



RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

BSc Honours in Chemistry
Fourth Year— Semester I Examination —July/August 2023

CHE 4206 – NANOCHEMISTRY

Time: Two (2) hours

Answer all questions

1. (a) (i) What is a nanometer? (5 Marks)
(ii) Describe Nanotechnology according to the National Nanotechnology Initiative (10 Marks)
(iii) Draw diagrams and explain nanomaterials with different types of dimensions. Provide an example for each dimension (45 Marks)
- (b) (i) Name five examples of nanotechnology in nature. (20 Marks)
(ii) Describe any two products developed by mimicking nature (20 Marks)
2. (i) List five different types of nanomaterials with a short description for each material (20 Marks)
(ii) Describe the reason for different color formations of silver nanoparticles due to their sizes (30 Marks)
(iii) Describe the electrospinning technique with diagrams to make nanofibers and any three of the essential properties of electrospun nanofibers (50 Marks)
3. (i) What are the primary approaches for preparing nanomaterials? (20 Marks)
(ii) List five applications of photolithography (20 Marks)
(iii) Describe the main steps of photolithography (60 Marks)
4. Answer all questions based on your knowledge of characterization techniques of nanomaterials.
(a) (i) Give two techniques to identify the crystalline structures of nanomaterials (10 Marks)
(ii) Name four techniques used to identify the elemental composition of nanomaterials (20 Marks)
(iii) Name two techniques to identify particle sizes of nanomaterials (10 Marks)

(b) Identify each technique using the following figures

(10 Marks per technique and a total of 60 Marks)

