrusion ✔ . | extrude |
| 5. Whatever it is called, one of the key benefits of FDM is that objects can be made of out of exactly the same thermoplastics used in traditional injection ✔ moulding. | inject |
| 6. In addition to being used to output plastic objects, material extrusion printers ✔ have also been developed that can output other semi-liquid materials. | print |
| 7. A third broad category of 3D printer hardware creates object layers by selectively sticking together successive layers ✔ of a powdered build material. This can also be achieved in two ways. Firstly, there are printers based on binder jetting (also sometimes known as 'inkjet powder printing'). | lay |
| 8. Binder jetting metal printing has been developed by a company called ExOne (who also make 3D sandcasting printers). Here a layer of bronze or stainless steel metal powder is laid down and a print head moves across it to selectively spray on a binder solution. A heating ✔ lamp then dries the layer, and a fresh layer of powder is rolled over it, and the process repeats. | heat |
| 9.When SLS is used to directly produce metal objects the process is also called direct metal laser sintering (DMLS). Metal objects created by a DMLS 3D printer are about 99.99 per cent dense ✔ , and hence can be used in place of traditional metal parts in the vast majority of applications. (There are some good pages on DMLS | density |
| 10. A closely related 3D printing technique to SLS is known as selective laser melting (SLM). This uses a laser to fully ✔ melt the powder granules that form a final object, rather then just heating them enough to fuse them together. | full |

ПРЕДЫДУЩИЙ ЭЛЕМЕНТ КУРСА

◄ Class Work 3

Перейти на...

СЛЕДУЮЩИЙ ЭЛЕМЕНТ КУРСА

Check Point 3 ►

© 2010-2024 Центр обучающих систем
Сибирского федерального университета, sfu-kras.ru

Разработано на платформе moodle
Beta-version (3.9.1.5.w3)

Политика конфиденциальности

Соглашение о Персональных данных

Политика допустимого использования

**Контакты** +7(391) 206-27-05
info-ms@sfu-kras.ru

Скачать мобильное приложение

Инструкции по работе в системе