

Name:

Midterm Exam
STS 201, Tahan
March 4, 2005

Part 1: Definitions

Define **3 of the 4** terms below.

Nanoparticles:

Top-down:

Buckyballs:

STM:

Define **3 of the 4** terms below.

Social Construction of Technology:

Technological somnambulism:

3.) Give three examples of new phenomena or properties of nanoparticles. For each, explain why they only occur in the nanoscale.

a.

b.

c.

4.) What are the two historical views of progress that Leo Marx describes in his article “Does Improved Technology Mean Progress”?

What does Marx urge us, as a society, to take away from his analysis?

5.) In a semiconductor crystal, the “bandgap” refers to the energy separation between the empty conduction bands and the core valence bands, which are filled with electrons. Heat or light can excite an electron from the valence band to the conduction band.

What happens when the excited electron relaxes or falls back into the conduction band?

What happens to the bandgap as a semiconductor nanocrystal is decreased in size? How might this effect the use of these quantum dots for medical applications?

6.) Winner introduces two ways in which artifacts can contain political properties. What are they? Give their definitions. Give an example of each kind.

Part 3: Essay.

Consider nanomaterial-based stain-proof, stink-proof, antibacterial super clothes. From your knowledge of the reading, how might Leo Marx, Langdon Winner, and Kline and Pinch react to this technology and its societal implications. (Use only the rest of this page.)