## **SYLLABUS**

# MANONMANIAM SUNDARANAR UNIVERISTY, TIRUNELVELI-12

#### **UG COURSES - AFFILIATED COLLEGES**

# **B.Sc. BOTANY**

#### (CHOICE BASED CREDIT SYSTEM) (With effect from the academic year 2021-2022 onwards

Semester-I							
Part	Subject Status	Subject Title	Subject Code	Credit			
Ι	Language	Tamil / Other Languages	C1TL11/ C1MY11	4			
II	Language	Communicative English	C2EN11	4			
III	Core I	Algae and Bryophytes	CMBO11	4			
III	Major Practical I	Algae and Bryophytes -Practical	CMBOP1	2			
III	Add on Major (Mandatory)	Professional English for Life Sciences - I	CPLS11	4			
	Allied	Allied Chemistry	CMCH11	3			
	Allied Practical	Inorganic Quantitatine Analysis	CACHP1	2			
IV	Common	Environmental Studies	CEVS11	2			

Nesamony Memorial Christian College, Marthandam



#### **COURSE OBJECTIVES**

- To introduce the students of Botany to current trends and practices in Biology of plants.
- To restructure syllabus in a job oriented manner.
- To prepare the students of Botany of this university well equipped to meet the demands of various competitive examinations.
- To inculcate the temperament of research in the students of UG course of this branch.

#### ELIGIBILITY FOR ADMISSION

Those who have passed Higher Secondary Examination with Biology/ Botany as one subject in Part III are eligible for admission to B.Sc., BOTANY COURSE.

#### Question paper will consist of (both major and allied)

Part-A: 1-10 Questions	(Objective type from each unit)	(10x1=10 marks)
Part-B: 11-15 Questions	(Internal choice from each unit)	(5x5=25 marks)
Part-C: 16-20 Questions	(Internal choice from each unit)	(5x8=40 marks)





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

#### A. Scheme for internal Assessment:

Maximum marks for written test: 20 marks3 internal tests, each of I 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	0	10	Outstanding
2	80-89	A+	9	Excellent
3	70-79	А	8	Very Good
4	60-69	B+	7	Good
5	50-59	В	6	Above Average
6	40-49	С	5	Pass
7	0-39	RA	-	Reappear
8	0	AA	-	Absent

#### <u>Cumulative Grade Point Average (CGPA)</u>

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

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

#### > Classification

- a) First Class with Distinction : CGPA  $\ge 7.5^*$
- b) First Class

d) Third Class

c) Second Class

- : CGPA  $\geq$  7.5\* : CGPA  $\geq$  6.0
- . COFA 2
  - : CGPA  $\ge$  5.0 and < 6.0
- : 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 : <u>anuchitrapublications@gmail.com</u>

#### 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 வேறுபாடுகளும

#### Unit:3

#### உரைநடை

இலக்கியச்சாரல் - தொகுப்பாசிரியா் முனைவா் 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 & TANSCHE 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 - സംസ്തുത സ്വാധീനം - ഭാഷയുടെ വളർച്ച

#### FOR DETAILED STUDY

1. ചെറ്റശ്ശേരി - കാളിയമർദ്ദനം (കൃഷ്ണഗാഥ) കായ്കളെക്കൊള്ളവാൻ പാഴ്മരമേറീട്ടു... ... ശാപംകൊണ്ടിങ്ങവൻ വാരായിന്നും. 2. എഴുത്തച്ഛൻ - പാർത്ഥസാരഥിവർണ്ണനം (അധ്യാത്മരാമായണം കിളിപ്പാട്ട്) നിറന്ന പീലികൾ നിരക്കവേ കത്തി ... ... കുറഞ്ഞൊരു നേരം.

3. പൂന്താനം - ജ്ഞാനപ്പാന സ്ഥാനമാനങ്ങൾ ചൊല്ലിക്കലഹിച്ചു... ... ഭ്രമിക്കുന്നിതൊക്കെയും.

<u>UNIT - 2</u>

കവിത - ആധുനിക കവിത്രയം

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

## FOR DETAILED STUDY

- 4. കുമാരനാശാൻ ചണ്ഡാലഭിക്ഷുകി ഭാഗം രണ്ട് തൂമ തേടും തൻ പാള കിണറ്റിലി-... ...തെല്ലിട സുന്ദരി
- 5. ഉള്ളൂർ കർണ്ണഭ്രഷണം താപസമന്ത്രത്തിൻ തത്വപരീക്ഷയാം... ... പ്രാവിശ്യം മാഴ്ജിടട്ടെ.
- 6. വള്ളത്തോൾ നാരായണമേനോൻ എന്റെ ഭാഷ മിണ്ടിത്തടങ്ങാൻ ശ്രമിക്കുന്ന പിഞ്ചിളം ...

... മിന്നിച്ചു നിൽക്കുന്ന തുമുത്തുകൾ.

UNIT-3

കവിത - ആധുനികപൂർവ്വ-ആധുനികഘട്ടം

ആധുനിക കവിതകളുടെ പ്രോദ്ഘാടനം - 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 - കാടെവിടെ മക്കളേ 10. ബാലചന്ദ്രൻ ചുള്ളിക്കാട് -സന്ദർശനം

<u>UNIT - 5</u>

#### **ആധുനിക-ആധുനികാനന്തരഘട്ടം** പ്രസക്തി - സാംസ്കാരിക - സാമ്മഹിക 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. അച്യൂതൻ നവോത്ഥാനന്തരകവിത - എസ്. രാജശേഖരൻ കടലിൽ തങ്ങിയ കാന്തഭൂമി - ഡോ. ബി. വി. ശശികുമാർ



ഭാവഗീതത്തിന്റെ അടയാളങ്ങൾ മലയാളകവിതയിൽ - ഡോ. ആർ. എസ്. രാജീവ് ഉത്തരകാവൃകാന്തി - 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 – III: ALGAE AND BRYOPHYTES

#### UNIT – I

General characters and classification of Algae based on Fritsch (1945), life cycle patterns of Algae, systematic position, distribution, structure, reproduction and life history of *Volvox* and *Caulerpa*.

#### UNIT – II

Systematic position, distribution, structure, reproduction and life history of Chara, Sargassum and Gracilaria.

#### UNIT – III

Seaweed cultivation - *Gracilaria*; Methods of extraction and uses of agar-agar and carrageenin; Economic importance of Algae.

#### $\mathbf{UNIT} - \mathbf{IV}$

Morphology, mass culture and nutritive importance of Spirulina; Morphology, mass culture and economic importance of *Nostoc*.

#### $\mathbf{UNIT} - \mathbf{V}$

General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of Marchantia.

#### **REFERENCES**:

- 1. Dubey R.C. 1993 A text book of bio-technology S. Chand & Comp. Ltd., New Delhi.
- 2. Fritsch F.E. 1972. The structure and reproduction of Algae Vol. I & II
- 3. Kamat N.D. 1982. Topics in algae, Sai Kraipa Prakashan Aurangabad.
- 4. Kumar H.D & Singh H. N. 1982 A Text book of Algae East West Press Pvt. Ltd New Delhi.
- 5. Pandey S.N & Trivedi P.S. 1977. Text book of Botany Vol I Vikas Publishing House J Pvt. Ltd., New Delhi.
- 6. Parihar N.S. 1967. Bryophyta-Central Book Depot Publications in Botany, Allahabad.
- 7. Sharma O.P. 1986. Text Book of Algae. Tata Me Graw-Hill Publications. New Delhi,
- 8. Vashista B.R. 1997. The Algae, S. Chand & Co, New Delhi.
- 9. Venkatraman. 1969. The cultivation of Algae-Indian council of Agricultural Research New Delhi.
- 10. Watson E.V. 1974. Structure and life cycle of Bryophytes- B.I. Publications New Delhi.



## **Major Practical-I**

# ALGAE AND BRYOPHYTES – PRACTICAL

- 1. Study of Morphology of the Algae and Bryophytes prescribed in the syllabus.
- Make suitable micro preparations of the following: a. Caulerpa Rhizome; b. Sargassum - Stipe, leaf; c. Gracilaria - Thallus with cystocarp; d. Marchantia - Thallus.
- 3. Observe and identify the microslides
  - a) Volvox Vegetative colony, colony with daughter colonies and sex organs.
  - b) Chara Sex organs
  - c) Sargassum Male and female conceptacles
  - d) Gracilaria Thallus with cystocarp.
  - e) Marchantia V.S of Gemma cup, V.S of Antheridiophore,
  - f) V.S of Archcgoniophore, V.S of Sporophyte
  - g) Algal Slides / Tablet Spirulina, Nostoc; BGA-fertilizer (packet);
- 4. Field trip of minimum one day.



## **SEMESTER – I PAPER I**

# **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<sup>2</sup> and sp<sup>3</sup> 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 CHEMOTHERAPHY

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.

#### **Refernce Books**

- 1) B.R. Puri, L.R. Sharma, K. C. Kalia, Principles of Inorganic chemistry, 21st edition, Vallabh Publications, 2005.
- 2) B. 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

- 1. Estimation of oxalic acid Std. oxalic acid
- 2. Estimation of Na2CO3 Std. Na2CO3
- 3. Estimation of hydrochloric acid Std. oxalic acid

#### Permanganometry

- 1. Estimation of ferrous ammonium sulphate Std. ferrous ammonium sulphate
- 2. Estimation of oxalic acid Std. oxalic acid
- 3. 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 Analaysis' 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.

## UNI TV:

## 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.

