

## SYLLABUS

MANONMANIAM SUNDARANAR UNIVERSITY, TIRUNELVELI-12

Common Course Structure for other UG Degree Programmes in Sciences

### B.Sc. Zoology

(with effect from the academic year 2021-2022 onwards)

Semester-I				
Part	Subject Status	Subject Title	Subject Code	Credit
I	Language	Tamil / Other Language	C1TL11/ C1MY11	4
II	Language	Communicative English –I	C2EN11	4
III	Core	Invertebrata	CMZO11	4
III	Add on Major (Mandatory)	Professional English for Life Sciences – I	CPLS11	4
III	Major Practical-I	Invertebrata	CMZOP1	1
	Allied	Allied Chemistry	CACH11	3
	Allied Practical	Inorganic Quantitative Analysis	CACHP1	2
IV	Common	Environmental Studies	CEVS11	2



**Total Marks: 100 Internal Exam: 25 marks + External Exam: 75 marks**

**A. Scheme for internal Assessment:**

Maximum marks for written test: **20 marks**

**3 internal tests**, each of **1 hour** duration shall be conducted every semester.

To the average of the **best two** written examinations must be added the marks scored in. The **assignment** for 5 marks.

The break up for internal assessment shall be:

Written test- 20 marks; Assignment -5 marks Total - 25 marks

**B. Scheme of External Examination**

**3 hrs.** examination at the end of the semester

A – Part : 1 mark question two - from each unit

B – Part : 5 marks question one - from each unit

C – Part : 8 marks question one - from each unit

➤ **Conversion of Marks into Grade Points and Letter Grades**

S.No	Marks	Letter Grade	Grade point (GP)	Performance
1	90-100	O	10	Outstanding
2	80-89	A+	9	Excellent
3	70-79	A	8	Very Good
4	60-69	B+	7	Good
5	50-59	B	6	Above Average
6	40-49	C	5	Pass
7	0-39	RA	-	Reappear
8	0	AA	-	Absent

➤ **Cumulative Grade Point Average (CGPA)**

$$CGPA = \frac{\Sigma (GP \times C)}{\Sigma C}$$

- **GP** = Grade point, **C** = Credit
- CGPA is calculated only for Part-III courses
- CGPA for a semester is awarded on cumulative basis

➤ **Classification**

- First Class with Distinction : CGPA  $\geq 7.5^*$
- First Class : CGPA  $\geq 6.0$
- Second Class : CGPA  $\geq 5.0$  and  $< 6.0$
- Third Class : CGPA  $< 5.0$



முதலாம் பருவம்

பாடத்திட்டப்பதிப்பு -2021-2022

## பகுதி – ஒன்று – பொதுத்தமிழ் - முதல் தாள்

### Unit:1

செய்யுள்

தமிழ்த்தாய் வாழ்த்து முதல் நாட்டுப்புறப்பாடல்கள் வரை

பல்கலைக்கழக வெளியிடு,

அனுசித்ரா பப்ளிகேஷன்ஸ், சென்னை-33.

தொலைபேசிஎண் : 044-24743719,

Email : [anuchitrapublications@gmail.com](mailto:anuchitrapublications@gmail.com)

### Unit:2

இலக்கணம் : எழுத்து இலக்கணம்

1. எழுத்தின் விளக்கம்
2. எழுத்தின் வகைகள் - முதல் எழுத்துக்கள், சார்பு எழுத்துக்கள்
3. வினா எழுத்துக்கள், சுட்டெழுத்துக்கள்
4. வல்லினம் மிகும் இடங்கள், வல்லினம் மிகா இடங்கள்
5. ஒலிப்பு மாறுபாடுகளும் பொருள் வேறுபாடுகளும்

### Unit:3

உரைநடை

இலக்கியச்சாரல் - தொகுப்பாசிரியர் முனைவர் ச.அருள்மணி

பிரிசாட் பப்ளிகேஷன்ஸ், சென்னை – 3

### Unit:4

சிறுகதை

நவரத்தினக்கதைகள் - தொகுப்பாசிரியர் முனைவர் சு.நயினார்

அறிவுப்பதிப்பகம்(பி)லிட்., சென்னை –14, தொலைபேசி எண் : 044-28482441

### Unit:5

இலக்கிய வரலாறு

1. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும்
2. சிறுகதையின் தோற்றமும் வளர்ச்சியும்
3. நாவலின் தோற்றமும் வளர்ச்சியும்
4. நாடகத்தின் தோற்றமும் வளர்ச்சியும்
5. நாட்டுப்புறப்பாடல்களின் தோற்றமும் வளர்ச்சியும்



## **PART-1 MALAYALAM**

For B.Com., BCA, B.Sc. Computer Science, B.Sc. Electronics, BBA and other Job Oriented Courses, Part-1 Language will be in the first two semesters only. In that case they are supposed to study Paper-III & Paper-IV only. Other B.A. & B.Sc. Degree Course Students should study all four papers. Each paper shall divide into five units having one or two poems / prose works / parts / chapters etc for detailed study. In addition to these lessons, the teachers should brief about the Origin and History of the Literary Movements, Disciplines, Theories of Classical and Modern Theatre, Print & Visual Media.

The present Board of Studies in Malayalam is strictly adhered to the directions put forwarded by UGC & TANSCHHE Govt. of Tamilnadu. Presently the language learning is closely associated with Print and Visual Media. The learner must be aware about the practicality of the language in the present scenario. That is why in the last semester media literature and art of advertising is included. The new curriculum is designed on par with the Part-1 Malayalam Syllabus of other major Universities in Kerala. The Course Structure is 75% equal in compared with other Universities

### **OBJECTIVE OF THE STUDY**

The study of early days of Malayalam poetry, origin from Pattu movement to contemporary poetry should be introduced. The aim is to develop general knowledge about Malayalam poetry. To Develop ability to appreciate poetry and critical analysis. By understanding the history of poetry and its growth over time, one can understand the various levels associated with poetical studies and criticism.



## UNIT - 1

കവിത - പ്രാചീന-മധ്യകാല കവിതകൾ

പാട്ടുപ്രസ്ഥാനം - മണിപ്രവാളഭാഷ - കവിതയിലുണ്ടായ പ്രവണതകൾ -  
ഗാഥാപ്രസ്ഥാനം - കിളിപ്പാട്ട് - സംസ്കൃത സ്വാധീനം - ഭാഷയുടെ വളർച്ച

### FOR DETAILED STUDY

1. ചെറുശ്ശേരി - കാളിയമർദ്ദനം (കൃഷ്ണഗാഥ)  
കായ്ക്കളെക്കൊള്ളുവാൻ പാഴ്മരമേറീട്ടു...  
... ശാപംകൊണ്ടിങ്ങവൻ വാരായിനും.
2. എഴുത്തച്ഛൻ - പാർത്ഥസാരഥിവർണ്ണനം (അധ്യാത്മരാമായണം കിളിപ്പാട്ട്)  
നിറന്ന പീലികൾ നിരക്കവേ കുത്തി ...  
... കുറഞ്ഞൊരു നേരം.
3. പൂന്താനം - ജ്ഞാനപ്പാന  
സ്ഥാനമാനങ്ങൾ ചൊല്ലിക്കലഹിച്ചു...  
... ഭ്രമിക്കുന്നിതൊക്കെയും.

## UNIT - 2

കവിത - ആധുനിക കവിത്രയം

കവിതയിലെ ആധുനികത - രചനാപശ്ചാത്തലം - പ്രമേയം - ആഖ്യാനരീതി  
എന്നിവയിൽ വന്ന മാറ്റങ്ങൾ - പ്രസക്തി

### FOR DETAILED STUDY

4. കുമാരനാശാൻ - ചണ്ഡാലഭിക്ഷുകി - ഭാഗം രണ്ട്  
തുമ തേടും തൻ പാള കിണറ്റിലി-...  
...തെല്ലിട സുന്ദരി
5. ഉള്ളൂർ - കർണ്ണഭൂഷണം  
താപസമന്ത്രത്തിൻ തത്വപരീക്ഷയാം...  
... പ്രാവിശ്യം മാഴ്ചിട്ടെ.
6. വള്ളത്തോൾ നാരായണമേനോൻ - എന്റെ ഭാഷ  
മിണ്ടിത്തുടങ്ങാൻ ശ്രമിക്കുന്ന പിഞ്ചിളം ...

... മീനിച്ചു നിൽക്കുന്ന തുമ്പത്തുകൾ.

## UNIT- 3

കവിത - ആധുനികപൂർവ്വ-ആധുനികഘട്ടം

ആധുനിക കവിതകളുടെ പ്രോത്സാഹനം - പ്രത്യേകതകൾ - കൈകാര്യം ചെയ്ത  
വിഷയങ്ങൾ - മാനവികത



### FOR DETAILED STUDY

7. വൈലോപ്പിള്ളി ശ്രീധരമേനോൻ - ജലസേചനം
8. എൻ. വി. കൃഷ്ണവാരിയർ - എലികൾ

### UNIT - 4

ആധുനികഘട്ടം

കവിതയിൽ കൈകാര്യം ചെയ്യുന്ന പ്രമേയം - രൂപഘടന - മാറ്റങ്ങൾ - വിവിധ രീതികൾ

### FOR DETAILED STUDY

9. അയ്യപ്പപ്പണിക്കർ - കാടവിടെ മക്കളേ
10. ബാലചന്ദ്രൻ ചുള്ളിക്കാട് - സന്ദർശനം

### UNIT - 5

ആധുനിക-ആധുനികാനന്തരഘട്ടം

പ്രസക്തി - സാംസ്കാരിക - സാമൂഹിക ഇടപെടൽ

### FOR DETAILED STUDY

11. വിജയലക്ഷ്മി - കൗസല്യ
12. എ. അയ്യപ്പൻ - അത്താഴം

### REFERENCE BOOKS

മലയാള കവിതാസാഹിത്യചരിത്രം - ഡോ. എം. ലീലാവതി  
 വർണ്ണരാജി - ഡോ. എം. ലീലാവതി  
 കൈരളിയുടെ കഥ - പ്രൊഫ. എൻ. കൃഷ്ണപിള്ള  
 തെരഞ്ഞെടുത്ത പ്രബന്ധങ്ങൾ - ഡോ. എം. അച്യുതൻ  
 നവോത്ഥാനനരകവിത - എസ്. രാജശേഖരൻ  
 കടലിൽ തങ്ങിയ കാനനഭൂമി - ഡോ. ബി. വി. ശശികുമാർ



ഭാവഗീതത്തിന്റെ അടയാളങ്ങൾ മലയാളകവിതയിൽ - ഡോ. ആർ. എസ്. രാജീവ്  
ഉത്തരകാവുകാന്തി - പ്രകാശനവിഭാഗം, കേരള സർവ്വകലാശാല  
കവിതാപഥം - പ്രകാശനവിഭാഗം, കേരള സർവ്വകലാശാല  
പദ്യസാഹിതി - പ്രകാശനവിഭാഗം, കേരള സർവ്വകലാശാല  
കാവ്യമാലിക - പ്രകാശനവിഭാഗം, കേരള സർവ്വകലാശാല



## PART II ENGLISH

### Unit I

1. Listening and Speaking
  - a. Introducing self and others
  - b. Listening for specific information
  - c. Pronunciation (without phonetic symbols)
    - i. Essentials of pronunciation
    - ii. American and British
    - iii. pronunciation
2. Reading and Writing
  - a. Reading short articles – newspaper reports / fact based articles
    - I. Skimming and scanning
    - II. Diction and tone
    - III. Identifying topic sentences
  - b. Reading aloud: Reading an article/report
  - c. Journal (Diary) Writing
3. Study Skills - 1
  - a. Using dictionaries, encyclopaedias, Thesaurus
4. Grammar in Context:
  - Naming and Describing
    - Nouns & Pronouns
    - Adjectives

### Unit II

1. Listening and Speaking
  - a. Listening with a Purpose
  - b. Effective Listening
  - c. Tonal Variation
  - d. Listening for Information
  - e. Asking for Information
  - f. Giving Information





## 2. Reading and Writing

### 1. a. Strategies of Reading:

Skimming and Scanning

### b. Types of Reading :

Extensive and Intensive Reading

c. Reading a prose passage

d. Reading a poem

e. Reading a short story

### 2. Paragraphs: Structure and Types

a. What is a Paragraph?

b. Paragraph structure

c. Topic Sentence

d. Unity

e. Coherence

f. Connections between Ideas: Using Transitional words and expressions

g. Types of Paragraphs

### 3. Study Skills II:

Using the Internet as a Resource

a. Online search

b. Know the keyword

c. Refine your search

d. Guidelines for using the Resources

e. e-learning resources of Government of India

f. Terms to know

### 4. Grammar in Context

Involving Action-I

a. Verbs

b. Concord

## Unit III

### 1. Listening and Speaking

a. Giving and following instructions

b. Asking for and giving directions

c. Continuing discussions with connecting ideas

### 2. Reading and writing

a. Reading feature articles (from newspapers and magazines)

b. Reading to identify point of view and perspective (opinion pieces, editorials etc.)

c. Descriptive writing – writing a short descriptive essay of two to three paragraphs.

### 3. Grammar in Context:

Involving Action – II

a. Verbals - Gerund, Participle, Infinitive

b. Modals



## **Unit IV**

1. Listening and Speaking
  - a. Giving and responding to opinions
2. Reading and writing
  - a. Note taking
  - b. Narrative writing – writing narrative essays of two to three paragraphs
3. Grammar in Context:  
Tense
  - a. Present
  - b. Past
  - c. Future

## **Unit V**

1. Listening and Speaking
  - a. Participating in a Group Discussion
2. Reading and writing
  - a. Reading diagrammatic information – interpretations maps, graphs and pie charts
  - b. Writing short essays using the language of comparison and contrast
3. Grammar in Context:  
Voice (showing the relationship between Tense and Voice)



## **CORE PAPER: 1.**

# **INVERTEBRATA**

### **OBJECTIVES:**

1. To understand the taxonomy, relationship and evolution of animals.
2. To identify the animals of invertebrate phyla and to recognize their distinguishing features.
3. To appraise the diversity of animals in a phylogenetic context.
4. To understand how different body designs solve biological problems related to physiological and environmental challenges.
5. To develop an appreciation for the role of invertebrates in biological communities, ecological interactions, and conservation problems.

### **UNIT I:**

#### **Classification and introduction & Protozoa**

Concept of five kingdom classification of life. Introduction to Protista & Animal kingdom –Systems of classification & nomenclature -levels of organization - Types of symmetry. Protozoa: General characters of Protozoa & Classification up to Classes with examples.

Type study: Paramecium

General topics: Protozoan parasites, Life cycle of Plasmodium, Locomotion & Nutrition in Protozoa.

### **UNIT II:**

#### **Porifera & Coelenterata**

Characters & Classification up to Classes with examples

Salient features of Ctenophora.

Type study: Leucosolenia & Obelia Colony

General topics: Canal system in sponges, Polymorphism in Coelenterates, Diversity /Types of corals and coral reefs.

### **UNIT III:**

#### **Platyhelminthes, Aschelminthes & Annelida**

Characters & Classification up to Classes with examples.

Type study: Liver fluke, Ascaris & Neries

General topics: Nematode parasites & their adaptations, Metamerism in Annelida, Filter feeding in Polychaetes.

### **UNIT IV:**



## Arthropoda

Characters & Classification up to Classes with examples. Brief description of Limulus & Sacculina.

Type study: Prawn

General topics: Crustacean larvae, Mouth parts of Insects, Social life in Insects, Affinities of Peripatus.

## UNIT V:

### Mollusca and Echinodermata.

Characters & Classification up to Classes with examples.

Type study: Pila & Starfish

General topics: Torsion & de-torsion in Gastropods, Cephalopods as an advanced Mollusc, Pearl and edible oyster culture, Phylogenetic significance of Echinoderm larva.

### Learning Outcome:

- The learner will be able to understand the diversity and basic taxonomy of non chordates.
- The learner will get an idea of adaptation and importance of non-chordates.
- The learner will be able to identify the animal at basic level.
- The paper will give a strong observation skill and prompt him to think about its
- conservation, sustainable economic utilisation and its potentials in technological prospects.

### Books for reference (Use latest Editions)

1. Barnes, R.D. Invertebrate Zoology (1982) VI Edition. Holt Saunders International Edition.
2. Ekambaranatha Ayyar & T.N. Ananthakrishnan, Manual of Zoology Vol –I , Part I & IIS. Viswanathan Pvt. Ltd. Chennai.
3. Kotpal RL, Agarwal SK & Khetarpal RP Invertebrates, Rastogi Publications, Meerut.
4. Jordan And Verma Invertebrate Zoology S. Chand & Co, New Delhi
5. Anderson TA, Invertebrate Zoology, Oxford University Press, New Delhi.
6. Barrington EJW, Invertebrate Structure and Functions. English Language Book Society.
7. Hyman LH, The Invertebrates (6 vols). McGraw-Hill Companies Inc. NY
8. Nair NC, Invertebrata & Chordata, Saras Publication Nagercoil.
9. Nair NC, Leelavathy S, SoundaraPandian NMurugan T & Arumugam N A Text Book of Invertebrates, Saras Publication Nagercoil.



10. Ebanasar J & and Sheeja BD Outlines of five kingdoms of life, Shine and Twinkle Publications, Nagercoil.
11. Mahanta Rita and I.K. Bhattacharyya. Invertebrate Zoology. 1. 11. Kalyani Publishers, B1/1299, Rajaendar Nagpur, Ludhiana-141008.
12. Parker and Haswell. A text Book of Zoology, Invertebrates Volume I. AITBS Publishers and Distributors, J5/6 Krishna Nagar, Delhi-110051
13. Verma, A. Invertebrates: Protozoa to Echinodermata. Naros Publishing House Private Limited.3536 Greams Road, Thousand Lights, Chennai – 6

## **CORE PRACTICAL - I**

# **INVERTEBRATA**

### **1. Dissection and Mountings:**

Cockroach- Nervous System, Digestive System, Trachea, Salivary Apparatus.

### **2. Museum specimens, slides , models and charts:**

Paramecium- entire, binary fission, conjugation, Plasmodium, Marine sponge, Obelia colony, Medusae of Obelia, Madrepora, Favia, Ascaris male and female, Fasciola, Earthworm, Nereis, Chaetopterus, Leech, Prawn, Limulus, Peripatus, Honey Bee, Nauplius larva, Zoea larva, Pila- shell, Sepia, Octopus, Pinctada, Star fish, Bipinnaria larva, Auricularia larva, Sea cucumber.



## **CORE PAPER: 1.2**

# **PROFESSIONAL ENGLISH FOR LIFE SCIENCES –I**

### **OBJECTIVES:**

- To develop the language skills of the students by offering adequate practices in professional contexts.
- To enhance the lexical, grammatical and socio-linguistic and communicative competence of the first year life sciences students.
- To focus on developing students' knowledge of domain specific registers and the required language skills.
- To develop strategic competence that will help in efficient communication.
- To sharpen the students' critical thinking skills and make the students culturally aware of the target situation.

### **LEARNING OUTCOMES:**

- Recognize their own ability to improve their own competence in using the language.
  - Use language for speaking with confidence in an intelligible and acceptable manner.
  - Understand the importance of reading for life.
  - Read independently unfamiliar texts with comprehension.
  - Understand the importance of writing in academic life.
  - Write simple sentences without committing error of spelling or grammar (Outcomes based on guidelines in UGC LOCF –Generic Elective)
- NB: All four skills are taught based on texts/passages.

### **UNIT: I**

#### **COMMUNICATION:**

Listening: Listening to audio text and answering questions-Listening to Instructions-Speaking: Pair work and small group work. Reading: Comprehension passages –Differentiate between facts and opinion. Writing: Developing a story with pictures. Vocabulary: Register specific -Incorporated into the LSRW tasks.

### **UNIT: II**

#### **DESCRIPTION:**

Listening: Listening to process description.-Drawing a flow chart. Speaking: Role play (formal context). Reading: Skimming/Scanning-Reading passages on products, equipment and gadgets. Writing: Process Description –Compare and



Contrast. Paragraph- Sentence, Definition and Extended definition- Free writing. Vocabulary: Register specific -Incorporated into the LSRW tasks.

### **UNIT: III**

#### **NEGOTIATION STRATEGIES:**

Listening: Listening to interviews of specialists / Inventors in fields(Subject specific). Speaking: Brain storming. (Mind mapping). Small group discussions- (Subject- Specific). Reading: Longer Reading text. Writing: Essay writing (250 words). Vocabulary: Register specific -Incorporated into the LSRW tasks.

### **UNIT: IV**

#### **PRESENTATION SKILLS:**

Listening: Listening to lectures. Speaking: Short talks. Reading: Reading Comprehension passages. Writing: Writing: Recommendations-Interpreting Visuals inputs. Vocabulary: Register specific -Incorporated into the LSRW tasks.

### **UNIT : V**

#### **CRITICAL THINKING SKILLS:**

Listening: Listening comprehension-Listening for information. Speaking: Making presentations (with PPT-practice). Reading: Comprehension passages –Note making. Comprehension: Motivational article on Professional Competence, (Professional Ethics and Life Skills). Writing: Problem and Solution essay–Creative writing –Summary writing. Vocabulary: Register specific -Incorporated into the LSRW tasks.



# ALLIED CHEMISTRY I

## Objectives

- To learn theories of chemical bonding.
- To know about the principles and types of organic reactions.
- To understand the various states of substances.
- To know about mostly used inorganic materials.
- To learn the medicine for curing diseases.

## UNIT I

### INORGANIC CHEMISTRY

**Atom:** Composition – Atomic structure – Quantum numbers – Shape of atomic orbitals.

**Bonding:** Overlapping of atomic orbitals s-s, s – p and p-p – Valence bond theory- Sigma and pi bonds – Hybridization –  $sp$ ,  $sp^2$  and  $sp^3$  hybridisations with suitable examples.

**Molecules:** Shape of molecules – VSEPR theory – Intermolecular forces – Hydrogen bonding.

**Molecular Orbital Theory (MOT):** Bonding and Antibonding molecular orbitals – Bond order. MO diagrams: Homonuclear diatomic molecules ( $N_2$ ,  $O_2$  and  $F_2$ ) and Heteronuclear diatomic molecule (HF).

## UNIT II

### ORGANIC CHEMISTRY

**Principles of reactions:** Heterolytic and homolytic cleavage  
Nucleophiles and electrophiles : Definition – Types – Examples.

**Organic reaction intermediates** – Preparation and properties of carbonium ions, carbanions and free radicals – Order of stability of the intermediates. Types of reactions - Substitution, addition, elimination and polymerisation reactions – Illustrations with specific examples.

## UNIT III

### PHYSICAL CHEMISTRY

**Gaseous state:** Postulates of kinetic theory of gases – Derivation of expression for pressure of gas on the basis of kinetic theory – Deducing the basic gas laws. Ideal and real gases- Deviation of real gases from ideal behaviour – Reasons for deviation - Derivation of Vander Waals gas equation.

**Liquid state:** Comparison of gaseous and liquid states. Surface tension –





viscosity – Trouton's rule and its significances.

**Solid state:** Types of solids - Crystals, crystallographic systems - Conductors, insulators and semiconductors. Intrinsic and extrinsic semiconductors.

## UNIT IV

### INDUSTRIAL CHEMISTRY

**Cement:** Manufacture – Wet Process and Dry process, types, analysis of major constituents, setting of cement, reinforced concrete. **Glass:** Composition and manufacture of glass. Types of glasses: optical glass, coloured glasses and lead glass. **Chemical explosives:** Preparation and chemistry of lead azide, nitroglycerine, nitrocellulose, TNT, RDX, picric acid and gunpowder.

## UNIT V

### CHEMOTHERAPY

Preparation, uses and mode of action of sulpha drugs - Prontosil, Sulphadiazine and Sulphafurazole. Uses of Pencillin, chloramphenicol and streptomycin - Definition with one example for analgesics, antipyretics, tranquilisers, sedatives, hypnotics, local and general anaesthetics. Cause and treatment of diabetes, cancer and AIDS.

### Reference Books

1. B.R. Puri, L .R. Sharma, K. C. Kalia , Principles of Inorganic chemistry, 21st edition, Vallabh Publications, 2005.
2. S. Bahl and A. Bahl, Organic Chemistry, 12th edition, New Delhi, Sulthan Chand & Co., 2010.
3. B.R. Puri, L .R. Sharma, Pathania, Principles of Physical chemistry, 35th edition, Shoban Lal Nagin Chand and Co., 2013.
4. B.K. Sharma, Industrial Chemistry, Goel Publishing House, Meerut.
5. James A. Kent, Riegel's Hand Book of Industrial Chemistry, Springer Science, 2013.
6. G.R. Chatwal, Himalaya, Publishing House, New Delhi, 2002.
7. Text Book of Pharmaceutical Chemistry, Jeyashree Gosh S. Chand and company ,New Delhi, 2003



## ALLIED CHEMISTRY PRACTICALS I

# INORGANIC QUANTITATIVE ANALYSIS

**Objective:**

To enable the students to acquire the quantitative skills in volumetric analysis.

**Acidimetry and alkalimetry**

- Estimation of oxalic acid – Std. oxalic acid
- Estimation of  $\text{Na}_2\text{CO}_3$  – Std.  $\text{Na}_2\text{CO}_3$
- Estimation of hydrochloric acid – Std. oxalic acid

**Permanganometry**

- Estimation of ferrous ammonium sulphate – Std. ferrous ammonium sulphate
- Estimation of oxalic acid – Std. oxalic acid
- Estimation of ferrous sulphate – Std. oxalic acid

Internal –50 marks

25 marks - Regularity

25 marks – Average of best four estimations in regular class work

External -50 marks

10 marks – Record (atleast 4 volumetric estimations)\*

10 marks – Procedure

30 marks – Result

\*Experiments done in the class alone should be recorded (Students having a bonafide record only should be permitted to appear for the practical examination).

**Reference books:**

1. G.H.Jeffery, J.Bassett, J.Mendham and R.C.Denny ‘Vogel’s Text book of Quantitative Chemical Analysis’ 5th Edition ELBS, 1989.
2. I.M.Kolthoff and E.A.Sanderson, Quantitative Chemical Analysis, S Chand
3. O.P. Pandey, D.N Bajpai, S. Gini, Practical Chemistry, for I, II & III BSc.Students. S.Chand & Company Ltd reprint 2009.
4. V.K.Ahluwalia, Sunitha Dhingra, Adarsh Gulate College Practical Chemistry, Universities Press (India) Pvt Ltd 2008 (reprint)



# **ENVIRONMENTAL STUDIES**

## **PART IV-COMPULSORY PAPER**

### **UNIT I:**

#### **THE MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES**

Definition, scope and importance Natural resources and associated problems:

- a) Forest resources: Use and over-exploitation, deforestation, timber extraction, dams and their effects on forests and tribal people.
- b) Water resources: Use and over-utilization of surface and ground water, floods, drought, dams-benefits and problems, water conservation and watershed management.
- c) Mineral resources: Use and exploitation, environmental effects.
- d) Food resources: World food problems, changes, effects of modern agriculture, fertilizer-pesticide problems.
- e) Energy resources: Growing energy needs, renewables and non-renewable energy sources, alternate energy sources.
- f) Land resources: Land as a resource, land degradation, man-induced landslides, soil erosion and desertification.
- g) Role of an individual in conservation of natural resources.
- h) Equitable use of resources for sustainable lifestyles.

### **UNIT II:**

#### **ECOSYSTEMS**

- a) Forest Ecosystem
  - b) Grassland Ecosystem
  - c) Desert ecosystem
  - d) Aquatic Ecosystem (Ponds rivers, oceans, estuaries)
- Food Chains, Food Webs and Ecological Pyramids Energy flow in the ecosystem Ecological succession

### **UNIT III :**

#### **BIODIVERSITY AND ITS CONSERVATION**

Introduction Definition: Genetic, species and ecosystem diversity. Bio geographical classification of India Values of Biodiversity

Biodiversity at global, national and local levels India as a mega-diversity nation

Hot-Spots of biodiversity Threats to biodiversity

Endangered and endemic species of India

Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.



#### **UNIT IV: ENVIRONMENTAL POLLUTION**

Definition- Causes, effects and control measures of:-

- a) Air Pollution
- b) Water Pollution
- c) Soil Pollution
- d) Marine Pollution
- e) Noise Pollution.
- f) Thermal Pollution

Solid Waste Management

Disaster Management: Floods, earthquake, cyclone and landslides.

#### **UNIT V: SOCIAL ISSUES AND THE ENVIRONMENT**

Climatic change, global warming, acid rain, ozone depletion.

Wasteland reclamation

Consumerism and Waste products, use and through plastics

Environment Protection Act

Air (Prevention and Control of Pollution Act

Water (Prevention and Control of Pollution) Act

Wildlife Protection Act

Forest Conservation Act

Population Explosion — Family Welfare Programme

Human Rights

#### **REFERENCES:**

1. Vijayalakshmi, G. S., A. G. Murugesan and N. Sukumaran.2006. Basics of Environmental Science, Manonmaniam Sundaranar University Publications, Tirunelveli, pp.160
2. Agarwal. K. C.2001.Environmental Biology, Nidi Publications Limited, Bikaner.
3. A.K. De.1999. Environmental Chemistry, Wiley Eastern Limited, India.
4. Jadhav, H. and Bhosale,V.M.1995. Environmental Protection and Laws, Himalaya Publishing House, Delhi. pp284.
5. Odum, E.P.1971. Fundamentals of Ecology, W.B.Saunders Co.,USA.pp.574.

