

Menofia University
Faculty of Engineering
Dep. : Production Engineering

Time : 3 Hours.
Date : ~~13/1/2018~~ 13/1/2018
Subject : Nano Technology, level 500

Answer the following Questions (using sketches whenever possible.)

1- Define the following terms and cite their applications:- (50 Points)

- a) Nanoscience,
- b) Nanotechnologies,
- c) Nanostructured material,
- d) ~~nanos~~ Dendrimers
- e) Dye-Sensitized Nano solar-cells,
- f) Proton- exchange membrane fuel cells,
- g) Graphene,
- h) Quantum dots,
- i) Scanning tunnelling microscope,
- j) Nanoreactors.

2- Outline the specific properties of materials at the Nanoscale and then declare what makes NANO special? (15 Points)

3- Describe the different methods for manufacturing Nanostructures. (15 Points)

4- Cite the applications of Carbon Nanotubes in the following sectors:-

- Energy
- Medicine
- Transportation
- Civil Engineering

(20 Points)