

Instructions to candidates

Duration: One (01) Hour

Number of questions: Essay 04

Answer All Questions

Mark allocation: 100 Mark

Illustrate your answers with sketch/diagrams where necessary

1.
 - a. Define the term *Nanotechnology*. [06 mark]
 - b. There are different areas that present world utilized nanotechnology. State four different areas at least with three examples for each. [09 mark]
 - c. What are the two approaches in Nano fabrication? Briefly explain with examples. [10 mark]

2.
 - a. What is Photolithography? [03 mark]
 - b. State the basic requirements for Photolithographic process. [06 mark]
 - c. Briefly explain the four major steps in Photolithography. [12 mark]
 - d. How Electron beam lithography differ from photolithography? [04 mark]

3.
 - a. Differentiate Graphite oxide, Graphene oxide, Graphene and Carbon Nanotubes (CNT). [08 mark]
 - b. Explain the synthesis process of Carbon Nanotubes (CNT) from Sri Lankan vein graphite by Arc-Discharge Method. [14 mark]
 - c. State three specific properties of Carbon Nanotubes (CNT). [03 mark]

4.
 - a. What is Sol gel method and what are the major steps in this method? [08 mark]
 - b. What are the two types of precursors, made from "Ilmenite" and "Rutile" in order to synthesis of nano TiO₂? Briefly explain precursor production processes. [10 mark]
 - c. Briefly explain the antibacterial effect of nano TiO₂ with reference to its photocatalytic activity. [05 mark]

