

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086**  
**(For candidates admitted during the academic year 2015 – 2016 & thereafter)**

**SUBJECT CODE: 15BI/PC/BP14**

**M. Sc. DEGREE EXAMINATION, NOVEMBER - 2017**  
**BIOINFORMATICS**  
**FIRST SEMESTER**

**COURSE : CORE**  
**PAPER : BIOPHYSICS**  
**TIME : 3 HOURS**

**MAX. MARKS: 100**

**SECTION – A**

**ANSWER ALL QUESTIONS:**

**(20X1=20)**

1. Define Covalent bond.
2. Write about  $SP^3$  hybridization?
3. Rutherford model.
4. Define entropy.
5. Write about FTIR?
6. State Beer-Lambert's law.
7. What is the wavelength range of Visible & UV light?
8. Write about spectrofluorometer?
9. 2D NMR.
10. What is proton spectroscopy?
11. Define NOE.
12. Nuclear spin.
13. Define MALDI.
14. Write about trypsin and chymotrypsin?
15. Linear ion trap.
16. Define TOF.
17. Crystal.
18. Electron diffraction.
19. van der Waals force.
20. Spin–spin interaction.

**SECTION- B**

**ANSWER ANY FOUR QUESTIONS**

**(4X10=40)**

21. Write about types of atomic spectra?
22. Explain hybrid orbitals.
23. Write about Infrared spectroscopy.
24. What are the applications of NMR?
25. Explain in detail the various chemical bonds
26. Write about peptide mass fingerprinting?
27. Write about principles and modes of AFM?

**SECTION – C**

**ANSWER ANY TWO QUESTIONS**

**(2X20=40)**

28. Explain the laws of thermodynamics and its applications.
29. Write the principle, instrumentation and applications of Fluorescence Spectroscopy?
30. Explain Principle, Methodology and applications of Mass spectrometry and MALDI-TOF
31. Write about mechanisms of crystal growth and X-ray Diffraction technique in detail?

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