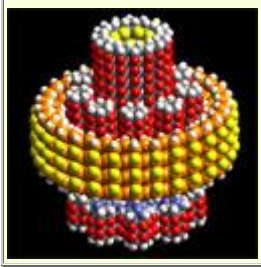
Nano-Quiz

(20 questions to test your nano-IQ)

Question 1: The prefix "nano" comes from a ...

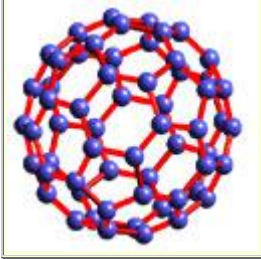
- French word meaning billion
- Greek word meaning dwarf
- Spanish word meaning particle
- Latin word meaning invisible

Question 2: Who first used the term nanotechnology and when?



- Richard Feynman, 1959
- Norio Taniguchi, 1974
- Eric Drexler, 1986
- Sumio Iijima, 1991

Question 3: What is a buckyball?

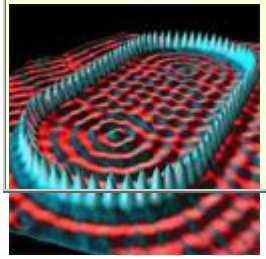


- A carbon molecule (C60)
- Nickname for Mercedes-Benz's futuristic concept car (C111)
- Plastic explosives nanoparticle (C4)
- Concrete nanoparticle with a compressive strength of 20 nanonewtons (C20)

Question 4: Which of these historical works of art contain nanotechnology?

- Lycurgus cup
- Medieval stained glass windows in churches
- Damascus steel swords
- All of the above

Question 5: What is depicted in this famous image?



- Artist's nanoscale illustration of the Circus Maximus in Rome
- Scanning Tunneling Microscope image of electrons surrounded by iron atoms
- Simulation of underwater volcanoes near the Hawaiian Islands

- Nanoscale version of a bear trap to capture nanoparticles

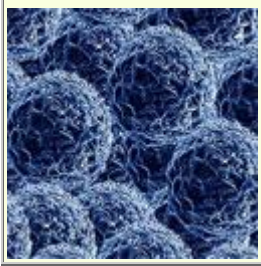
Question 6: Richard Feynman is often credited with predicting the potential of nanotechnology. What was the title of his famous speech given on December 29, 1959?

- There is a tiny room at the bottom
- Things get nanoscopic at the bottom
- Bottom? What bottom?
- There is plenty of room at the bottom

Question 7: How many oxygen atoms lined up in a row would fit in a one nanometer space?

- None; an oxygen atom is bigger than 1 nm
- One
- Seven
- Seventy

Question 8: Which one of these statements is NOT true?



- Gold at the nanoscale is red
- Copper at the nanoscale is transparent
- Silicon at the nanoscale is an insulator
- Aluminum at the nanoscale is highly combustible

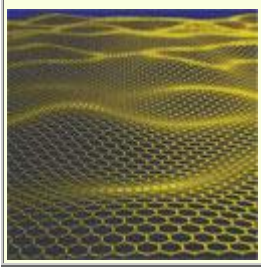
Question 9: Which of these consumer products is already being made using nanotechnology methods?

- Fishing lure
- Golf ball
- Sunscreen lotion
- All of the above

Question 10: If you were to shrink yourself down until you were only a nanometer tall, how thick would a sheet of paper appear to you?

- 170 meters
- 1.7 kilometers (a bit more than a mile)
- 17 kilometers
- 170 kilometers

Question 11: What is graphene?



- A new material made from carbon nanotubes
- A one-atom thick sheet of carbon
- Thin film made from fullerenes
- A software tool to measure and graphically represent nanoparticles

Question 12: Which of these well-known phrases from Star Trek depends on the (fictional) use of nanotechnology?

- Beam me up, Scotty!
- Tea. Earl Grey. Hot.
- You will be assimilated. Resistance is futile.
- All of the above

Question 13: What is grey goo?

- A hypothetical substance composed of out-of-control self-replicating nanobots that consumes all living matter on Earth
- The feeder material used to grow grey nanoparticles in the laboratory
- Toxic byproduct resulting from the synthesis of carbon nanotubes
- Waste product from the production of nanoglue made from the membranes on the feet of the Madagascan Grey Gecko

Question 14: Which one of these condiments is unique due to the nanoscale interactions between its ingredients?

- Ketchup
- Mustard
- Mayonnaise
- All of the above

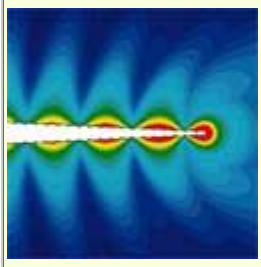
Question 15: Nanorobots (nanobots)...

- Do not exist yet
- Exist in experimental form in laboratories
- Are already used in nanomedicine to remove plaque from the walls of arteries
- Will be used by NASA in the next unmanned mission to Mars

Question 16: What is the 2017 budget for the U.S. National Nanotechnology Initiative?

- $587 million
- $917 million
- $1.4 billion
- $2.1 billion

Question 17: Plasmonics is...



- A field of nanophotonics that holds the promise of molecular-size optical device technology
- The science of fluorescent nanoparticles used in modern fireworks
- A hypothetical science used in science fiction weaponry (plasma cannons)
- The technology used to design and build the laser-guided photonic gyroscopes used in aviation.

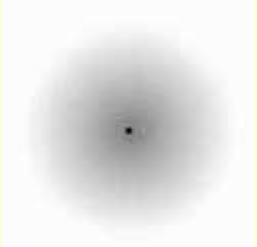
Question 18: Optical tweezers...

- Are used to remove facial hair with miniaturized laser beams
- Use light to manipulate particles as small as a single atom
- Are a nanotechnology-based tool for stamp collectors
- Don't exist

Question 19: A silver coin with a diameter of 4 cm (such as the U.S. silver dollar) contains 26.96 grams of coin silver and has a surface area of about 27.7 square cm. If the same 26.96 grams of coin silver were divided into particles 1 nanometer in diameter, what would their combined surface area be?

- 11.4 square meters
- 140 square meters
- 1,400 square meters
- 11,400 square meters

Question 20: And what exactly is a quantum dot?



- A semiconductor nanostructure that confines the motion of conduction band electrons, valence band holes, or excitons in all three spatial directions.
- The sharpest possible tip of an Atomic Force Microscope
- A fictional term used in science fiction for the endpoints of wormholes
- Unexplained spots that appear in electron microscopy images of

nanostructures smaller than 1 nanometer

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