



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**M.Sc. DEGREE EXAMINATION – FOOD CHEMISTRY AND FOOD PROCESSING**

**FIRST SEMESTER – APRIL 2019**

**FP 1808– ANALYTICAL AND INSTRUMENTATION TECHNIQUES**

Date: 04-04-2019  
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

**Part A**

**Answer all the questions.**

10 x 2 = 20 marks

1. Write the principle of atomic absorption spectroscopy.
2. State the selection rule for IR spectroscopy.
3. What is meant by finger print region in IR spectroscopy?
4. How will you differentiate inter and intra molecular hydrogen bonding using NMR spectroscopy?
5. Define spin-spin splitting in NMR spectroscopy.
6. List out the various types of detectors used in gas chromatography.
7. State nitrogen rule in mass spectroscopy.
8. What are polydentate ligands? Give an example.
9. Mention any two important applications of HPLC in food industries.
10. What is meant by ascending technique in paper chromatography?

**Part B**

**Answer any eight questions.**

8x5=40 marks

11. Describe the instrumentation of UV-Visible spectroscopy.
12. How will you determine the pH of milk using pH meter?
13. Write a note on various types of detectors used in atomic absorption spectroscopy.
14. Describe various types of molecular vibrations possible in IR spectroscopy.
15. Explain the various types of isomerism existing in coordination compounds.
16. Discuss the instrumentation of NMR spectroscopy.
17. Define coupling constant. Why does tetra methylsilane used as standard?
18. List out any four applications of super critical fluid chromatographic technique.
19. Describe various factors influencing the fragmentation of ions in mass spectroscopy.
20. Explain the importance of molecular ion peak in mass spectra.
21. Write the principle and procedure for thin layer chromatography.
22. Define  $R_f$  value. Mention the various factors affecting it.

### Part C

Answer any four questions.

4x 10=40 marks

23. a) How will you determine the amount of riboflavin present in curry leaves using spectrofluorimetry?(5)
- b) Describe the various types of electronic transitions in UV-Visible spectroscopy (5)
24. a) What are primary and secondary standard solutions? Give examples.(4)
- b) What are cis –trans isomers? Give an example for each.(3)
- c) How will you determine the force constant using Hookes law? (3) 25.
- Define chemical shift. Explain any three factors affecting chemical shift.
26. a) Describe the fragmentation pattern of amines and nitro compounds in mass spectra.(6)
- b) Write the importance of isotopic peak in mass spectra. (4)
27. Describe the principle, procedure and applications of column chromatography.
28. Explain the principle and instrumentation of gas chromatography.

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