

REGISTRAR



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No.ANU/Acad./U.G/CBCS/III B.Sc/Chemistry/SEM-VI/Syllabus/2017 Date: 18-10-2017

**PROCEEDINGS OF THE VICE-CHANCELLOR**

Sub:- ANU – Academic –UG courses –CBCS – III year B.Sc Chemistry VI semester  
Syllabus - Approval - Orders – Issued.

Ref:- 1. Minutes of the meeting of the Board of Studies (UG) in Chemistry  
held on 25-09-2017.

2. Vice-Chancellor's orders dated 12-10-2017.

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**ORDER:-**

The Vice-Chancellor, after having considered the minutes 1<sup>st</sup> cited, has approved the III year B.Sc Chemistry VI semester syllabus and Model Question Papers for the academic year 2017-18 prepared by the Board of Studies (UG) in Chemistry. The titles of the papers are mentioned below.

**Semester-VI**

1. Paper VII(A)- **Elective:** Analytical Methods in Chemistry

OR

2. Paper VII(B)- **Elective:** Environmental Chemistry

3. Paper VIII(B) **Cluster Electives.**

VIII-B-1: Fuel Chemistry and Batteries

VIII-B-2: Inorganic Materials of Industrial Importance

VIII-B-3: Analysis of Applied Industrial Products

OR

4. Paper VIII( C)- **Cluster Electives.**

VIII-C-1: Organic Spectroscopic Techniques

VIII-C-2: Advanced Organic Reactions

VIII-C-3: Pharmaceutical and Medicinal Chemistry

5. **Common Practicals for Elective paper VII: A or B:**

i. Determination of carbonate and bicarbonate in water samples.

ii. Determination of hardness of water using EDTA

iii. Determination of Zn using EDTA

iv. Determination of Alkalinity of water samples.

(BY ORDER)

  
**JOINT REGISTRAR**  
Academic

To  
The Chairman and all members, Board of Studies (UG) in Chemistry, ANU.  
All the Principals of the Affiliated Colleges under ANU area.

Copy to:

The Dean, Faculty of Physical Science, ANU.

The Dean, CDC, ANU.

The Coordinator, UG (Exams), ANU

The Addl. Controller of Examinations, ANU.

The P.A. to Vice-Chancellor/ Registrar/Rector, ANU.

5/10/17, corrected copy

SEMESTER-VI - Electives  
ELECTIVE Paper – VII-(A) : ANALYTICAL METHODS  
IN CHEMISTRY

45hrs (3h / w)

**UNIT-I**

**Quantitative analysis:**

**10h**

- a) Importance in various fields of science, steps involved in chemical analysis. Principles of volumetric analysis :. Theories of acid-base, redox, complexometric, iodometric and precipitation titrations - choice of indicators for these titrations.
- b) Principles of gravimetric analysis: precipitation, coagulation, peptization, coprecipitation, post precipitation, digestion, filtration and washing of precipitate, drying and ignition.

**UNIT-II**

**Treatment of analytical data:**

**7h**

Types of errors, significant figures and its importance, accuracy - methods of expressing accuracy, error analysis and minimization of errors, precision.

**UNIT-III**

**SEPARATION TECHNIQUES IN CHEMICAL ANALYSIS:**

**8h**

**SOLVENT EXTRACTION** : Introduction, principle, techniques, factors affecting solvent extraction, Batch extraction, continuous extraction and counter current extraction. Synergism., Application - Determination of Iron (III)

**UNIT – IV**

**10h**

**Chromatography:** Classification of chromatography methods, principles of differential migration adsorption phenomenon, Nature of adsorbents, solvent systems,  $R_f$  values, factors effecting  $R_f$  values.

Paper Chromatography: Principles,  $R_f$  values, experimental procedures, choice of paper and solvent systems, developments of chromatogram - ascending, descending and radial.

**UNIT -V**

**10h**

Thin layer Chromatography (TLC): Advantages. Principles, factors effecting  $R_f$  values. Experimental procedures. Adsorbents and solvents. Preparation of plates. Development of the chromatogram. Detection of the spots. Applications.

HPLC : Basic principles and applications.

**List of Reference Books**

1. Analytical Chemistry by Skoog and Miller
2. A textbook of qualitative inorganic analysis by A.I. Vogel
3. Nanochemistry by Geoffrey Ozin and Andre Arsenault
4. Stereochemistry by D. Nasipuri
5. Organic Chemistry by Clayden

3

**LABORATORY COURSE – VI**  
**Practical Paper – VII-(A) (at the end of semester VI) 30hrs (2 h / W)**

**50M**

1. Determination of Zn using EDTA

Common practical for Electives A & B are proposed and drafted in the University book.