

PARUL UNIVERSITY
FACULTY OF PHARMACY
M.Pharm. Summer 2018-19 Examination

Semester: II
Subject Code: MPC 201T
Subject Name: Advanced Spectral Analysis

Date: 15/04/2019
Time: 10:00am to 1:00pm
Total Marks: 75

Instructions:

1. Figures to the right indicate maximum marks.
2. Make suitable assumptions wherever necessary.

Q.1 Essay Type Questions. (any 2 out of 3) (15 Marks Each) (30)

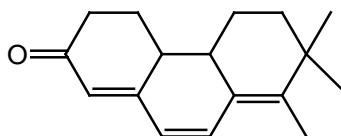
1. Explain the principle, instrumentation and applications of Raman Spectroscopy.
2. Discuss the instrumentation, sample application, development of plates, detection and quantization in HPTLC.
3. Write the principle, instrumentation and applications of DTA.

Q.2 Short Essay Type Questions. (any 5 out of 6) (5 Marks Each) (25)

1. Write note on radio immuno-assay of insulin.
2. Enlist the components of GC-MS and write in brief about the detectors used.
3. Write a brief note on NOESY and COSY.
4. Write short note on Ion pair chromatography.
5. Give the typical fragmentation pattern in 4-Heptanone.
6. Predict the structure of an organic compound with molecular mass 88 whose proton magnetic resonance data is given as follows: (i) a triplet (δ 1.23, 3H) (ii) a singlet (δ 1.97, 3H) (iii) a quartet (δ 4.06, 2H)

Q.3 Short Answers. (2 Marks Each) (20)

1. Calculate the λ_{\max} for the given structure:



2. Calculate the absorption maximum for 3,4-dihydroxy acetophenone.
3. An organic compound dissolves in sodium hydroxide to form a yellow colored solution. It gives brisk effervescence with sodium bicarbonate solution. Its infra-red spectrum exhibits the following absorption bands: (i) 3060-3110 cm^{-1} (ii) 3000-2520 cm^{-1} (iii) 1602, 1510, 1450 cm^{-1} and (iv) 1620, 1375 cm^{-1} (s) and 830 cm^{-1} .
4. Write the principle of flash chromatography.
5. Explain ring rule.
6. Mention the applications of Super critical fluid chromatography.
7. Enumerate the detectors used in LC-NMR and discuss any one in detail.
8. Discuss the applications of GC-AAS.
9. Explain the instrumentation of LC-FTIR.
10. Define meta stable ions.