PHC 427: INSTRUMENTAL ANALYSIS (2 + 1)

Course Description

The course concerns with the study of the principles and theoretical bases of electrochemical analysis, spectrophotometric analysis as well as separation methods with regard to instrumentation, and application are also included.

PHC 427 : Practical

Lab. No.

**I. Ultraviolet and visible spectrophotometry**

**1** -Beer's Law - recording - stray light effect - calculation

of constants-deviations - absorabance ratio - log A vs.

plots - optimum conditions - applications.

**2** -Typical benzenoid structures - isosbestic point - solvent

effect - pH effect - dissociation constant - chromophores

& auxochromes.

**3** -Acid-dye technique - compensation method - correction

of linear interference - the ǻA method.

-First and second derivative curves of absorption spectra -

recording - linearity.

**4** **II. Optical rotatory dispersion**

**5** **Practical examination.**

**6 III. High pressure liquid chromatography**

i) Factors affecting the separation and analysis 6

usng HPLC.

ii) Calculation of capacity factor, No. of theoretical

plates and resolution using clobazam stanard and tablets.

Pharmaceutical Applications:

**7** Sulphatriad.

Isoniazid tabs or paracetamol paed. drops.

Continuation:

Septrin tabs (Sulphamethoxazole + trimethoprim).

**8** Chloramphenicol capsules.

**9** **Practical exam.**

**VI. Electrochemical analysisLab. No.**

**10** Non-aqueous potentiometric titrations:

-Use of semi-automatic potentiograph for the assay of basic

medicinal agents in various dosage forms e.g. tablets,

ointment suppori-tories, oily liquid preparation etc. using

acetous 0.1 N - perchloric standard solution.

**11 Polarography**

-Recording of a polarogram of a typical electro-active

substance e.g. Cd++. Determination of E1/2, residual

current, diffusion and limiting currents.

-Demonstration of effect of oxygen during polarographing.

-Demonstration of effect of maximum suppressor and

supporting electrolyte.

Evaluation methods

-Calibration curve method ) Solution of Cd++

) and Zn++ are used

-Standard addition method) for illustration.

-Internal standard method)

Amperometric titration

**12** -Pb++ against SO4

-Pb++ against Cr2O7

Bi-amperometric titration (dead-stop)

**13** -Various medicinal agents (e.g. sulphonamides)

are titrated against standard NaNO2 in dil. HCl medium.

-Determination of moisture content in various

pharmaceutical formulation by Karl Fisher method.

**14** **Practical Examination**