



THE AMERICAN COLLEGE, MADURAI

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

Re-accredited (2nd Cycle) by NAAC with Grade "A", CGPA – 3.46 on a 4-point scale

Backlog Arrear Examination, March 2021

PGC 5428/5528

Nano and Green Chemistry

Time: 3 Hours

Max Marks: 75

Answer any FIVE questions

5X15 = 75

1. By drawing suitable diagrams wherever possible, explain a scanning electron microscopy and infra-red spectroscopy techniques to be employed to investigate material at the nanoscale.
2. With neat sketch explain the preparation of metal nanoclusters by laser evaporation method. Discuss its reactivity with various gases.
3. Briefly discuss the protocol for nanodrug administration via oral and nasal routes.
4. a) What are carbon nanotubes? List the methods for producing carbon nanotubes and explain any one of the method with a neat sketch? (2+8)
b) Give a detailed account on mechanical properties of carbon nanotubes. (6)
5. Discuss in detail the twelve principles of green chemistry as proposed by Paul Anastas and John Warner.
6. a) Explain the requirements of an organic synthesis to be eco-friendly. (7)
b) Write a brief account on microwave heating, its requirements, superiority and limitations in organic synthesis. (8)
7. a) Give a note on Environmentally friendly green techniques (7)
b) Green chemistry looks unto botanicals for agrochemicals rather than organic synthetics. Explain. (8)