

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

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

**B.Sc. DEGREE EXAMINATION APRIL 2018**  
**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. What are Nanomaterials?
2. Explain the energy band structure of metals.
3. Give any two properties exhibited by metal nanoparticles?
4. What are semiconductor nanoparticles?
5. Give any two physical approaches for nanoparticle synthesis.
6. What is agglomeration?
7. Explain the principle behind X-ray diffraction.
8. What do you mean by HRTEM.
9. What are solar cells?
10. What is bio-compatibility?

**SECTION – B**

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

11. Write a short note on nanomaterials found in nature.
12. Explain briefly the important applications of noble metal nanoparticles.
13. Draw a flow chart explaining the sol-gel synthesis.
14. Explain the working principle of UV-vis spectrophotometer.
15. What is targeted nano drug delivery? Explain.
16. Compare TEM and SEM.
17. What is hydrothermal synthesis? Explain its advantages.

**SECTION – C**

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

18. Briefly narrate the history of nanomaterials?
19. What are carbon nanostructures? Explain in detail the various carbon nanostructures.
20. What is solvothermal synthesis? Explain in detail the synthesis procedure for the same.
21. Explain XRD technique for material characterization?

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