

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 600 086.**  
**(For candidates admitted during the academic year 2015-16)**

**SUBJECT CODE : 15PH/AE/FN45**

**B.Sc. DEGREE EXAMINATION APRIL 2017**  
**FOURTH SEMESTER**

**COURSE : ALLIED ELECTIVE**  
**PAPER : FUNDAMENTALS OF NANOSCIENCE**  
**TIME : 3 HOURS** **MAX. MARKS : 100**

**SECTION – A**

**Answer ALL the questions:** **(10 x 3 = 30)**

1. Brief about nano scale.
2. What is top-down approach?
3. What are quantum dots?
4. What are the two types of CNTs?
5. Compare CVD with PVD.
6. Mention the properties of Au nano particles.
7. What is photoluminescence?
8. Explain the principle of electron microscope.
9. What is photocatalysis?
10. Write a note on biosensors.

**SECTION – B**

**Answer any FIVE questions:** **(5 x 5 = 25)**

11. Explain why the bulk properties change at nano scale?
12. Explain the properties of graphene.
13. Explain the ball milling method of preparing nano particles.
14. Compare SEM with TEM.
15. Explain, how nano materials find application in solar cells.
16. Explain about quantum confinement.
17. Brief about the optical properties of metal nano particles.

**SECTION – C**

**Answer any THREE questions:** **(3 x 15 = 45)**

18. What are CNTs? Discuss about the various (a) properties and (b) applications of them.
19. Describe how nano particles are prepared by, (a) sol-gel method, and (b) sputtering deposition.
20. Explain the power XRD characterisation technique with principle, diagram and explanation?
21. Explain the applications of nano particles in life science, (a) nano medicine, and (b) drug delivery.

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