

VU Medical Zone

BT 405 Midterm Past M.C.Q

1. Nanoscale is considered to cover the range from _____ **1-100nm**
2. 1 nanometer is equal to _____ part of a meter. **Billionth**
3. The study of categories is called _____. **Ontology**
4. Nanoparticles can also be used to deliver chemotherapy drugs to specific cells, such as _____. **Cancer cells**
5. Water filters that are only **15-20 nanometers** wide can remove nanosized particles, including virtually all **viruses and bacteria**.
6. Who used the word Nanobiotechnology for the first time? **Professor Taniguchi**
7. Who Entitled "There is a plenty of room at the botom". **Dr. Richard P. Feynman**
8. The number of Carbon atoms in the Buckyballs is _____. **60**
9. _____ fish consumed by humans worldwide. **50%**
10. The current use of stem cell for _____. **Diabetes and spinal cord injuries**
11. Who developed Humulin (human insulin) to treat diabetes in 1982? **Genentech**
12. Which was the first biotech drug to be FDA approved? **Insulin**
13. Bionanotechnology and Nanobiotechnology are terms that refer to the intersection of _____ **nanotechnology and biology**
14. MRI is the full form of _____. **Magnetic Resonance Images**
15. Nanoparticles can enhance the efficacy of _____ in detecting the spread of cancer. **Magnetic resonance imaging**
16. Nanoparticles such as quantum dots, which emit light of different colors depending on their _____. **Size**
17. Silver (Ag) nanoparticles are embedded in sticking plasters for their ability to inhibit the transmission of **viruses**.
18. _____ to iron oxide nanoparticles that are clearly visible under magnetic resonance imaging (MRI). **Pancreatic cancer cells**
19. Titanium oxide nanoparticles have a comparable _____ property to the bulk material. **UV protection**
20. The diameter of Nanorobots _____. **0.5 to 3 microns**
21. Nanoprobe can be made to _____ that could kill bacteria, viruses and cancer cells. **Generate radiation**
22. The total market for nanobiotechnology products was _____ in 2010. **\$19.3 billion**

VU Medical Zone

23. The most common nanoscale substance used in consumer products is _____ **Nano-silver**
24. Which particles have antibacterial properties? **Silver nanoparticles**
25. _____ has healing and anti-oxident properties. **Nano gold**
26. SAMMS stands for _____ **self assembled monolayers on mesoporous supports**
27. Nanoscience can potentially help us detect and treat cancer at the _____ **Molecular level**
28. SPRI is the full form of _____ **Surface Plasmon Resonance Imaging**
29. More than _____ patients in the U.S. undergo MRIs each year. **25 million**
30. NPs less than _____ show only their surface plasma resonance (SPR). **20 nm**
31. The absorbance and scattering properties of AuNPs can be tuned in accordance with their **size parameter**.
32. _____ is a phenomenon occurring at the metal surface when a beam of light is incident on the surface of the molecules at a particular angle and distance. **Surface plasmon resonance (SPR)**
33. PEG-coated iron oxide gold is a type of core-shell nanoparticles measuring approximately **25 nm** in diameter.
34. AuNPs show excellent behavior of **antiphotobleaching** under the presence of strong light illumination.
35. A grain of sand is _____ **1 million nm or 1 millimeter**
36. A human hair is about _____ thick. **50-100 microns**
37. A human hair is about **1 million** carbon atoms wide.
38. **Quantum mechanics** is a scientific model that was developed for describing the motion and energy of atoms and electrons.
39. One example of a random kinetic motion is _____ **Brownian motion**
40. The energy separation between the valence band and the conduction band is called _____ **Eg (band gap)**
41. _____ is the phenomenon that occurs when radiation hits a structure with dimensions comparable to the incident wavelength. **Scattering**
42. Carbon nanotubes are _____ stronger than steel but _____ lighter. **100 times & six times**
43. Nanomaterials can also be used to improve the _____ of existing materials. **Mechanical properties**
44. _____ is also known as bionics. **Biomimetics**
45. Magnetic nanoparticles of _____ with a mean size of **6 nm** can be encapsulated in these nanocavities. **Iron oxide and cobalt oxide**
46. _____ is a protein that transports and stores iron in an organism. **Ferritin**

VU Medical Zone

47. Diatoms are a large group of eukaryotic microalgae that have a rigid cell wall made of _____ **Silica (SiO₂)**
48. Which organism is evolved in self-healing materials? **Diatoms**
49. _____ molecule is the ability to restrict the passage of contaminants including bacteria, viruses, minerals, proteins, DNA and dissolved gases. **Aquaporin**
50. Which one of the following is forth state of matter? **Liquid Crystal**
51. Which has properties between those of a conventional liquid and those of a solid crystal? **Liquid Crystal**
52. Which phase that exists between solid and liquid? **Liquid Crystal**
53. Which phase in Molecules are long and rod-like in shape? **Nematic Phase**
54. If gold is shrunk to a nanoparticle, it changes colour, becoming _____ **Red**
55. Iron nanoparticles are _____ more reactive than commonly used iron powders. **10 to 1 000 times**
56. Which nanoparticles have a strong antibacterial capacity? **Silver**
57. Nanofibers have **50 to 1000** nanometers in diameter.
58. The _____ is between the valence band and the conduction band. **Band gap**
59. A quantum dot (QD) has a discrete quantised energy spectrum, so it can absorb a specific wavelength and emit a **monochromatic colour.**
60. _____ is the most widely used white pigment because of its brightness. **Titanium dioxide**
61. Like TiO₂, it is used for solar photocatalytic remediation _____ **Zinc oxide (ZnO)**
62. Which one is the main component of quartz? **Silicon dioxide (SiO₂)**