அரசாணை (நிலை) எண் 47, பள்ளிக்கல்வி (ஆ.தேவா)த் துறை, 25-2-2021

இணைப்பு2

தமிழ்

அலகு-1

பேச்சு மொழியின் தோற்றமும் வளர்ச்சியும் - காலந்தோறும் தமிழ் எழுத்து வடிவ மாற்றங்கள் - திராவிட மொழிக்குடும்பங்களின் தனித்தன்மைகள் பிராமி, பிராகிருதம், வட்டெழுத்து முதலான எழுத்தின் தன்மைகளும் வரலாறும்-பேச்சு மொழியும், எழுத்து மொழியும் - வட்டார மாவட்ட மொழித்தன்மைகள் - ஓலியன், உருபன் முதலான கூறுகள்- தனிமொழி, தொடர்மொழி பொதுமொழிகள்

அலகு-2

சங்க இலக்கியங்களில் அகம் - கீழ்க்கணக்கு நூல்களில் அகம் - எட்டுத்தொகை, நற்றிணை, குறுந்தொகை, ஐங்குறுநூறு, அகநானூறு, கலித்தொகை, பத்துப்பாட்டு-முல்லைப்பாட்டு, குறிஞ்சிப்பாட்டு, பட்டினப்பாலை.

கீழ்க்கணக்கு நூல்கள்- ஐந்திணை ஐம்பது, திணைமொழி ஐம்பது, ஐந்திணை எழுபது, திணைமாலை நூற்றைம்பது, கைந்நிலை, கார்நாற்பது

அலகு-3

சங்க இலக்கியங்களில் புறம் - எட்டுத்தொகை- பதிற்றுப்பத்து, புறநானூறு, பரிபாடல் (அகமும் புறமும்) - பத்துப் பாட்டு-நெடுநல்வாடை (அகமும் புறமும்), திருமுருகாற்றுப்படை, பொருநராற்றுப்படை, சிறுபாணாற்றுப் படை, பெரும்பாணாற்றுப்படை, மலைபடுகடாம், மதுரைக்காஞ்சி, கீழ்க்கணக்கு நூல்கள்-களவழி நாற்பது

அலகு-4

அறஇலக்கியம் - கீழ்க்கணக்கில் அறம் - திருக்குறள், நாலடியார், நான்மணிக்கடிகை, இன்னாநாற்பது இனியவை நாற்பது, திரிகடுகம், ஆசாரக்கோவை, பழமொழிநானூறு, சிறுபஞ்சமூலம், ஏலாதி, முதுமொழிக் காஞ்சி, ஔவையாரின் ஆத்திச்சூடி, கொன்றை வேந்தன், மூதுரை, நல்வழி, குமரகுருபரரின் நீதிநெறி விளக்கம், பாரதியாரின் ஆத்திச்சூடி.

அலகு-5

சமய இலக்கியங்கள், காப்பியங்கள்

(i) **சமணம்**: சிலப்பதிகாரம், சீவகசிந்தாமணி (பெருங்காப்பியங்கள்) சூளாமணி (சிறுகாப்பியம்)

(ii) **பௌத்தம்**: மணிமேகலை, நீலகேசி.

(iii) **சைவம்** : பன்னிருதிருமுறைகள் - திருவிளையாடற்புராணம், கந்தபுராணம், தல புராணங்கள், சித்தர் பாடல்கள், தாயுமானவர் பாடல்கள்,

(iv) **வைணவம்** : வள்ளலார் பாடல்கள் நாலாயிரத்திவ்ய பிரபந்தம், கம்பராமாயணம், வில்லிப்புத்தூரார் பாரதம், அஷ்டப்பிரபந்தம்.

(v) **இசுலாம்**: சீறாப்புராணம், குணங்குடி மஸ்தான் சாகிபு பாடல்கள்.

(vi) **கிறிஸ்தவம்**: தேம்பாவணி, இரட்சண்யயாத்ரீகம், இரட்சண்ய மனோகரம், இயேசு காவியம்.

(vii) சித்தர் இல்க்கியம்: பட்டினத்தூர், பத்திரகிரியார், இடைக்காட்டுச் சித்தர், கடுவெளிச் சித்தர், பாம்பாட்டிச் சித்தர், குதம்பைச் சித்தர், (1. வ.சு.ப. மாணிக்கம், இரட்டைக் காப்பியங்கள் 2. அ.ச. ஞானசம்பந்தன், பெரிய புராணம் ஓர் ஆய்வு 3. ஆ. வேலுப்பிள்ளை, தமிழர் சமய வரலாறு)

அலகு -6

சிற்றிலக்கியங்கள்

பரணி, பிள்ளைத்தமிழ், உலா, தூது, கலம்பகம், பள்ளு, குறவஞ்சி, அந்தாதி (1, ந.வீ.செயராமன், சிற்றிலக்கியச் செல்வம் 2. மு. சண்முகம் பிள்ளை, சிற்றிலக்கிய வகைகள்)

அலகு-7

தொல்காப்பியம், நன்னூல், யாப்பருங்கலக்காரிகை, தண்டியலங்காரம், நம்பியகப்பொருள், புறப்பொருள் வெண்பாமாலை, வீரசோழியம், தொன்னூல் விளக்கம், பன்னிருபாட்டியல். (க. வெள்ளைவாரணன், தமிழ் இலக்கிய வரலாறு தொல்காப்பியம் 2.இரா.இளங்குமரன், இலக்கிய வரலாறு)

அலகு -8

(i) **உரைநடை இலக்கியம்**

உரைநடை தோற்றமும் வளர்ச்சியும், ஆறுமுக நாவலர், உ.வே.சா., பாரதியார், வே.சு. ஐயர், மறைமலையடிகள், திரு.வி.க. ரா.பி. சேதுப்பிள்ளை, பண்டிதமணி மு.கதிரேசனார், தெ.பொ.மீ, மு.வ., வ.சு.ப.மாணிக்கம், தொ.மு.சி.இரகுநாதன், சாமிசிதம்பரனார், நா.வானமாமலை, ஜெயகாந்தன், சுஜாதா, எஸ்.ராமகிருஷ்ணன்.(மா. இராமலிங்கம், புதிய உரைநடை)

(ii) **சிறுகதை**.

தோற்றம் வளர்ச்சி - வ.வே.சு.ஐயர், புதுமைப்பித்தன், கு,ப.ரா., மௌனி, ந.பிச்சமூர்த்தி, லா.ச. ராமாமிர்தம், கு. அழகிரிசாமி, தி. ஜானகிராமன், சுந்தர ராமசாமி, கி.ராஜநாராயணன், நகுலன், அசோகமித்ரன், ஜெயகாந்தன், சா.கந்தசாமி, பூமணி, நாஞ்சில் நாடன், பாவண்ணன், கோணங்கி தமிழ்ச்செல்வன், பிரேம்ரமேஷ், பிரபஞ்சன், மாலன், கந்தர்வன், அம்பை, சூடாமணி, சிவகாமி, அழகிய பெரியவன், பெருமாள் முருகன், வண்ணதாசன், வண்ணநிலவன், உத்தமசோழன் தோப்பில் முகமது மீரான் பவா செல்லத்துரை உள்ளிட்ட இக்காலப் படைப்பாளர்கள் வரை. (1.கா. சிவத்தம்பி, தமிழ்ச் சிறுகதையின் தோற்றமும் வளர்ச்சியும் 2.பெ.கோ.சுந்தரராஜன் - சோ.சிவபாதசுந்தரம், தமிழிலில் சிறுகதை வரலாறும் வளர்ச்சியும்)

(iii) **புதினம்**

தோற்றம் வளர்ச்சி-மாயூரம் வேதநாயகம் பிள்ளை, நா. பார்த்தசாரதி, கோவி. மணிசேகரன், தி.ஜானகிராமன், ஜெயகாந்தன், சுந்தரராமசாமி, கல்கி, பாலகுமாரன், சு.சுமுத்திரம், பெருமாள் முருகன், மாதவன், கிருத்திகா, ராஜம்கிருஷ்ணன் இந்திராபார்த்தசாரதி, அசோகமித்ரன், சோ.தர்மன், ஜெயமோகன், எஸ்.இராமகிருஷ்ணன், வண்ணநிலவன், நீலபத்மநாபன், பூமணி, நாஞ்சில்நாடன், பிரபஞ்சன், சுஜாதா, வைரமுத்து தோப்பில்முகமது மீரான், மேலாண்மை பொன்னுசாமி, வாஸந்தி தமிழவன், சாரு நிவேதிதா, சுப்ரபாரதி மணியன், தமிழ்ச்செல்வி ஜே.டி.குரூஸ், பாமா வெங்கடேசன், பெருமாள் முருகன், உள்ளிட்ட இக்காலப்படைப்பாளர்கள் வரை. (1.பெ.கோ. சுந்தரராஜன், சோ.சிவபாதசுந்தரம், தமிழ் நாவல் நுற்றாண்டு வரலாறும் வளர்ச்சியும்)

(iv) **நாடகம்**

நாடகம் தோற்றம் வளர்ச்சி - நாடக வகைகள் - சங்கரதாஸ் சுவாமிகள், பம்மல் சம்பந்த முதலியார், *சி.என். அண்ணாதுரை, ந. முத்துசாமி, இந்திரா பார்த்தசாரதி, சே. இராமானுஜம்,* கோமல் சுவாமிநாதன், பிரளயன், ஞாநி, மனோகரன், இன்குலாப், அ. இராமசாமி உள்ளிட்ட இக்கால நாடக ஆசிரியர்கள் வரை. (1. *ஆறு. அழகப்பன், தமிழ் நாடகத்தின் தோற்றமும் வளர்ச்சியும் 2. மு. இராமசாமி, தமிழ் நாடகம் நேற்று இன்று நாளை*)

(v) **மொழிபெயர்ப்பு**

மொழிபெயர்ப்பின் அடிப்படை - மொழிபெயர்ப்புச் சிக்கல்கள் - மொழி பெயர்ப்பாளரின் கடமை - தமிழில் மொழி பெயர்க்கப்பட்டுள்ள தெலுங்கு, மலையாளம், கன்னட சிறுகதைகள், நாவல்கள் - ஆங்கிலத்தில் தமிழ் இலக்கியங்கள் - ஏ.கே.இராமானுஜன் முதலியோர். (1.சு. சண்முக வேலாயுதம், மொழிபெயர்ப்பியல், 2. ந. முருகேச பாண்டியன்).

(vi) **ஒப்பிலக்கியமும் திறனாய்வும்**

தமிழில் ஒப்பிலக்கியத்தின் பண்பும் பயனும் - திறனாய்வின் வளர்ச்சி நிலைகள்-*தொ.மு.சி., சி.சு. செல்லப்பா, க.* கைலாசபதி, க.சிவத்தம்பி, வானமாமலை, தமிழண்ணல், வை.சச்சிதானந்தன், கோ.கேசவன், *தமிழவன், எம். ஏ. நுஃ. மான்,* தி.சு. நடராசன்

(1. *க. கைலாசபதி, ஒப்பியல் இலக்கியம் 2. தி.சு. நடராசன், திறனாய்வுக் கலை*)

அலகு-9

(i) **மரபுக்கவிதை**

மக்கள் இலக்கியம் - பாரதியார் - கவிமணி தேசிக விநாயகம் - பாரதிதாசன் - நாமக்கல் கவிஞர் - சுரதா - முடியரசன் - வாணிதாசன் - கம்பதாசன் - கா.மு. ஷெரீப் - கண்ணதாசன் - பெருஞ்சித்திரனார் உள்ளிட்ட மரபுக்கவிஞர்களின் கவிதைகள் வரை.

(ii) **புதுக்கவிதை**

தொடக்க காலம் முதல் ந.பிச்சமூர்த்தி - வல்லிக்கண்ணன் - பிரமிள் - சி.மணி - மீரா - மேத்தா - அப்துல்ரகுமான் - ஈரோடு தமிழன்பன் - சிற்பி பாலசுப்பிரமணியன் - ஆத்மாநாம் - அறிவுமதி - வைரமுத்து - விக்ரமாதித்யன் - கலாப்பிரியா - கல்யாண்ஜி - இரா. மீனாட்சி – சுகந்தி சுப்பரிமணியம் - குட்டி ரேவதி - புவியரசு - தேவதேவன் உள்ளிட்ட புதுக்கவிஞர்களின் கவிதைகள் வரை. (1. *வல்லிக்கண்ணன், புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும் 2. ராஜமார்த்தாண்டன், புதுக்கவிதை வரலாறு*).

(iii) **திரைப்படப்பாடல்கள்**

தொடக்க காலம் முதல் உடுமலை நாராயணகவி - பாபநாசம் சிவன் - கு.மா.பாலசுப்பிரமணியம் - மருதகாசி - பட்டுக்கோட்டை - கண்ணதாசன் - வாலி - வைரமுத்து - தாமரை - யுகபாரதி - அறிவுமதி – *நா. முத்துகுமார்.*

(iv) **நாட்டுப்புறப்பாடல்கள்**

நாட்டுப்புற இயலின் தோற்றமும் வளர்ச்சியும் - நாட்டுப்புறப் பாடல்கள் - நாட்டுப்புற மக்களின் பண்பாடுகள் - தமிழர் நாட்டுப் பாடல்கள் - வானமாமலை - நல்லதங்காள் கதை - 'மலையருவி' தொகுப்பு முதல் பிந்தைய தொகுப்புகள் வரை. (1. *சு. சத்திவேல், நாட்டுப்புறவியல், 2, சா. வே. சுப்பிரமணியன், நாட்டுப்புற இயல் ஆய்வு*).

அலகு-10

இதழியலும் கணினித் தமிழும்

மனிதவாழ்வியலில் இதழ்களின் பங்கு - தமிழ்மொழி வளர்ச்சிக்கு இதழ்களின் பங்களிப்பு - தமிழ் இதழ்களின் தோற்றம், வளர்ச்சி - திங்கள் வார, நாள், இதழ்கள் - மொழிநடை - தலையங்கம் - விளம்பரம் - துணுக்குச் செய்தி சேகரிக்கும் முறைகள், செய்தி வடிவாக்கம், பக்கப்புனைவு, தலைப்பு - இன்றைய இதழ்களின் போக்குநிலைகள் வரலாறும் வளர்ச்சியும் - கணினித் தமிழ் - வன்பொருள் மென்பொருள் பாகுபாடு - மின்னஞ்சல் - இணையமும் வலைத்தளமும் - கணினியில் தமிழ். (1. மா.பா. குருசாமி, இதழியல் கலை 2. இரா. கோதண்டபாணி, இதழியல் 3. மா.சு. சம்பந்தன், தமிழ்ப்பத்திரிக்கைகள் 4. அ.மா. சாமி, பத்தொன்பதாம் நூற்றாண்டுத் தமிழ் இதழ்கள் 5. மா. ஆண்டோ பீட்டர், கம்ப்யூட்டர் கற்றுக்கொள்ளுங்கள்).

ENGLISH SYLLABUS

DEGREE STANDARD

UNIT – I

HISTORY OF ENGLISH LITERATURE

1. The Age of Chaucer
2. The Age of Shakespeare
3. The Age of Milton
4. The Age of Dryden
5. The Age of Pope
6. The Age of Johnson
7. The Age of Wordsworth
8. The Age of Tennyson
9. The Age of Hardy
10. The Present Age.

Reference Books:

1. K.R. Ramachandran Nair – History of English Literature
2. W.H. Hudson – History of English Literature.

UNIT – II

BRITISH LITERATURE-I

Prose:

Detailed Study:

1. Francis Bacon – Of Revenge
   Of studies
2. Charles Lamb – Dream Children: A Reverie

Non – Detailed Study:

1. Joseph Addison – Sir Roger at the Theatre
2. Richard Steele – The Spectator Club

Poetry:

Detailed Study:

1. Edmund Spenser – Prothalamion
2. William Shakespeare – Sonnet 18
3. John Milton – Paradise Lost (Book IX) lines (795 - 833)
4. William Blake – The Lamb Non

Non Detailed Study:

1. John Donne – The Bait
2. Sir Philip Sidney – Sonnet I (from Astrophil and Stella)
3. John Dryden – A Song for St. Cecilia's Day
4. Alexander Pope – Ode on Solitude

DRAMA:

Detailed Study:

1. Christopher Marlowe: Dr. Faustus
2. George Bernard Shaw: Pygmalion

Non – Detailed study:

1. Oscar Wilde – The Importance of Being Earnest

Fiction:

1. Oliver Goldsmith – The Vicar of Wakefield
2. Charles Dickens – David Copperfield
3. H.G. Wells – Time Machine

UNIT – III

SHAKESPEARE

Unit – 1 Introduction

1. Shakespearean Theatre, Audience,
2. Fools and Clowns – Texts: Quortos and Folios
3. Shakespearean Women
4. Shakespearean Comedies, Tragedies,
5. Histories, Romances, Problem plays

II. Plays

Detailed Study:

1. Macbeth
2. Julius Caesar

Non – Detailed

1. A Midsummer Night's Dream
2. Richard II

UNIT-IV

BRITISH LITERATURE - II

I Poetry

Detailed Study

1. William Wordsworth – The Solitary Reaper
2. S.T. Coleridge – Kubla Khan
3. John Keats – Ode to a Nightingale
4. P.B. Shelley – Ozymandias

Non – Detailed Study

1. Robert Browning – My Last Duchess
2. G.M. Hopkins – God's Grandeur

Prose

Detailed Study

1. W. Hazlitt – My first Acquaintance with Poets
2. W.R. Inge – Spoon Feeding

Non – Detailed study

1. John Ruskin – Of King's Treasuries

Drama:

Samuel Beckett – Waiting for Godot

Fiction

Aldous Huxley – Brave New World

UNIT – V

AMERICAN LITERATURE

I Prose

Detailed Study

R.W. Emerson - Self – Reliance

Martin Luther King -I have a Dream

Abraham Lincoln - Gettysburg Address

Non-Detailed Study

H.D. Thoreau - A Battle of Ants

R.W. Emerson - The American Scholar

II Poetry

Detailed Study

Robert Frost - West Running Brook

Walt Whitman - Out of the Cradle, Endlessly Rocking

Emily Dickinson - I felt a Funeral

H.W. Longfellow - Nature

Non-Detailed Study

Sylvia Plath - Lady Lazarus

Carl Sandburg - Happiness

R.W. Emerson - Brahma

III Drama

Detailed Study

Arthur Miller - Death of a Salesman

Tennessee Williams - The Glass Menagerie

IV. Short Stories

Edgar Allan Poe - The Cask of Amontillado

O. Henry - Let Me Feel Your Pulse

Hans Christian Andersen - The Little Match Girl

T.S. Arthur - An Angel in Disguise

V Fiction

Nathaniel Hawthorne - The Scarlet Letter

Toni Morrison - Beloved

UNIT –VI

INDIAN WRITING IN ENGLISH

I Prose

Detailed Study

M.K. Gandhi - The Gospel of Non-Violence

Non-Detailed Study

S. Radhakrishnan - The World Community

A.P.J. Abdul Kalam - The Power of Prayer

II **Poetry**

Detailed Study

Sir Aurobindo Ghosh - The Tiger and the Deer

Sarojini Naidu - Love and Death

Non-Detailed Study

Vikram Seth - Evening Wheat

Nissim Ezekiel - Good Bye Party

Kamala Das - An Introduction

A.K. Ramanujam - Of Mothers, Among other Things

III **Drama**

Detailed Study

Girish Karnad - Nagamandala

Mahesh Dattani - Dance Like a Man

Non-Detailed Study

Vijay Tendulkar - Silence! The court is in session

IV **Fiction**

Mulk Raj Anand -Coolie

R.K.Narayan - Swami and Friends

Chetan Bhagat - The Three Mistakes of My Life

UNIT-VII

TWENTIETH CENTURY LITERATURE

I. PROSE

Detailed Study

Robert Wilson Lynd - The Pleasures of Ignorance

Bertrand Russell - Knowledge and Wisdom

E.M. Forster - Tolerance

Non-Detailed Study

R.L. Stevenson - An Apology for Idlers

E.V. Lucas - On Finding Things

I **POETRY**

Detailed Study

T.S. Eliot - Journey of the Magi

Dylan Thomas - The Hunchback in the Park

II **DRAMA**

Detailed Study

G.B. Shaw - Candida

III. NOVAL

Virginia Woolf - Mrs. Dalloway

R.L. Stevenson - Treasure Island

UNIT-VIII

INTRODUCTION TO THE STUDY OF LANGUAGE AND LINGUISTICS

I. **Introduction**

Definition of language, spoken and written language -Diachronic & Synchronic approaches of language study - Linguistics - definition, nature and scope.

II. **English Phonetics and Phonology**

Speech Organs - Sounds in English (Consonants, Vowels and Diphthongs) - Syllabus, Stress and Intonation - Transcriptions (exercises).

III. **Grammar**

Definition of Grammar - Different Approaches to Grammar -Descriptive, Prescriptive and Functional.

IV Syntax

Structural analysis (I.C. analysis) -Deep and Surface Structure

IV. **Morphology and Semantics**

Word, Morphemes -Word meaning association (semantics)

UNIT IX

LITERARY CRITICISM AND THEORIES

I. The Contributions of Plato and Aristotle to Literary Criticism

II. The Contributions of Horace, Quintilian, Longinus and Dante to the development of literary criticism.

III. Orientation of Critical Theories

Mimetic Theory - Pragmatic Theories – Sidney - Dryden - Dr. Johnson – Coleridge - Arnold - T.S. Eliot.

IV. Five Approaches

Moralistic Approach - Psychological Approach - Archetypal Approach - Sociological Approach - Formalistic Approach.

Unit V Recent Trends

1. Feminist Criticism
2. Marxist Criticism
3. New Historicism
4. Eco Criticism

5. Post Colonial Criticism

UNIT X

WOMEN'S WRITING IN ENGLISH

I. **Prose**

Detailed Study

Sojourner Truth - Ain't I a woman?

Non – detailed Study

Mary Wollstonecraft - A Vindication of the Rights of Woman: with Strictures on Political and Moral Subjects

II. **Poetry**

Detailed Study

Judith Wright - Request to a Year

Sylvia Plath - Medusa

Kamala Das - The Old Playhouse

Supata Bhattacharya -Draupadi

Non- Detailed Study

Maya Angelou - Still I Rise

Glady Cardiff - Combing

Gwendolyn Brooks - A Sunset of the City

III. **Drama**

Detailed Study

Susan Glaspell - Trifles

Non- Detailed Study

Caryl Churchill -Top Girls

IV Fiction

Ruth Prawer Jhabvala -Heat and Dust

V. Short Stories

Charlotte Perkins Gilman - The Yellow Wallpaper

Ambai - Forest

MATHEMATICS

UNIT-1 ALGEBRA and TRIGONOMETRY

Polynomial Equations – Imaginary and Irrational Roots – Relation between Roots and Coefficients symmetric function of Roots in terms of coefficient- Transformation of equation – Reciprocal equation - Increase or Decrease the roots of given equation – Removal of terms – Descartes's rule of signs – Approximate solution of roots of polynomial by Horner's Method–Cardan's method of solution of cubic polynomial – Summation of series using Binomial – Exponentialand Logarithmic series.

Symmetric – Skew symmetric, Hermitian – Skew Hermitian, Orthogonal Matrices, Unitary Matrices – Eigen Values – Eigen Vectors – Cayley-Hamilton Theorem – Similar Matrices – Diagonalization of Matrices.

Prime Number, Composite Number, Decomposition of a Composite Number as a Product of primes uniquely – Divisor of a positive Integer – Euler Function. Congruence Modulo *n*, Highest power of prime number *p* Contained in *n*! – Application of Maxima and Minima – Prime and Composite numbers – Euler's function ϕ(N) – Congruences – Fermat's, Wilson's and Lagrange's theorems.

Expansions of Power of sinnX, cosnX, tannx – Summation by C + *i* S method, Telescopic Summation - Expansion of sin*x*, cos*x*, tan*x* in terms of *x* - Sum of Roots of Trigonometric Equation, Formation of Equation With Trigonometric Roots - Hyperbolic Functions – Relation Between Circular and Hyperbolic Function – Inverse Hyperbolic Function – Logarithm of a complex number – Principal Value and General Values.

UNIT II DIFFERENTIAL CALCULUS, INTEGRAL CALCULUS and ANALYTICAL GEOMETRY

n^{th} derivatives –Trigonometrical Transformations — Leibnitz Theorem – Implicit functions – Partial Differentiation – Maxima / Minima of a function of two variables – Lagrangian multiplier method - Radius of curvature in Cartesian and Polar forms – Angle between radius vector and tangent – Slope of tangent of a polar curve – p-r equations – Center of Curvature – Evolutes, Envelopes –Asymptotes of Algebraic curves - Asymptotes by inspection – Intersection of a curve with asymptotes.

Evaluation of Double and Triple integrals – Applications of Multiple Integrals in finding volumes, surface areas of solids – Areas of curved surfaces – Jacobians – Transformation of Integrals using Jacobians – Indefinite integrals - Beta and Gamma Functions and their properties – Evaluation of Integrals using Beta and Gamma Functions.

Pole and Polar – Conjugate points and Conjugate lines, Conjugate diameters - Polar Coordinates – General Polar Equation of a Straight line – General Polar Equation of a Conic

UNIT-III DIFFERENTIAL EQUATIONS and LAPLACE TRANSFORMATIONS

Ordinary Differential Equations - Homogeneous Equations - Exact equations - Integrating Factors - Linear equations - Reduction of order – Second order Linear differential equations – General solution of homogeneous Equations – Homogeneous equation with constant coefficients – Method of undetermined coefficients – method of Variation of Parameters - System of first order equations – Linear systems - Homogeneous linear systems with constant coefficients.

Partial Differential Differential Equations - Formation of Partial Differential Differential Equations by eliminating arbitrary constants and arbitrary functions. Solving PDEs: Complete integral - Singular integral - general integral - Lagrange's equation Pp+Qq=R - Charpit's method and special types of first order equations.

Laplace transform of elementary functions – Laplace transforms of special functions like unit step function. Dirac Delta function – Properties of Laplace Transformation and Laplace Transforms of derivatives and integrals – Evaluation of integrals using Laplace transform - Initial value theorem - Final value theorem – Laplace transform of periodic functions – Inverse Laplace transforms – Convolution theorem – Application of Laplace transformations in solving first and second order linear differential equations and simultaneous linear ordinary differential equations.

UNIT –IV VECTOR CALCULUS and FOURIER SERIES, FOURIER TRANSFORMS

Vector Differentiation – Velocity and Acceleration – Vector valued functions and Scalar potentials – Gradient – Divergence – Curl – Directional Derivative – Unit normal to a surface – Laplacian double operator – Harmonic functions.

Vector Integration – Line Integral – Conservative force field – Determining Scalar Potential from a conservative force field – Work done by a force – Surface Integral – Volume integral – Theorems of Gauss, Stokes, and Green.

Fourier Series – Expansions of Periodic functions of period 2π - Expansion of even and odd functions – half range series – Evaluation of Infinite Series using Fourier Series expansions – Fourier Transforms – Infinite Fourier Transform – Fourier Sine and Cosine transforms – Simple properties of Fourier Transforms – Convolution Theorem – Parseval's identity.

UNIT –V ALGEBRAIC STRUCTURES

Groups – Subgroups, cyclic Groups and properties of cyclic groups, Lagrange's Theorem – Counting Principles – Normal subgroups, Quotient groups, Homomorphism, Automorphism, Cayley's theorem, Permutation groups – Rings – Some special classes of Rings – Integral domain, Homomorphism of rings – Ideal and Quotient rings – Prime ideal, Maximum Ideals –the field and quotients of an integral domain – Euclidean rings – Algebra of Linear transformation, Characteristic roots, matrices, Canonical forms, Triangular Forms – Problems of converting Linear Transformation to Matrices and vice-versa – Vector Space – Definition and examples – Linear dependence – Independence, Sub spaces and Dual spaces – Inner product spaces.

UNIT-VI REAL ANALYSIS

Sets – Countable and Uncountable sets – Real Number system R – Functions – Real Valued functions, Equivalence and Countability – Infremum and Supremum of a subset of R – Bolzano- Weierstrass Theorem – Sequences of real numbers – Convergent and Divergent Sequences – Monotone Sequences – Cauchy Sequences – Limit Superior and Limit Inferior of a sequence – Sub Sequences – Infinite series – Alternating Series – Conditional convergence and Absolute convergence – Tests of Absolute convergence – Continuity and Uniform Continuity of a real valued function of a real variable – Limit of a function at a point – Coninuity and Differentiability of real valued functions – Rolle's Theorem – Mean Value Theorems – Inverse function theorem, Taylor's Theorem with remainder forms – Power series expansion – Riemann Integrability – Sequences and Series of Functions.

Metric spaces – Limits of a function at a point in metric spaces – functions continuous on a metric space – various reformulations of continuity of a function in a metric space - open sets – closed sets – discontinuous functions on the real line.

UNIT VII COMPLEX ANALYSIS

Algebra of Complex Numbers – Function of Complex Variable – Mappings, Limits – Theorems on Limits, continuity, differentiability – Cauchy-Riemann Equations – Analytic Functions – Harmonic Function – Conformal mapping – Mobius Transformations – Elementary Transformation – Bilinear Transformations – Cross ratio – Fixed points of bilinear transformations – Special Bilinear transformations.

Contours – Contour Integrals – Anti Derivatives – Cauchy-Goursat Theorem- Power Series – Complex Integration – Cauchy's theorem, Morera's theorem, Cauchy's Integral Formula – Liouville's Theorem – Maximum Modulus Principle – Schwarz's Lemma – Taylor's series – Laurent's series – Calculus of Residues – Residue Theorem – Evaluation of Integrals - Definite integrals of Trigonometric functions – Argument principle and Rouche's Theorem.

UNIT VIII MECHANICS

Statics: Forces on a rigid body –Moment of a force – General motion of a rigid body – Equivalent system of forces – Parallel Forces – Forces along the sides of Triangle Couples.

Resultant of several coplanar forces – Equation of line of action of the resultant – Equilibrium of rigid body under three Coplanar forces – Reduction of Coplanar forces into single force and couples – Laws of friction, angle of friction, Equilibrium of a body on a rough inclined plane acted on by several forces – Equilibrium of a uniform Homogeneous string – Catenary – Suspension bridge – Centre of Gravity of uniform rigid bodies.

Dynamics: Velocity and Acceleration – Coplanar motion – Rectilinear motion under constant forces – Acceleration and retardation thrust on a plane – Motion along a Vertical line under gravity – Motion along an inclined plane – motion of connected particles – Newton's Laws of motion.

Work, Energy and power – Work – Conservative field of force – Power –Rectilinear motion under varying force Simple Harmonic Motion (S.H.M) – S.H.M along a horizontal line – S.H.M along a Vertical line – Motion under gravity in a resisting medium.

Path of a projectile – Particle projected on an inclined plane – Analysis of forces acting on particles and rigid bodies on static equilibrium, equivalent systems of forces, friction, centroids and moments of inertia – Elastic Medium, Impact – Impulsive force – Impact of sphere – Impact of two smooth spheres – Impact of two spheres of two smooth sphere on a plane – oblique impact of two smooth spheres.

Circular motion – Conical Pendulum motion of a cyclist on circular path – Circular motion on a vertical plane – relative rest in revolving cone – simple pendulum – Central Orbits – Conic as Centered Orbit – Moment of inertia

UNIT IX OPERATIONS RESEARCH

Linear Programming – Formulation – Graphical Solution – Simplex Method – Big –M method – Two phase method – Duality – Primal dual relation – dual simplex method – revised simplex method – Sensitivity analysis – Transportation Problem – Assignment Problem – Queuing Theory – Basic Concepts – Steady State analysis of M/M/1 and M/M/Systems with infinite and finite capacities.

PERT-and CPM – Project network diagram – Critical path – PERT computations-Inventory Models- Basic Concept –EOQ Models – uniform Demand rate infinite and finite protection rate with no shortage – Classical newspaper boy problem with discrete demand – purchase inventory model with one price brake – Game theory – Two person Zero – Sum game with saddle point – without saddle point – Dominance – Solving 2xn or mx2 game by graphical method – Integer programming – Branch and bound method

UNIT—X STATISTICS/PROBABILITY

Measures of central tendency – Measures of Dispersion – Moments – Skewness and Kurtosis – Correlation – Rank Correlation – Regression – Regression line of x on y and y on x – Index Numbers – Consumer Price Index numbers – Conversion of chain base Index Number into fixed base index numbers – Curve Fitting – Principle of Least Squares – Fitting a straight line – Fitting a second degree parabola – Fitting of power curves – Theory of Attributes – Attributes – Consistency of Data – Independence and Associate of data.

Theory of Probability – Sample Space – Axioms of Probability – Probability function – Laws of Addition – Conditional Probability – Law of multiplication – Independent – Boole's Inequality – Bayes' Theorem – Random Variables – Distribution function – Discrete and continuous random variables – Probability density functions – Mathematical Expectation – Moment Generating Functions – Cumulates – Characteristic functions – Theoretical distributions – Binomial, Poisson, Normal distributions – Properties and conditions of a normal curve – Test of significance of sample and large samples – Z-test – Student's t-test – F-test – Chi square and contingency coefficient.

PHYSICS

DEGREE STANDARD

Unit – 1 Mechanics

Newton's laws – Impulse and impact – laws of impact – direct impact and oblique impact between two smooth spheres – loss of K.E – motion of two interacting bodies – reduced mass – centre of gravity – centre of gravity of a solid hemisphere – hollow hemisphere – tetrahedron and solid cone – friction – types of friction – angle of friction – equilibrium of rigid bodies – moment of inertia – angular momentum and kinetic energy of a revolving body – moment of inertia of sphere, shell and cylinder – parallel and perpendicular axes theorem – rolling – Kepler's laws of planetary motion – Newton's law of gravitation – determination of G by Boy's method – gravitational field and potential – variation of acceleration due to gravity on height, depth and altitude – orbital and escape velocities – earth and geostationary satellites – limitations of Newton's laws.

Unit – 2

Thermal Physics

Kinetic theory of gases – postulates – mean free path – ideal gas equation – degrees of freedom – Boltzmann's law of equipartition of energy – Maxwell's law of distribution of molecular speed – atomicity of gases – specific heat capacity of gases ratio of c_p and c_v – calculation for monoatomic and diatomic gases – Mayer's relation – experimental determination of c_p and c_v – Joule-Kelvin effect – theory and experiment – liquefactionof gases – hydrogen, oxygen, air, helium – thermal conductivity of solids – Forbe's and Lee's disc method – Stefan's law – determination of Stefan's constant – solar constant – temperature of the Sun – firstlaw of thermodynamics – isothermal, adiabatic, isochoric, isobaric, cyclic processes– Carnot's engine – Carnot's cycle – second law of thermodynamics – Carnot's theorem – entropy – reversible and irreversible process – Maxwell's thermodynamic relations and their applications – thirdlaw of thermodynamics.

Unit – 3

Properties of Matter and Acoustics

Moduli of elasticity – relations among three moduli of elasticity – bending moment – uniform and non-uniform bending – couple per unit twist – torsionaloscillation – elasticconstants and their determination – viscosity – determination of highly viscous liquid by Stokes' method – streamline and turbulent flow – Reynold's number – Poiseuille's flow – applications of viscosity – surface tension – capillary rise – method of drops – surfacetension of mercury – Quicnke's method.

Simple harmonic motion – combination of two SHMs in straight line and right angles – Lissajou's figures – free, damped, forced oscillations – laws of transverse vibrations – sonometer, and Melde's string – resonance – intensity and loudness of sound – beats– Doppler effect – velocity of sound in solids and gasses – ultrasonic – production, properties and applications – acousticsof auditoria.

Unit – 4

Electricity and Magnetism

Coulomb's law – permittivity – relative permittivity – electric field intensity – due to point charge – Guass' theorem and its applications – electric potential – relation between potential and intensity – electric dipole moment – potentialand intensity due to dipole – capacitance – capacity of parallel plates, spherical and cylindrical capacitors – energy stored in a capacitor – electrometers – measurement of potential and dielectric constant – Ohm's law – resistivity and conductivity – Kirchhoff's laws for a loop and a junction – internal resistance of a cell andemf– thermoelectricity – Peltier, Thomson coefficients.

Biot-Savarts law – Ampere' s law – magnetic field around current carrying conductors magnetic force on charge and current elements – force between two current carrying parallel conductors – Faraday's laws of electromagnetic induction – self and mutual induction – induction coil and its uses – eddy currents – transformers – energy losses – skin effect – advantages of ac over dc – dynamos and motors – magnetic poles – magnetic moments - susceptibility and permeability – dia, par and ferro magnetism – hysteresis – B-H curve – energy loss due to hysteresis.

Unit – 5

Atomic and Nuclear Physics

Bohr's atom model –hydrogen atom –spectraof hydrogen and hydrogen like atoms – Rydberg's constant –special quantisation – Sommerfeld model –quantum numbers – vector atom model – electronic structures –Pauli's exclusion principle –electronic configuration – magnetic moment due to orbital motion and electron spin – Bohr magnetron – Stern and Gerlachexperimental – fine structure of sodium d line – Zeeman effect –anomalousZeeman effect – theoretical explanation.

General properties of nuclei and nuclear models – nuclear size, charge and mass determination – nuclear spin – magnetic dipole moment – mass defect, binding energy and packing fraction – nuclear forces – shell model – liquid drop model – fission, fusion and nuclear reactions – induced radioactivity – artificial transmutation – application of radio isotopes – discovery, production and detection of neutrons –cyclotron, synchrotron and betatron – radiation detectors – ionisation chamber –G.M. counter – elementary particles – classification –pions, muons, k mesonshyperons – conservation laws – cosmic rays.

Unit – 6

Quantum Mechanics and Relativity

Wave nature of particles – deBroglie waves – Davison and Germer experiment – waves and particle duality – photoelectric effect – photo electric multiplier – Einstein's equation – Compton Effect – experimental verification of Compton effect – wave nature of electron – Heisenberg's uncertainty principle – position and momentum, energy and time uncertainty – Schrodinger's wave equation – probability amplitude –properties of wave function–normalization – potential barriers – tunnelling across barriers – particle in a box (one dimension only)

Relativity –– postulate of Special theory of Relativity – Lorentz transformation of equations and its application – length contraction, time dilation – variation of mass with velocity – Mass energy equivalence - Physical Significance.

Unit – 7

Solid State Physics

Crystalline and amorphous solids – crystal lattice – structure of crystals – periodicity and plane in crystal – translational and rotational symmetry – crystallography – fundamental types of lattices in two and three dimensions – Bravais lattice – lattice systems, unit cell – primitive lattice vectors – packing fraction – Miller indices – crystal planes and directions – reciprocal lattice vectors – xrays – Bragg's law – crystal diffraction by x rays -x ray spectroscopy – characteristic x ray spectra – x ray absorption and fluorescence –Mosley's law – uses of x rays – Laue and Bragg equations – symmetry elements and symmetry groups – types of crystal – different types of chemical bonds – ionic, covalent, metallic – vanderWaals bond.

Unit – 8

Optics and Spectroscopy

Defect of images – spherical aberration – methods of minimizing spherical aberration – chromatic aberration –their rectification – deviation without dispersion and dispersion without deviation – eyepiece – interference – young's double slit experiment – colours of thin film – Newton's rings – air wedge – diffraction – Fresnel and Fraunhoffer types – zone plate and diffraction grating – prism – Huygens's explanation – polarisation – double refraction - Nicol prism – quarter and half wave plates – production and detection of plane, circular and elliptically polarised light – optical activity – determination of specific rotatory power usingpolarimeter– optic fiber – fiber optic sensors – fibre optic communication systems and their advantages – laser – stimulated emission – population inversion – ruby and helium-neon laser and applications – UV and IR spectroscopy and applications – Raman effect – explanation on the basis of quantum theory – experimental arrangement – applications of Raman effect.

Unit – 9

Electrical circuits and Electronics

AC circuits with R, L and C –complex impedance and phase diagram – R-L and R-C circuits – series and parallel resonant-LCR circuits – sharpness of resonance Q factor –power in A.C. circuit –choke coil.

Semiconductor – energy band theory of solids and insulators, conductors and semiconductors – intrinsic and extrinsic semiconductors – electrons and holes as charge carriers – P type and N type semi-conductors – junction diodes –characteristics curve of diode – diode applications – Light Emitting Diodes, Photodiodes – junction transistors – characteristics of transistors –rectifier, amplifier and oscillator circuits – AM and FM transmission and reception with block diagrams – Logic circuits – NOT, AND, OR, NAND, NOR and Ex-OR gates – truth tables – Boolean algebra – deMorgan's theorems – Karnaugh map simplification –opamp IC – summing, difference, integrator and differentiator circuits using opamp – astable and monostable multi vibrators – flip- flop circuits.

Unit – 10 Experimental Physics

Errors and approximations – types of errors – absolute, relative and percentage of errors – significant figures – advantages of average – leastcount of instruments – calibration techniques – curve plotting – least square refinement – dimensional analysis and uses – parallax method – Verniercalipers – screw gauge – travelling microscope – optic lever – Haier's apparatus – calorimeter – Barton's radiation correction – focal length of concave lens by contact – galvanometer – conversion of galvanometer into ammeter and voltmeter – calibration of low range ammeter and voltmeter – ballistic galvanometer –figure of merit – Ohm meter – multimeter– tangent galvanometer – magnetometer – meter bridge – potentiometer– LCR circuits – registers and counters.

CHEMISTRY

DEGREE STANDARD

INORGANIC CHEMSTRY UNIT – I

A. ATOMIC STRUCTURE AND PERIODIC CLASSIFICATION

I) Atomic models: Rutherford, Bohr and Sommerfield-Origin of hydrogen spectrum-Electromagnetic radiation- Dualism of light-Black body radiation- Planck's quantum theory-Phtoelectric effect-Compton effect-de Broglie equation-Heisenberg uncertainty principle.

II) Periodic properties of elements: Atomic ionic radii, Ionization potential, electron affinity, electronegativity (Pauling and Mulliken's scale) of elements along period and groups, -Effective nuclear charge, screening effect, Slater rule

III) Postulates of quantum mechanics-operators: linear, non-linear, commutator- Schrodinger wave equation and derivation)-Significance of ψ and ψ^2, wave mechanical concept of atomic orbitals.

B. CHEMICAL BONDING

I) Ionic bond-Factors influencing the ionic bond-Lattice energy- Inert pair effect-Fajan's rules-Born-Haber cycle-Born-Lande equation (derivation not required)

II) Covalent bond-Lewis theory-VSEPR theory-Shapes of BeF_2, BCl_3,$SnCl_2$, CCl_4, PF_5, Valence bond theory- Coordinate bond-Hybridization: sp^3,dsp^2, sp^3d^2, d^2sp^3

III) Shapes of orbitals,-quantum numbers-Zeeman effect-Pauling's exclusion principle, Hund, rule, Aufbau Principle, Electronic configuration of elements- MO theory, MO diagrams of O_2, N_2

IV) Intermolecular forces: hydrogen bond, van der Waals forces

V) Dipole moment

UNIT II

C. p-Block elements

i) General characteristic of p-block elements- Diborane-borax, borazine,mAlums, alloys of aluminium, allotropes of carbon

ii) Chemistry of oxides of carbon, silicon

iii) Compound of N and P-NH_2-NH_2, NH_2 OH, Fixation of N_2, PH_3, P_2O_5

D. d-BLOCK & f-BLOCK ELEMENTS

i) General characteristics of d-block elements: Melting points, Ionization energies, oxidation states, magnetic properties

ii) Alloys of iron, copper, Nickel, chromium- Gemstones: Ruby, Emerald, Sapphire

iii) General characteristics of f-block elements

iv) Lanthanide, actinide contraction- consequences- UV spectra

v) Separation and applications of lanthanides and actinides

UNIT III

E. COORDINATION CHEMISTRY

i) Classification of ligands, Complexes- IUPAC nomenclature, Isomerism. Mono and bidentateligands and their complexes- outer orbital inner orbital complexes

ii) Theories of coordination compounds: Werner's theory, VB theory, Crystal field theory, EAN rule

iii) Applications of coordination compounds

F. NUCLEAR CHEMISTRY

i) Theory of nuclear reactions- alpha, beta and gamma rays- n/p ratio, isotopes. Isobars, isotones- Laws of radio activity- Radioactive equilibrium

ii) Types of nuclear reactions: Fission, fusion and spallation-Nuclear reactors

iii) Applications of radio isotopes in industry, medicine and agriculture

G. ANALYTICAL CHEMISTRY

Principles of volumetric analysis, gravimetric analysis, Separation and purification techniques- Redox titrations, complexometric titrations and Conductometric titrations.

PHYSICAL CHEMISTRY

UNIT-IV

H. GASEOUS STATE

Gas laws: Boyle's law, Charles law, Avogadro's law- kinetic theory- ideal gas equation– deviation from ideal behaviour- Maxwell distribution of molecular velocities(no derivation)- mean, root mean square and most probable velocities- Calculation of molecular velocities-collision diameter- mean free path- collision number-behaviour of real gases-deviation from ideal behaviour--Inversion temperature-Liquefaction of gases

I. SOLID STATE

i) Classification of solids, Isotropic and anisotropic crystals- Crystal systems- Laws of crystallography-Miller indices, Bravais lattices- Unit cell- Crystal symmetry- X-ray diffraction- Structures of NaCl, CsCl and ZnS-Bragg's equation-Radius ratio-Packing in crystals-defects in crystals

ii) Semiconductors: n and p –type, intrinsic and extrinsic semiconductors

UNIT- V

J. THERMODYNAMICS

i) Definitions: System and surrounding, isolated, closed and open systems- state of the system-intensive and extensive properties-Thermo dynamic processes: reversible and irreversible, isothermal and adiabatic processes, state and path functions

ii) First law of thermodynamics, Internal energy, enthalpy, heat capacity, Relationship between C_p and C_v Hess's law of constant heat summation-Kirchoff's equation- Second law of thermodynamics-Carnot theorem, entropy and probability-free energy and chemical equilibrium-Third law-Gibb's & Helmholtz functions

K. CHEMICAL KINETICS

i) Rate of reactions, rate law, Rate constant-order and molecularity of reactions- Derivation of first order rate constant, Zero order reaction, Effect of temperature on reaction rates- Half-life period, Activation energy- Arrehenius equation

ii) Theory of reaction rates, failure of collision theory-Significance of entropy and free energy of activation

UNIT-VI

L. COLLOIDS AND SURFACE CHEMISTRY

i) Classification of colloids-Preparation and purification of colloids-Properties of colloids-Stability of colloids-Gold number, gels- emulsion-types, emulsifiers-Application of colloids

ii) Adsorption-Physisorptio, chemisorption, difference between them-Factors influencing adsorption-Adsorption isotherm, Langmuir isotherm(no derivation)

M. ELECTROCHEMISTRY

i) Galvanic cells- Types of reversible and irreversible elcterodes-conventional representation of electrochemical cells. Nernst equation- reference electrodes, Computation of cell emf, Calculation of thermodynamic parameters of cell reactions-Over potential, Hydrogen over voltage.

ii) Arrhenius theory, Debye-Huckel equation- Kohlrausch law, Ostwald's dilution law – Determination of pH and pKa of acids by potentiometric methods-Corrosion- Types of corrosion-Prevention of corrosion

UNIT-VII

N. SPECTROSCOPY:

i) Electromagnetic spectrum-Different regions of spectra- Microwave spectra of diatomic molecules, rotational constants, selection rules-Infrared spectroscopy-Applications-Raman spectroscopy-Principles and applications

ii) Principles, instrumentation and applications of UV Vis, NMR, ESR and Mass spectrometry.

ORGANIC CHEMISTRY UNIT-VIII

O. TYPES OF REACTIONS

i) Aliphatic nucleophilic substitution reactions –Aromatic electrophilic substitution reactions-Free radical reactions-Addition to C=C and C=O compounds – Elimination Reactions.

ii) Reduction and oxidation reactions – Oxidation with osmium tetroxide, ozone- reduction with $NaBH_4$, $LiAlH_4$

P. ELECTRON DISPLACEMENT METHODS

Inductive effects- Mesomeric effects, Hyper conjugation- Steric effects in substitution, addition and elimination reactions

Q) NOMENCLATURE OF ORGANIC COMPOUNDS

Classification of organic compounds-IUPAC nomenclature:alkanes, alkenes, alkynes, alcohols, aldehydes and ketones.

UNIT- IX

R. NATURE OF BONDING

1) Hybridization and geometry of simple organic compounds- Breaking of bonds- homolytic and heterolytic cleavage of C – C bonds-Reaction intermediates- free radicals : generation and stability- Carbocation and carbanion: formation and stability

S. STEREOCHEMISTRY

Stereoisomerism, definition and types- optical activity-asymmetric ccarbons, D and L notations, Enantiomerism, Diastereomerism- Racemization methods- Resolution methods-Walden inversion-Fisher, sawhorse and Newman projections-R and S notation of optical isomers: Cahn-Inhold and Prelog rules- Geometrical isomerism Z and E notations

UNIT X

T. MECHANISM IN AROMATIC SUBSTITUTION

i) Aromatic electrophilic substitution: Arenium ion mechanism: nitration, halogenation, sulphonation, Friedel Crafts reaction- Orientation and reactivity in monosubstituted benzene rings-Activating and deactivating groups-

ii) Aromatic nucleophilic substitution: S_NAr mechanism, Benzyne mechanism

U. CARBOHYDRATES

Classification of carbohydrates-Monosaccharides-D family sugars-L family sugars-Epimers-Mutarotation- Interconversion of glucose to fructose and vice versa, Reactions of monosaccharides-Disaccharides – Lactose, Maltose, Gentiobiose, Sucrose, Manufacture of sucrose, properties and uses.

V. MATERIAL CHEMISTRY

i) Polymers-Types of polymerization-Homopolymers- copolymers- Thermosetting and thermoplastic polymers-Vulcanization of rubber

ii) Dyes: Classification and Properties of dyes, Chromophores, auxochromes, Preparation of methyl orange, cangored, malachite green, fluorescein, indigo.

BOTANY

UNIT-1 VIRUS, BACTERIA, PHYCOLOGY, MYCOLOGY

VIRUS-

Discovery, Structure, Virus infection in plants, and symptoms, Transmission of plant Viruses, Genome Organisation, Replication of Bacteriophages, Economic Importance.

BACTERIA-

Discovery, General Characteristic Features, Cell Structure, nutrition, reproduction, Techniques in Sterilization and Bacterial Culture, Economic importance.

PHYCOLOGY –

General characters, Classification (F.E.Fritsch) Thallus Organisation, Life Cycle Patterns, pigmentation, Evolutionary Trends in The sexuality of Algae – Economic importance.

Structure and reproduction, life cycle of the following algae: Anabaena, Nostoc, Spirulina, Diatoms, Chlamydomonas, Oedogonium.

MYCOLOGY-

General Characteristics, Thallus Organisation, Classification (Alexopolus), Nutrition, Reproduction, Economic importance.

Structure, reproduction and Life cycle of the following: Rhizophus, Agaricus, Puccinia, Cercospora.

UNIT-2 LICHENOLOGY, BRYOLOGY, PTERIDOLOGY

Lichenology-

General characteristics, Thallus Organisation, Reproduction, occurrence, Classification, Ecological importance, Mycorrhiza (EctomyCorrhiza & Endomycorrhiza)

Bryology-

General characters, Classification, structure and reproduction, Economic importance, structure and Life history of Marchantia, Riccia and Polytrichum

Pteridology-

General characters – Classification, based on smith, Structure and life history of Psilotum, Lycopodium, Selaginella, stellar organisation, Heterospory and seed habit, Economic importance.

UNIT-3 GYMNOSPERMS, PALEOBOTANY, EVOLUTION.

Gymnosperms-

General characters, classification (Sporne, 1954), Structure & reproduction, Economic importance, Life history of cycas, pinus and Gnetum.

Paleobotany-

Geological time scale – era, period, epoch, fossilization methods – fossil types – Radio carbon dating, contributions of Birbal sahni.

Evolution-

Origin of Life, Theories of Evolution – Darwin, Lamarck and De vries.

UNIT-4 ANGIOSPERM - MORPHOLOGY, TAXONOMY AND ECONOMIC BOTANY

Angiosperm morphology-

Root system – Modifications, shoot system – Modifications, Leaf – simple, Compound- phyllotaxy, Modifications of leaf.

Inflorescence – types, Flowers – parts, Aestivation, Placentation, fruits – types and classification.

Taxonomy –

Classification of Angiosperms – Artificial, natural, phylogenetic, Herbarium – techniques, Botanical Nomenclature, Botanical Survey of India.

Study of the following families based on the natural sytem poaceae, cucurbitaceae, asteraceae, solanaceae Arecaceae, Euphorbiaceae Leguminosae lamiaceae & Economic importance of the above familes.

Economic Botany-

Source, Cultivation methods and economically important products of rice, sugarcane, cotton, groundnut.

UNIT-5 ANATOMY AND EMBRYOLOGY

ANATOMY-

Meristems and types, simple permanent tissues, complex permanent tissues (xylem, phloem), Tissue systems & types, Secondary growth, Anomalous Secondary Growth, primary structure of root, stem and leaf of dicots & monocots, krantz anatomy.

EMBRYOLOGY-

Microsporangium, microsporogenesis and development of male gametophyte, Megasporangium, types, Megasporogenesis, development of female gametophyte - Monospory, Bispory, tetraspory, Double fertilization, triple fusion, types of endosperm, Embryo development in dicot & monocots, Apomixis, polyembryony, anther and embryo culture technique.

UNIT -6 MICROBIOLOGY, PLANT PATHOLOGY

Microbiology-

History and scopes of microbiology, Introduction to microbial world – protozoa, bacteria, viruses, mycoplasma, economic importance of bacteria, culture methods and techniques, Fermentation and antibiotic production.

PLANT PATHOLOGY-

History of plant pathology, symptomology of Fungal, viral, bacterial pathogens host defence.

Name the causative organisms, etiology and control measure of the following diseases Blast of rice, wilt of cotton, canker of citrus, powdery mildew disease, Redrot of sugarcane, Tikka of groundnut, Little leaf of brinigal, Bunchy top of banana.

UNIT -7 PLANT PHYSIOLOGY, BIOCHEMISTRY, BIOPHYSICS

PLANT PHYSIOLOGY: -

Water relations of plants – Imbibition, Diffusion, Osmosis, plasmolysis, Mechanism of Water absorption – Ascent of sap, Transpiration – Types, Significance, Mechanism, Factors affecting it, Guttation.

Photosynthesis- C3, C4 CAM pathways.

Respiration – Aerobic, Anaerobic, Glycolysis, kreb's cycle, Electron transport chain, photorespiration Nitrogen Metabolism – Source of nitrogen, Methods of nitrogen Fixation – Metabolism - Symbiontic, non-symbiontic, Nitrogen Cycle.

Physiology of flowering - photoperiodism – plant growth substances, chemical nature and physiological functions of auxins, Gibberellins cytokinins, ethylene, ABA and Brassinosteriods.

BIOCHEMISTRY: -

Biopolymers, carbohydrates, Lipids, proteins, nucleic acids and their monomers.

Enzymes- properties, classification, mode of action-factors affecting enzymes.

BIOPHYSICS: -

Laws of thermodynamics – Concept of free energy, ATP as high energy compound- photo physiology – Light emission – fluorescence, phosphorescence, Bioluminescence, light absorption

UNIT-8 CYTOLOGY, GENETICS, PLANTBREEDING, HORTICUTURE

CYTOLOGY: -

Cell organisation – prokaryotic & Eukaryotic cells, Cell membrane, Cell cycle, mitosis, Meiosis, Amitosis, Cell Organelles – Occurrence, Structure, Function and Origin of ER, Golgibody, Lysosomes, Ribosomes, Mitochondria and chloroplast,

Chromosome- Structure, types, polytene & lampbrush.

GENETICS: -

Mendelism, Monohybrid, Dihybrid crosses, Laws of Mendel, Incomplete dominance, Interaction of factors and genes, Linkage & crossing over, Multiple alleles, Mutations, sex determination in Plants.

PLANTBREEDING: -

Principles involved in plant breeding Methods of crop improvement – Selection, hybridisation Introduction, acclimatization, Heterosis – cause and effects, polyploidy in breeding, Hybridisation technique employed in Cotton, paddy & sugarcane

HORTICUTURE: -

Scope of Horticulture – Classification of Horticulture plants – fruits, Vegetables, ornamentals, Garden design & types – Rockery. Bonsai, Kitchen Garden, Lawn making, Floriculture, Cultivation of commercial plants – Jasmine, Propagation methods, cutting, grafting, Layering, Budding.

UNIT-9 PLANT ECOLOGY, ENVIRONMENT, CONSERVATION BIOLOGY, PHYTOGEOGRAPHY

PLANT ECOLOGY: -

Biotic and Abiotic Factors, plant Succession, Ecological adaptations, Xerophytes, hydrophytes, Epiphytes.

Food chain, Food web, Energy flow- Types of eco system, Ecological pyramids, Nutrient cycles,

ENVIRONMENT: -

Pollution – Air, Water, Soil, Causes and Consequence, Green house effect, Global warming, ozone depletion, acid rain and their impacts, remedial measures – Green building.

CONSERVATION BIOLOGY: -

Natural resource and its conservation (Insitu, Exsitu), Brief account of National and International agencies of conservation – Afforestation.

PHYTOGEOGRAPHY: -

Principles – Vegetation types of India, Tropical evergreen forests, Deciduous forest, Mangrove vegetation and scrub jungle with reference to Tamil Nadu – Raunkiaer's life form, Remote sensing of vegetation photo interpretation.

UNIT-10 PLANT BIOTECHNOLOGY, BIOINFORMATICS, MOLECULAR BIOLOGY

PLANT BIOTECHNOLOGY: -

History & Scope, Applications of plant biotechnology, Bio fertilizers, Biopesticides, antibiotics, Recombinant Vaccines, Insulin and Interferons – Bio remediation.

Plant tissue culture – Applications of plant tissue Culture, Vectors – Plasmid, Bacteriophages, viral vectors, cosmids, Restriction enzymes, rDNA technology, Development of transgenic plants with reference to insect resistance, edible Vaccines, pros and cons of genetically Modified food (GM food).

BIOINFORMATICS: -

Databases and tools – Biological database 'NCBI' model primary & Secondary databases – BLAST - proteomics and tools, Homology modelling.

MOLECULAR BIOLOGY: -

Nature and function of genetic materials – Nucleic acid – DNA, RNA, Replication of DNA, RNA types, Transcription, protein synthesis, codons, anticodons, gene regulation in prokaryotes – Lac Operon.

Zoology

DEGREE STANDARD

Unit I – INVERTEBRATA

Principles of taxonomy - Bionomical nomenclature - Rules of nomenclature - Classification of Animal Kingdom - General Characters and classification up to orders from protozoa to Echinodermata - Protozontype study - *Paramecium* and *Plasmodium* - Parasite protozoans (*Entamoeba*, *Trypanosoma* and *Leishmania* - Porifera - Type study *Leucosolenia* - General Topic - History, Skeleton and canal system in sponges - Coelenterata - Type study - *Obelia* and *Aurelia* - General topic - Coral and coral reefs - Polymorphism, Economic importance - Platyhelminthes - Type Study - *Fasciola* and *Taenia* - General Topic: Parasitic adaptation - Aschelminthes - Type Study - *Ascaris* - General Topic - Nematode parasites and diseases (*Enterobius vermicularis*, *Ancylostoma duodenale* and *Wuchereria bancrofti*) - Annelida -Type study - Earthworm and Hirudinaria General Topic - Metamerism - Trochophore larva and its significance - vermiculture - Nephridia - Econonic importance - Arthropoda - Type study - *Penaeus* - General topic - Affinities of *Peripatus* - Crustacean larvae and their significance - Mouth parts of insects - Economic importance of insects - social life of insects - Mollusca - Type study - *Pila* and *Lamellidens* - General Topics - Foot in Mollusca - Economic importance - Torsion in Gastropods - Echinodermata - Type study - *Asterias* - General Topic - Echinoderm larvae and their significance - water vascular system in Echinoderms.

UNIT II - CHORDATA

Origin of chordates - General characters and outline classification of Phylum chordata with examples - General characters and classification upto mammalia. **Prochordates** - Type study - Hemichordata - *Balanoglossus* - Urochordata - *Ascidian* - Cephalochordata - *Branchiostoma* (*Amphioxus*). **Agnatha** - Type study - *Petromyzon* - General topic - Affinities of cyclostomata. **Pisces** - Type study - *Scoliodon sorrokowah* and *Mugil cephalus* - General Affinities of Dipnoi - Types of scales and fins - Accessory respiratory organs - Air bladder - Migration- Parental care - Economic Importance. **Amphibia** - Type study *Rana hexadactyla* - General - Origin of Amphibia - Adaptive features of Anura; Urodela and Apoda - Neoteny in urodela - Parental care in Amphibia. **Reptilia -** Type Study - *Calotes versicolor* - General - Origin of reptiles - snakes of India - poison apparatus and biting mechanism of snakes. **Aves** - Type study - *Columba livia* - General topics: Origin of birds - Ratitae - Flight adaptation - Migration in birds - Palate in birds - Birds are glorified reptiles. **Mammalia** - Type study - Rabbit - General topics - Adaptive radiation in mammals. Egg laying mammals - Marsupials - Aquatic mammals - flying mammals - Dentition in mammals.

Unit III - CELL AND MOLECULAR BIOLOGY

Compound microscope - Phase contrast microscope – Electron microscope - Light and Dark field microscopes - Cytological techniques - fixation - staining - centrifugation- sedimentation co-efficient - **History of cell biology** - Cell theory - cell as the basic unit of living organism - Prokaryotic and Eukaryotic cell - ultrastructure of an animal cell - plasma membrane - Lipid bilayer, unit membrane, fluid mosaic and functions of plasma membrane - Cell organelles - ERC - Ribosomes - Golgi complex - Lysosomes - Centrioles and mitochondria - Nucleus - Nucleolus - structure and functions of chromosomes - heterochromatin and euchromatin - Giant chromosome - Polytene and Lambrush chromosome - cell cycle - mitosis and meiosis. Cancer - types - causes - diagnosis - characteristics and treatment - Gene responsible for aging - stem cells.

Nucleic acids - Molecular structure of DNA and RNA - Types of RNA - DNA replication - Role of RNA and ribosome in protein synthesis - Regulation of Protein synthesis.

UNIT IV - GENETICS

Mendelian principles - Gene interactions - Multiple alleles - ABO blood group and Rh factor - Multiple factors - skin colour - Sex determination - Linkage and crossing over - chromosomal aberrations. Extra chromosomes - Allosomal and Autosomal aberrations - Mendelian traits - Pedigree studies - Eugenics - Genetics and society. Nucleic acids - DNA and RNA - Chemical basis of hereditary - Gene mutation - Genetics of bacteria - Genetic code - Gene action - Regulation of gene expression - Insertion elements and transposons - Genetic cloning.

UNIT V - ANIMAL PHYSIOLOGY

Nutrition - Types of nutrition - food - feeding mechanism. Digestive enzymes and their role in digestion - Respiration - Respiratory organs - Mechanism of respiration - Transport of gases - chloride shifting - Haldane and Bohr's effect. Circulation - Structure of human heart - cardiac cycle - origin of heart beat - pace maker regulation of heart beat - ECG - Blood pressure. Blood - excretion - kidney - nephron - mechanism of urine formation in mammals - hormonal control of excretion. Osmoregulation and thermoregulation. Muscular system - Types of muscles - structure and chemical composition of skeletal muscle - mechanism of muscle contraction. Nervous system - Structure of neuron - Types of neuron - nerve impulse in myelinated and non- myelinated neuron - action potential – synapse - neuromuscular junction and reflex action - reflex arc. Photoreceptor - phonoreceptor - physiology - equilibrium - chemoreceptors. Endocrine

system - endocrine glands - hormones of pituitary gland - pineal gland - thyroid gland - parathyroid gland - thymus - adrenal gland – pancreas. Defects of hormones - Human reproductive hormones - Menstrual cycle in human.

UNIT VI - BIOCHEMISTRY & BIOTECHNOLOGY

Biological properties - Classification - Structure of carbohydrates, proteins and fats. Metabolism of carbohydrates, proteins and lipids. Glycolysis - Glycogenolysis - Gluconeogenesis - Glycogenesis. Kreb's cycle - Oxidative phosphorylation - Electron transport system. Deamination - Transamination - fate of keto acids. Nitrogen metabolism - Beta oxidation of fatty acids - BMI and BMR - Biotechnology - Scope and importance of Biotechnology - DNA Recombinant Technology - Application of genetic recombinant technology in human health and agriculture - Genetic engineering - Restriction enzymes - ligase - polymerase and reverse transcriptase - PCR, Gene cloning - cloning vectors - plasmids - cDNA library - Gene Bank. Production of biotechnological products - SCP - Biofertilizers - Biofuel - Biopesticides - Biogas production - Solid and liquid waste management. Enzyme Biotechnology - Sources and production of commercially important enzymes - cellulase, amylase, pectinase and proteinase.

UNIT VII - DEVELOPMENTAL BIOLOGY

Origin of germ cells - Gametogenesis - Process of spermatogenesis and oogenesis - Types of sperms - Types of eggs and egg membranes - Structure of sperm and ovum in mammals - Fertilization - Acrosomal reaction - Cortical reaction, physiological and biochemical changes and significance. Cleavage - Types of cleavage patterns - Controlling factors and laws in cleavage - Fate maps in frog and chick. Blastulation and gastrulation in amphioxus, frog and chick. Organogenesis - Development of brain, eye and ear in vertebrate animals - Extra-embryonic membranes - Placentation in mammals - Mechanism of induction - Human reproduction - Puberty - Menstrual cycle- Menopause - Pregnancy and related problems - Artificial insemination - Cryopreservation - IVF - Embryo transfer and its advantages - Test tube baby - Amniocentesis - Super ovulation - Artificial Reproductive Technology (ART) and embryo manipulation - Ethics in ART - Stem cells.

UNIT VIII - ENVIRONMENTAL BIOLOGY & EVOLUTION

Scope - Concept - Braches in Ecology - Autecology and Synecology - Micro and macro environment. Types of media and substratum - their influence on animals. Biosphere - Hydrosphere, Lithosphere, Stratosphere - Biocoenosis and biogeocoenosis - Abiotic factors - Water, soil, light and temperature - Biotic factors. Animal relationships - Symbiosis, Commensalism, Mutualism, Antagonism, Predation, Parasitism and Competition. Biogeochemical cycles - Nitrogen, Carbon and Oxygen - Ecosystem - Pond ecosystem - Primary and secondary production - food chain - food web. Trophic levels - Energy flow - Ecological pyramids - Biomass, number and energy. Terrestrial Ecology - Biomes - Characters - tundra, grass land, forest and desert biomes - Types of forests in India - Adaptations of animals inhabiting deserts - Freshwater, Marine and Estuarine Ecology - their characteristics - Biotic communities and their adaptations. Population Ecology - Community Ecology - Pollution - air, water and land - wild life management. Preservation - laws enforced - sanctuaries - natural resources management. Renewable and non-renewable resources. Evolution - Theories and trends - Lamarckism and Neo Lamarckism - Darwinian theory - Geological time Scale - Fossil and Fossilization - Dating of fossil - living and extinct fossils. Mimicry & coloration - Convergent, Divergent and parallel Evolution - Coevolution - Isolating Mechanisms - different types - species concept - definition and origin of species - Allopatric and sympatric speciation - genetic drift - Founder's principle.

UNIT IX- ECONOMIC ENTOMOLOGY AND PEST CONTROL

Economic importance of honey bees, silkworm and lac insects. Insects damage to the plants, animals and man - Insects pests of stored grains - Insect vector of plants, animals and man - Insects affecting health of domestic animals and human - Pest control methods - Physical, mechanical and chemical methods - Classification of pesticides and their modes of action - Plant protection appliances. Basic principles of insecticide formulations and their application in pest control - pesticides and environmental pollution - precautions in handling pesticides - integrated post management.

UNIT X- ECONOMIC ZOOLOGY

Poultry Farming: Important breeds of poultry - chick rearing - Role of egg in human nutrition - processing of egg, meat and by-products of poultry - major diseases of chick.

Dairy Farming: Important breeds of dairy - Nutritive value of milk and meat - dairy by-products.

Aquaculture: Important culturable freshwater, brackish water and marine fishes and shell fishes - Polyculture, integrated culture - live feed organisms in aquaculture. Nutritive value of fish meat - fishery by-products.

Pearl and edible oyster culture: Culture of pearl - Biology of *Pinctada fucata* - Preparation of graft, tissue and nucleus. Techniques of edible oyster culture - induced breading - Harvesting.

UNIT –XI - MICROBIOLOGY AND IMMUNOLOGY

Classification of microbes - structure of bacteria - economic importance of bacteria. Viruses - Types of viruses - Herpes Virus, TMV, Polyoma viruses, Bacteriophages and virion. Sterilization - Physical and chemical methods. Types of bacterial culture. Microorganisms of different soils in extreme environments - Thermophilic, Methanogenic and Halophilic. Food borne infections and intoxications - *Clostridium*, *Salmonella* - *Staphylococcus* - Common bacterial, viral and fungal diseases of human.

History of immunology - Blood transfusion - Rh factor - Compatibilities - Innate and acquired Immunity. Structure, composition and functions of cells and organs involved in immune system - virulence and host resistance related immunity. Antigens - types, properties - haptens - adjuvants - vaccines - types - toxoids - antitoxins. Immunoglobulins- structure, types and properties - theories of antibody production - complement structure- properties - function and pathway. Antigen - antibody reaction - *in vitro* methods - agglutination - precipitation - complement fixation - Immunofluorescence - ELISA - RIA - Western blot.

History

DEGREE STANDARD

Unit - I

History of India from Pre – Historic Period to 1206 A.D.

Geographical features, Sources - Archaeological - Literary – Monuments - Numismatics – Foreign - Sources – Pre Historic Age – Stone Age Culture – Early Civilizations of India – Indus Valley Civilization – Vedic Age – Political – Economic – Social and Religious life – Literature - Jainism and Buddhism – Mahajanapadas – Rise of Magadha – Persian and Greek influences - Alexander's invasions and Effects – The Mauryas – Ashoka - Dharma – It's nature and propagation – Mauryan State Administration - Economy – Art and Architecture – Sungas - Satavahanas – Kushanas – Guptas - Hun's Invasion – Effects – Harshavardhana – Chalukyas – Foreign Travellers– Hieun Tsang – Fahien – Itsing - Rashtrakutas – Rajput Age - The Arab conquest of Sind – causes and effects – Mahmud of Ghazni– Mohammed of Ghor – The first and second Battle of Tarain – Indian Society on the eve of Muslim Conquest of India.

Unit – II

History of India from 1206 A.D. to 1857 A.D.

Delhi Sultanate – Slave Dynasty – Khilji Dynasty – Malik Kafur's Invasion – Mongolian attack - Effects Tughlug Dynasty –Timur's Invasion – Sayyid Dynasty –Lodi Dynasty – Delhi Sultanate Administration – Social Economic and cultural life - Reforms– Literate - Art and Architecture under the Sultanate – Bhakthi Movement – Origin of Vijayanagar Kingdom – Krishnadevaraya's achievements – Administration – Bahmini Kingdom – Outline of the political history of the Mughals – Administration and Culture –Art and Architecture - Sher Shah's conquests – Reforms - Akbar – Rajput Policy – Religious policy – Golden Age of Mughals – Impact of Mughal rule on Hindu society - Marathas – Shivaji – Achievements and Administration – Peshwas – Third Battle of Panipet – The Advent of Europeans – Portuguese – Dutch - Battle of Plassey – Robert Clive – Warren Hastings – Lord Cornwallis – Permanent land Revenue settlement – Mysore War - Wellesley – Lord Hastings – Lord William Bentinck - Ranjit Singh – Lord Dalhousie - Reforms of Lord William Bentinck, Socio – Religious Reform Movements in the 19th Century – Education policy under East India Company – Administrative structure and policy – Judicial and police reforms.

Unit – III

History of India from 1857 A.D. to 1947 A.D.

The Revolt of 1857 – Nature, causes and Results - India under the Crown – Queen Victoria's Proclamation – Lord Canning – Lord Ripon – Lord Curzon – National awakening – Indian National Congress – Moderates – Extremists – Muslim League - Surat Split – Gandhian Era –Non- Cooperation Movement, Home Rule Movement – Wavell plan - Civil Disobedience Movement - Round Table Conferences – Poona Pact - Cripps Mission – Quit India Movement – Indian National Army – Cabinet mission plan Lord Mountbatten plan – Partition of India – Constitutional Development from 1773 to 1935 - Indian Independence Act of 1947.

Unit – IV

History of India since independence

Nehru Era – Main Features of Indian Constitution - Amendments of the Constitution – Integration of Indian states – Reorganisation of Indian states - Five year plans – Indian Foreign policy - Lal Bahadur Shastri to Dr. Manmohan Singh, Socio – Cultural Developments in India - Mahatma Gandhi, Dr. B.R. Ambedkar – Depressed class Movements - Jothirao Phule - EVR - Sri Narayana guru - Globalization – Market Economy and it's impact on Agriculture and Industries Development - Science and Technology – Education Policy development - Information Technology – Impact on the Society – Mandir conflict - Cross Border Terrorism.

Unit – V

History of Tamil Nadu upto 1565 A.D.

Geography of Tamil Nadu – Sources – Ancient Tamil Civilization – Sangam Age – Cheras, Cholas and Pandyas – Administration – Social, Economic condition – Culture and literature – Post sangam – Kalabhras - Pallavas – Origin – Political administration – Art & architecture - Cultural development - Literature – Bhakti Movement.

Imperial Cholas – Vijayalaya to Kulothunga I – Cholas Administration - Local self Government - Economic and Social life - Art and Architecture – Religion, Education and literature.

The Early Pandyan Empire - Later Pandyas – Political Administration – Art and Architecture – Literature – Malik Kafur's Invasion – Government under Madurai sultans– Kumarakampana – Expeditions - Marco Polo's Account - Sultanate of Madurai - Tamilagam under Vijayanagar rule.

Unit – VI

History of Tamil Nadu from 1565 A.D. to 2000 A.D.

Tamil Nadu under Nayaks and Marathas – Sethupathis of Ramnad - The Advent of Europeans – Anglo French rivalry – Carnatic Wars - Palayakkarar's revolt – Pulithevan – Kattabomman, Marudhu brothers – South Indian Rebellion of 1801 – Vellore Mutiny of 1806 - Tamil Nadu under British rule – The British land Revenue Administration - Role of Tamil Nadu in freedom struggle – VOC, Subramania Bharathi, Subramania Siva, Tiruppur Kumaran, Rajaji, Kamaraj, Annie Besant – Socio – Religious Reforms Movements of Tamil Nadu – E.V.Ramasamy – The Self Respect Movement, Justice Party Reforms Act, Widow Remarriage, Sarada Act, Abolition of Devadasi System –Anti – Hindi Agitations - Development of Tamil Nadu under Congress rule, DMK & AIADMK.

UNIT VII

HISTORY OF EAST ASIA

Advent of Europeans – Impact on China and Japan – Opium Wars in China – Taiping Rebellion – Open Door Policy – First Sino - Japanese War – Hundred days reforms - Boxer Rebellion –The Revolution of China, 1911 – Dr. Sun-Yat- Sen – Yuan - Shi-Kai, China in the First World War and its Impact – Paris peace conference – May Fourth Movement - Chiang – Kai – Shek - The Nationalist Government - Emergence of Communism – Civil War - China in the Second World War– Mao Tse Tung – People's Republic of China – Communist China foreign policy since 1949 - Japan - Shogunate - Meiji Restoration and Reforms – Anglo – Japanese Alliance 1902 – Russo - Japanese War – Japan in the first World War – 21 Demands – Japan and Treaty of Versailles, Foreign Policy of Japan – Washington conference – Manchurian crisis - Japan in the Second World War – Allied occupation – New Constitution of Japan – Reconstruction of Japan after World War II – Post War politics in Japan.

UNIT VIII HISTORY OF USA

Voyages and Exploration - European Settlements – 13 Colonies – War of Independence – Confederation - Declaration of Independence – Constitution and Federalists – George Washington – Alexander Hamilton – John Adams - Republican Revolution – Thomas Jefferson – War of 1812 – Westward Movement – Monroe Doctrine – Jacksonian Democracy - Expansion of USA and the issue of slavery – Civil war – Abraham Lincoln – Reconstruction – Ku Klux klan - Rise of Big Business – Agrarian Revolution - Labour Movements – Pan Americanism – The Spanish – American War of 1898 – Progressive Era - Role of USA in the I World War – Atlantic charter – USA and UNO - Great Depression – USA in the Second World War – Cold War – John F. Kennedy – New Frontier – Civil Rights Movement – Martin Luther King – End of cold war.

UNIT IX

HISTORY OF EUROPE

Fall of Constantinople - Renaissance in Italy – Reformation in Germany – Counter Reformation – Discovery of New Routes and New Lands – Inventions – Rise of Nation States – Nationalism – Thirty Years War – Benevolent Despots – French Revolution – Reign of terror - Napoleon I – Vienna Congress – Metternich – Holy Alliance – Concert of Europe – Unification of Italy- Unification of Germany – Bismarck as Chancellor – Eastern Question - First World War – Secret Alliances – Serajavo Incident – Course – End of the War – Paris Peace Conference – Treaty of Versailles – The League of Nations – The Russian Revolution – Fascist Italy – Nazist Germany – The great depression - Second World War – Establishment of UNO.

History of England – James I and his Relation with Parliament – Charles I - Long Parliament – Policy of Early Stuarts – Civil War – Common Wealth and the Protectorate– Oliver Cromwell – Later Stuarts – Charles II – Origin of the Party Systems In Britain – James II – Glorious Revolution – William III and Mary – Queen Anne –Act of union – Cabinet system in England - American War of Independence – Industrial and Agrarian Revolution – Queen Victorian Era - George V – Parliament Act of 1911 – George VI – England between two World Wars – Winston Churchill - Lord Atlee – Queen Elizabeth II.

Unit – X

History of Modern World

The World after the Second World war – Formation of UNO – Achievements – Cold War – NATO – SEATO – CENTO – Warsaw Pact, Regional Organizations – The Arab league – ASEAN - EEC – NAM – Commonwealth – SAARC – OPEC – BRICS - Latin American countries – Cuba under Fidel Castro – Arab Israel Conflicts – Gulf War– Oil crisis – Disintegration of Soviet Union – Nelson Mandela - Apartheid in South Africa – Liberalization, Privatization and Globalization – Major Trends in Science and Technology – Nuclear – Nuclear Disarmament – NPT – CTBT – SALT - Space and Communication – Global Warming – Disaster Management.

GEOGRAPHY

DEGREE STANDARD

UNIT-I - GEOMORPHOLOGY

Origin of the Earth - Interior of the Earth - Crust - Mantle - Core - Geomorphic Processes - Diastrophism – Fold – Fault – Earthquake – Volcanoes – Continental Drift – Plate Tectonics – Rocks – Rock types – Soil profile – Agents of Denudation – Running water - Glacier – Wind – Waves – Underground Water – Cycle concept of Davis and Penk.

UNIT-II - CLIMATOLOGY

Structure and Composition of atmosphere – Insolation – Heat balance – Factors affecting the horizontal and vertical distribution of temperature – Major Pressure belts of the world – Winds – planetary winds – Local winds – Humidity – Forms of Condensation – Clouds – Precipitation – Rainfall types – Air masses - Fronts – Cyclones – Climatic Classification of Koeppen and Thornthwaite.

UNIT- III - OCEANOGRAPHY

Relief of Ocean floor – Bottom Topography of Atlantic ocean, Pacific Ocean and Indian Ocean – Distribution of temperature of oceans – salinity of oceans – waves – Tides and ocean currents – Coral reefs-Deposits of Ocean floor - Resources of Oceans.

UNIT- IV - HUMAN GEOGRAPHY

Man and his environment – Human Adaptations in Equatorial regions – Mediterranean Regions Grasslands – Determinism and possiblism - World Population – Growth – Distribution pattern – Population Problems – Migration – Types – Causes and consequences – Settlements – Rural Settlements – Urban Settlements – Types of Urban and Rural Settlements – Site and situation – Functional Classification of Towns – World Urbanization.

UNIT-5 - ENVIRONMENTAL STUDIES

Concept of Eco-system Eco crisis – Climatic Conditions – Adaptation of animals and Plants in different climatic conditions – Balance of Eco-system – Need for conservation of Eco system – Natural Hazards – Flood - Drought – Forest fire – Earthquake and volcanic eruptions – Manmade disasters Nuclear explosions, Fire and Oil spills.

UNIT-6 - ECONOMIC GEOGRAPHY

Resources – Types – Agriculture – Types of Agriculture – Major Crops – Rice – Wheat – Cotton – Tea – Coffee – Sugar cane – Minerals-Types – Iron ore – Bauxite – Manganese and Mica – Power Resources – Coal - Petroleum - Hydro Power – Nuclear power – Forest Resources – Forest based industries – Iron and steel Industries - Textile industries – Ship building industries – Automobile Industries – Major fishing grounds of the world – Transport – Road ways – Railways – Waterways – Airways – Trade – international trade – World Trade Patterns.

UNIT-VII - REGIONAL GEOGRAPHY

Definition – classification of regions – Functional and Formal regions – Agricultural regions – Cultural Regions of the world – Human Races and types. Regional imbalance – Need for regional planning.

UNIT-VIII – CARTOGRAPHY

Maps – Types of Maps – Map scale and Types – Map Projections – Classification – Cylindrical – Conical and Zenithal projections – Map design and layout – Map compilation and generalization sources of data - Primary and secondary data – Computers and cartography.

UNIT- IX- GEOGRAPHY OF INDIA

Location of India – physiographic divisions – Climate of India – Climatic Divisions – Forest types – Soil types – Agriculture – Problems of Indian Agriculture – Crops – Wheat – Rice – Cotton – Sugarcane – Tea – Coffee – Minerals – Iron ore – Bauxite – Manganese – Mica – Copper – Industries – Iron and steel – Cotton textile. Sugar industries-cement industries - Engineering Industries – Transport -National Highways - Railways – Inland water ways – Airways – Ports - Major ports of India – Population – Distribution - density – problems of over population – National population policy Trade – Pattern of foreign Trade of India.

UNIT - X - GEOGRAPHY OFTAMILNADU

Location of Tamilnadu - Relief – climate - soil – rivers - vegetation – Fisheries - Agriculture – Impact of green Revolution – Cultivation of major crops – Mineral wealth of Tamilnadu - Industries – Population Transport – Roadways - Railways – Ports and Airports of Tamilnadu. Urbanization – Million cities of Tamilnadu.

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