



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIRST SEMESTER – NOVEMBER 2017

FP 1808 – ANALYTICAL AND INSTRUMENTATION TECHNIQUES

Date: 09-11-2017

Dept. No.

Max. : 100 Marks

Time: 01:00-04:00

Part A

Answer **ALL** questions:

(10X2=20) marks

1. What are primary and secondary standard solutions?
2. State Beer – Lambert's law.
3. How will you differentiate inter and intra molecular hydrogen bonding using IR spectroscopic technique?
4. Mention any four important characteristics of solvents used in NMR spectroscopy.
5. Define coupling constant.
6. What is meant by linkage isomerism in coordination compounds?
7. State nitrogen rule in mass spectrometry.
8. Write any four important characteristics of adsorbent in column chromatography.
9. Mention any two applications of HPLC in food analysis.
10. Write the principle of gas chromatographic technique.

Part – B

Answer **ANY EIGHT** questions:

(8 X 5 = 40) marks

11. Describe the four types of electronic transition in UV – Visible spectroscopy.
12. Discuss the various types of bending vibrations in IR spectroscopy.
13. What are chromophores and auxochromes? Give an example for each.
14. How will you determine the amount of Fe(III) in presence of aluminum by spectrophotometric titration method?
15. Write a note on spin –spin coupling in NMR spectroscopy.
16. Describe the instrumentation of NMR spectroscopic technique.
17. What are acidic and basic buffers? How are they prepared?
18. Write a note on various types of relaxation in NMR spectroscopic technique.
19. Discuss the importance of meta stable ions in mass spectroscopy.
20. Describe the fragmentation pattern of alcohol in Mass spectroscopy.
21. Explain the instrumentation of atomic absorption spectroscopy.
22. Discuss the applications of gas chromatography in food industries.

Part – C

Answer **ANY FOUR** questions

(4 X 10 = 40) Marks

23. a. Mention the important characteristics of detectors in gas chromatography.
b. Define molarity and normality. How will you prepare 700ml of 0.5M solution of NaCl? (5+5)
24. Describe the principle and instrumentation of super critical fluid chromatographic technique.
25. a. Mention the condition for a molecule to exhibit geometrical isomerism.
b. State Hooks law. How will you determine the vibrational frequency of a bond using Hooks law? (4+6)
26. Define chemical shift. Explain in detail any three factors that affects chemical shift.
27. a. Why is TMS used as a standard in NMR spectroscopy?
b. Write a brief note on molecular ion peak in Mass spectra. (5+5)
28. Write the principle, procedure and application of thin layer chromatographic technique.
