

**St. Joseph's College of Arts & Science (Autonomous)
Cuddalore – 607001**

**PG & RESEARCH DEPARTMENT OF PHYSICS
SUBJECT: PHYSICS OF NANOMATERIALS
SUBJECT CODE: EPPH912
STAFF INCHARGE: Mr.M.Sathish**

PART - C

UNIT-1 {TEN MARKS}

- 1) Discuss and plasma arching and cvd techniques with suitable diagram and give their advantage and disadvantages?
- 2) Discuss the various solgel process to synthesis nanoparticles and explain with help of neat diagram?

UNIT-2

- 1) Discuss in detail about the metal nanoparticles and silver sulfide nanocrystals?
- 2) Synthesis cdTe and cds using reverse micellar mechanics?
- 3) Synthesis of nano semiconducting particles with atleast two example?

UNIT-3

- 1) How will you estimate the nanoparticle size using XRD, TEM, AFM & MFM?
- 2) Write short note on quantum electronic devices, quantum information and quantum computers?
- 3) Explain in detail the line of nano materials in catalyst, as reagents and absorbents?

UNIT-4

- 1) Discuss light and nanotechnology and quantum field effect transistors?
- 2) Write short notes on i) quantum electronic device ii) quantum information iii) quantum computers

UNIT-5

- 1) Write a note on ageless materials and drug delivery system become effective with nanoparticles?
- 2) Discuss with eg how drug delivery system become effective with nanoparticles?
- 3) Application of DNA array devices and write a short note of drug delivery?
- 4) Write note on Optoelectronic devices and DNA CHIPS?
- 5) Write a essay on nanobiotechnology?

PART - B

5 marks

Unit 1

- 1) Classify nanomaterials with diagram?
- 2) Explain ball milling and nanoparticle application.
- 3) Explain detail in historical background of nanoparticle studies.
- 4) Explain the synthesis of nanomaterial using solgel method.
- 5) Explain the synthesis of nanomaterial CVD and plasma arch.

Unit 2

- 1) Explain the merits and demerits of solution based nano fabrication techniques?
- 2) Advantage of synthesizing nanomaterials by chemical method?
- 3) Write a note on nano manipulator?
- 4) How will you synthesis the metal nano particles.
- 5) Give an account on the background of quantum semiconductors.

Unit 3

- 1) Explain the variation of magnetism behaviour with size?
- 2) Write a note on metal nanoparticle?
- 3) Give an account on nanolithography.
- 4) How the magnetic effect changes with the size of the nano particle.

Unit 4

- 1) Explain the CVD method for the synthesis cNTs?
- 2) Discuss nano holes and photons?
- 3) How the nano tubes are formed explain?
- 4) Discuss about the use of nano tubes?

Unit 5

- 1) Give an account Optoelectronic device and applications?
- 2) Discuss about colourant and pigments?
- 3) Brief on nanoelectronics?
- 4) Discuss brief theory behind the branch of nanomechanics?
- 5) What is meant by DNA chips and explain nanobiotechnology plays a vital role in thi

PART - A

2 Marks

- 1) Different types of nanomaterial preparation?
- 2) The term 3d nanoparticles?
- 3) Different types of methods of synthesis available?
- 4) Quantum dots?
- 5) Define the term of DNA chips and robots?
- 6) Explain the two application of optoelectronics device?
- 7) Define nanoparticles
- 8) Define the term plasma
- 9) Explain one important characteristics of metal and semiconductor?
- 10) Define optoelectronic device?
- 11) Define Ageless materials ?
- 12) Nanomaterials and nanotechnology?
- 13) Merits and demerits of ball milling?
- 14) Synthesizing methods for nanoparticles?
- 15) Define nanomanipulator
- 16) Define nanomechanics
- 17) Explain anyone historical perspective of nanoparticles?
- 18) List the preparation method of nanomaterial?
- 19) Anyone important application of reverse micellar method?
- 20) Define nano tweezers?
- 21) What is colourants and pigments?
- 22) What is principles of ball milling techniques?
- 23) Give applications of quantum dots?
- 24) Role of nanomaterials in robots?
- 25) What is known as FeDMS?
- 26) How will you are nano particles as chemical reagent?
- 27) What are different types of carbon nanotubes?
- 28) What are the different techniques and for the nanotube preparation?
- 29) What is meant by magnetism in reduced size particles?
- 30) What is nanolithography?
- 31) Write down any four application of DMS?
- 32) List out the important properties of nano tubes?