

**BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE PILANI**

**Pilani-333031. Rajasthan  
Second Semester 2021-2022**

**Mid-semester Examination (Closed Book)**

Course Name: Modern Pharmaceutical Analytical Techniques

Course No: PHA G540

Marks: 30

Time: 90 Min

**Note:** Answer for all questions precisely with appropriate illustrations if required.

Give the answer for all sub-parts together in one place.

Start answer the next question in a fresh page.

1) a) How will you prepare / pre-treat the given sample of isoflurane (volatile GA) for appropriate instrumental analysis and estimate the content of the same indirectly. **(3x3=9)**

b) Write a note on common types of errors in an analytical methods of analysis and how will you overcome the same.

c) As an analytical chemist, how will you check linearity and accuracy of a newly developed analytical method, explain?

2) a) Write a note on LC technique used for separation and purification of Lectin. **(3x3=9)**

b) How will you separate (-)ly charged proteins using appropriate chromatography.

c) Explain the factors affecting the performance of vertical development in TLC.

3) a) Write a brief account on HILIC and grafted TLC. **(3x3=9)**

b) Draw the HPLC chromatogram depicting the following condition,

i) High selectivity and high efficiency; ii) Low selectivity and high efficiency;

iii) High selectivity and low efficiency; iv) Low efficiency and low selectivity.

Write the common ways to improve selectivity, efficiency in any HPLC experiment.

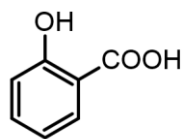
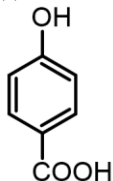
c) Draw the ORD graph depicting single cotton effect and multiple cotton effects of the given sample of camphor.

4) a) A 12 g sample of impure cetirizine is dissolved in 100 ml of water and it's optical rotation determined using 10 cm cell at 25 ° C. If the observed value of rotation is -1.28 °. Calculate the percent by weight (% purity) of cetirizine in the sample. Specific rotation of cetirizine is -12.79 °.

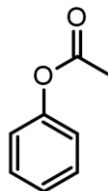
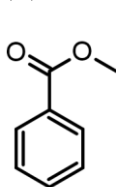
**(2x1.5=3)**

b) How will you differentiate the following using IR spectra,

(i)



(ii)



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