

JAF02 Unit 10 Nanotechnology

Task 1 The strange new world of nanoscience

(<https://www.youtube.com/watch?v=70ba1DByUmM>)

Watch the video and note down the following:

- nano inspiration from nature
- potential of new nano structures - applications

Task 2 Reading - Nanotechnology in Medicine Application: Drug Delivery

The use of nanotechnology in medicine o_____ some exciting possibilities. Some techniques are only imagined, while others are at various stages of testing, or actually being used today.

Nanotechnology in medicine involves applications of nanoparticles currently under development, as well as longer range research that involves the use of manufactured nano-robots to make repairs at the cellular level (sometimes r_____ to as *nanomedicine*).

Whatever you call it, the use of nanotechnology in the field of medicine could revolutionize the way we detect and t____ damage to the human body and disease in the future, and many techniques only imagined a few years ago are making remarkable progress towards becoming realities.

One application of nanotechnology in medicine currently being developed involves employing nanoparticles to d_____ drugs, heat, light or other substances to specific types of cells (such as cancer cells). Particles are engineered so that they are attracted to diseased cells, which allows direct treatment of those cells. This technique r_____ damage to healthy cells in the body and allows for earlier detection of disease.

Reserchers are developing a method to release insulin that uses a sponge-like matrix that contains insulin as well as nanocapsules containing an enzyme. When the glucose level r____ the nanocapsules release hydrogen ions, which bind to the fibers making up the matrix. The hydrogen ions make the fibers positively charged, r_____ each other and creating openings in the matrix through which insulin is released.

(<http://www.understandingnano.com/medicine.html>)

Task 3 Vocabulary

- a) Make opposites of the following words using the prefixes below. You can use some of them more than once.

ab- dis- im- in- ir- mal- over- un-

1. correct _____
2. undersized _____
3. adequate _____
4. detected _____
5. normal _____
6. sufficient _____
7. proportionate _____
8. regular _____
9. balance _____
10. function _____
11. operable _____
12. necessary _____
13. possible _____
14. competent _____
15. reliable _____
16. estimate _____
17. stable _____

- b) Complete the following sentences using the words in ex. a. Sometimes more than one word is possible.

1. The temperature gauge was faulty. That's why it was giving _____ readings.
2. The shaft was thinner than it should have been, so its strength was _____ .
3. The power output from the motor varies. We don't understand why it's _____ .
4. The machine's not working as it should. There's some kind of _____ .
5. The braking force on both front wheels should be the same. There should not be an _____ .
6. The fault was _____ . None of the maintenance technicians had noticed it.
7. The control panel isn't working, so you can't control the machine. It's totally _____ .