பருவம்: முதற் பருவம் **பாடக் குறியீட்டு எண்: LT101S**

அலகு **பாடங்கள்**

1. அலகு – 1 **(மரபு கவிதைகள்)**
   - 1.1 வள்ளலார்
   - 1.2 பாரதியார்
   - 1.3 பாரதிதாசன்
   - 1.4 கவிமணி
   - 1.5 கண்ணதாசன்

2. அலகு – 2 **(புதுக்கவிதைகள்)**
   - 2.1 அப்துல் ரகுமான்
   - 2.2 மு. மேத்தா
   - 2.3 வைரமுத்து
   - 2.4 தமிழச்சி
   - 2.5 நாட்டுப்புறப்பாடல்கள்

3. அலகு – 3 **(இலக்கிய வரலாறு)**
   - 3.1 இருபதாம் நூற்றாண்டுக் கவிஞர்கள்
   - 3.2 புதுக்கவிதையின் தோற்றமும், வளர்ச்சியும்
   - 3.3 சிறுகதையின் தோற்றமும், வளர்ச்சியும்
   - 3.4 நாட்டுப்புற இலக்கியங்கள்

4. அலகு- 4 **(சிறுகதைகள்)** கதவு – கி.ரா
   - 4.1 கதவு
   - 4.2 குடும்பத்தில் ஒரு நபர்
   - 4.3 ஜெயில்
   - 4.4 மின்னல்
   - 4.5 எழுத மறந்த கதை

5. அலகு – 5 **(மொழித் திறன்)**
   - 5.1 வல்லொற்று மிகுமிடம்
   - 5.2 வல்லொற்று மிகாமிடம்

SEMESTER – I ENGLISH THROUGH LITERATURE – I LE101S

UNIT - 1 **[15 HRS]**

RELATIONSHIPS

Freedom at Midnight – Larry Collins and Dominique Lapierre (Prose)
Night of the Scorpion – Nissim Ezekiel (Poem)
Driving Miss Daisy – Alfred Ubry (Play)

UNIT-2 **[15 HRS]**

SELF ENHANCEMENT

Ulysses – Alfred Lord Tennyson (Poem)
Our Urgent Need for Self-esteem – Nathaniel Brandon (Prose)
Emotional Intelligence – Daniel Goleman (Prose)

UNIT - 3 **[15 HRS]**

BASIC GRAMMAR

The Sentence

Parts of Speech

Nouns – Classes and Gender

Nouns – Number and Case

Adjectives

Comparison of Adjectives

UNIT- 4

BASIC LANGUAGE SKILLS **[15 HRS]**

Dialogue Writing
Letter writing – [Formal, Informal]
Comprehension

Text

1. Elango, K. **Insights : A Course in English Literature and Language**. Hyderabad: Orient Black swan Private Limited, 2009.
2. Bhatnagar, R.P., and Bhargava, Rajul. **English for Competitive Examinations**. Chennai: Macmillan India Press, 2002.
3. David Green, **Contemporary English Grammar: Structures and Composition**. Chennai: Macmillan India Limited, 2004.

Reference

1. Prince, Donna. **Skills for Success**, New York: CUP 1998.
2. Wallace, Michael, J. **Study Skills in English**. Kottayam: CUP, 2004.

SEMESTER – I ORGANIC CHEMISTRY – I CH101T

Objectives:

- To understand the basic properties of organic compounds
- To know the method of naming organic compounds
- To learn various methods of preparation of hydrocarbons
- To understand the mechanism of reactions of hydrocarbons
- To understand the stereochemistry of aliphatic Hydrocarbons

Unit -I BASIC CONCEPTS. 12hrs.

1.1 IUPAC nomenclature of organic compounds- naming of simple organic Molecules , practicing line formula for organic molecules
1.2 Geometry of molecules – Hybridisation sp^3, sp^2, sp with examples.
1.3 Cleavage of Bonds – Homolytic and heterolytic cleavage.
1.4 Bond energy, Bond length and Bond angle.
1.5 Electron displacement effects – inductive, inductomeric, electromeric, resonance, hyperconjugation and steric effects.
1.6 Reactive Intermediates: Carbocations, Carbanions, Carbenes and free radicals.

Unit – II : ALKANES&CYCLOALKANES 12 hrs.

2.1 Alkanes – methods of preparation: Wurtz reaction, hydrogenation of alkenes, hydrolysis of Grignard reagents, Kolbe's method. Physical and Chemical properties of alkanes.
2.2 Cycloalkanes – Preparation using Wurtz's reaction – Dieckmann's ring closure and reduction of aromatic hydrocarbons.
2.3 Substitution and ring opening reactions of cycloalkanes.
2.4 Bayer's strain theory and theory of strain less rings.

Unit-III ALKENES 12hrs.

3.1 Alkene Nomenclature - structure and bonding - Isomerism in Alkenes – properties – stability.
3.2 Preparation of Alkenes – Elimination reactions: Dehydration of Alcohols, Dehydrohalogenation of Alkyl halides. E1 and E2 mechanism. Hofmann and Saytzeff's rules – Problems related to these mechanism.
3.3 Addition reactions of Alkenes: Hydrogenation, Halogenation, Hydrohalogenation - mechanisms – Markovnikov's rule and Anti Markovnikov's rule. Mechanism of Hydration , Hydroboration, Ozonolysis, Hydroxylation with $KMnO_4$. Self-addition. Polymerization of Ethylene and Propylene problems.

UNIT – 4 – ALKYNES AND DIENES **12 hrs**

4.1 Alkynes – Sources of Alkynes - Nomenclature – acidity of alkynes – addition reactions – hydrogenation, Hydrohalogenation, Hydration with $HgSO_4$

4.2 Preparation of Alkynes by elimination reactions , Ozonolysis of alkynes Alkylation of alkynes using acetylides.

4.3 Dienes - preparation of dienes, classes of dienes - conjugated, isolated and cumulative - stability of dienes - addition of hydrogen halides & halogens to conjugated dienes - Polymerization of dienes– Diels-Alder reaction - Problems

4.4 Allenes – preparation and structure.

UNIT – V :STEREOCHEMISTRY – I **12hrs**

1.1 Conformational isomerism: Conformers, Dihedral angle, torsional strain.

1.2 Conformational analysis of ethane and n-butane,

1.3 Geometrical isomerism: Cis – trans, syn-anti and E-Z notations, Methods of distinguishing geometrical isomers using melting point, dipole moment, dehydration, cyclization and heat of hydrogenation.

Text Books:

1. Francis A.Carey, - Organic Chemistry- Tata McGraw Hill-1999.
2. Seyhan Ege- Organic Chemistry-A.I.T.B.S Publishers-1999.

Reference Books:

1. Ahluwalia and Parassar- Organic Reaction mechanisms, Narosa Publishers.2004.
2. Bahl & Arun Bahl- Advanced Organic Chemistry, Sultan Chand-1996.
3. Paula Yurkanis Bruice - Organic Chemistry, Prentice Hall- 1999.
4. E.L. Eliel and S.H.Wilers , Stereochemistry of Organic Compounds , John Wiley and sons , 2004.

P.S.Kalsi , Stereochemistry : Conformation and Mechanism , Wiley Eastern Ltd - 2007.

SEMESTER – I KINETIC THEORY OF GAS AND CHEMICAL KINETICS CH102Q

Objectives:

- **T**o study about SI units and unit conversion. To study about the laws governing the gaseous state
- **T**o impart the knowledge on Chemical kinetics.

UNIT – I **(12 hrs)**

1.1 Dimensions of units and its conversion.

1.2 The perfect gas equation of state – Boyle's law, Charle's law and Avogadro's principle.

1.3 Real gas equation –critical temperature – compression factor - Virial equations of state –Vanderwaals equation of state- Boyle temperature - joule –Thomson effect- Linde refrigerator (Pages 12 – 34)

UNIT – II **(12 hrs)**

2.1 Kinetic model of gases laws from the kinetic gas equation – Kinds of speed – mean, rms, most probable velocities. Maxwell's distribution of molecular speeds –Variation with temperature and molar mass.

2.2 Combined gas equation- Standard temperature and pressure.

2.3 Mixture of gases: partial pressures- Dalton's law.

2.4 Diffusion and effusion-Molecular collisions. [Pages 17-34]

UNIT-III **(12 hrs)**

3.1 Concept of equilibrium- law of mass action – relationship between Kp&Kc – effect of concentration, pressure, partial pressure, temperature & volume – Le Chatlier's principle

3.2 adsorption – terminologies – Gibbs adsorption isotherm – Friendlich – Langmiur – BET theory – adsorption isotherms – applications of adsorption

UNIT-IV **(12 hrs)**

4.1 Concepts of reaction rates- rate and units of rate of a reaction- dependence of rate on concentration- rate expression and rate constant- order and molecularity.

4.2 integrated rate equations-zero order, first order, pseudo first order reaction-half life of a reaction - temperature dependence of the rate of a reaction- effect of catalyst.

UNIT-V **(12 hrs)**

5.1 Solutions- types of solutions- concentration units of solutions- ideal and non ideal solutions.

5.2 Colloids- various types of classification – emulsions-applications of colloids.

5.3 Meso phases and disperse systems – liquid crystals- classification- surface,structure and stability- electrical double layer.(403-407)

Text & reference books

1. P.W. Atkins.Elements of Physical chemistry. Oxford university Press.3rd edition.1990.
2. Puri and Sharma. Principles of physical chemistry. 40th edition.2003

Arun Bahl, B.S.Bahl and G.D. Tuli . Essentials of Physical Chemistry. 26th edition (revised multicolour). 2009

SEMESTER – I ALLIED MATHEMATICS – I AMT101S

Unit-1: **[18 HRS]**

ALGEBRA: Binomial-exponentials-logarithmic series (without proof) summation and approximation-problems

Unit-II: **[18 HRS]**

MATRICES: Characteristic equation of a square matrix– Eigen roots and eigen vectors – Cayley – Hamilton theorem [without proof] – Verification and computation of inverse matrix-diagonalisation of matrices.

Unit-III: **[18 HRS]**

DIFFERENTIAL CALCULUS: n-th derivatives – Leibnitz theorem [without proof] and applications – Jacobians– Curvature and radius of curvature in Cartesian co-ordinates and polar co-ordinates.

Unit-IV: **[18 HRS]**

FOURIER SERIES: Bernoulli's formula for integration by parts-fourier series for the function in$(0,2\pi)$and$(-\pi,\pi)$ – half range fourier series.

Unit-V: **[18 HRS]**

LAPLACE TRANSFORMS: Laplace Transformations of standard functions and simple properties – Inverse Laplace transforms – Applications to solutions of linear differential equations of order 1 and 2 –problems.

Text Book:

1**.** P. Duraipandian and S. Udayabaskaran. 1997. Allied Mathematics. Vol I & II. Chennai: Muhil Publishers.

Reference Books

1. P. Balasubramanian and K. G. Subramanian. 1997. Ancillary Mathematics, Vol I & II. New Delhi: Tata McGraw Hill.
2. S.P.Rajagopalan and R.Sattanathan. 2005. Allied Mathematics. Vol I & II. New Delhi: Vikas Publications.
3. P. R. Vittal 2003. Allied Mathematics.Chennai: Marghan Publications.
4. P.Kandhasamy, K. Thilagavathy . 2003. Allied Mathematics Vol I & II. New Delhi: S. Chand & Co Ltd.

SEMESTER – I VALUE EDUCATION VE101

Unit I

Values-Definition- Concept -Sources of values-Characteristics of values-Classification of values-Importance of value education-Erosion of values-Political erosion-social erosion-economic erosion.

Unit II

Personal values-Importance- Self concept-Meaning-the existential self- the categorical self- self - image- Ideal self- Attitude-Meaning-Formations-Factors determining attitude-Need for positive attitude-Developing positive attitude-Consequences of negative attitude.

Unit III

Adjustment problems- Emotional and sexual adjustments-Significance of youth period- Autonomy versus dependence -Feeling of inferiority- Marriage and family-Identity of roles- Vocational problems - Social discrimination- stress coping skills.

Unit IV

Social values-Meaning-Importance-Types-Social sensitiveness-Altruism-Toleration-Social adjustment- Social loyalty-Social justice-Panchsheel of values-Other social values-Family values- Value of team work-Functions of family-Moral values-Importance of moral values.

Unit V

Cultural values-Meaning-Importance -Religious values-Characteristics of religious values- significance of religious education- Secular values-mutual understanding – Mutual cooperation- Tolerance- Appreciation of universal truths- Character-Humanitarianism.

Text Books;

1. RATCHAGAR .I (2010) mental health of rural youth.vijay Nicole imprints private limited, Chennai.
2. RATCHAGAR .I (2012) Value education, personality enrichment& soft skills. Vijay Nicole imprints private limited, Chennai.

References;

1. Beliefs Attitudes and Values by Milton Rokeach (1968)
2. The Nature of Human Values by Milton Rokeach (Aug 1973)
3. Understanding Human Values by Milton Rokeach (Jul 1, 2000)
4. The Three Christs of Ypsilanti (New York Review Books Classics) by Milton Rokeach and Rick Moody (Apr 19, 2011)
5. Understanding Human Values by Milton Rokeach (Jul 1, 2001)
6. Health And Human Values by Frank Harron, (1983)

பருவம்: இரண்டாம் பருவம் **பாடக் குறியீட்டு எண்: LT202S**

அலகு **பாடங்கள்**

அலகு – 1

1.1 திருமூலர்
1.2 சம்பந்தர்
1.3 திருநாவுக்கரசர்
1.4 மாணிக்கவாசகர்
1.5 ஆண்டாள்

அலகு – 2

2.1 பட்டினத்தார்
2.2 மஸ்தான் சாகிபு
2.3 குமரகுருபரர்
2.4 கலிங்கத்துப் பரணி
2.5 நந்திக்கலம்பகம்
2.6 முக்கூடற்பள்ளு

அலகு – 3 **(உரைநடை)**

நம்மால் முடியும் தம்பி நம்பு
எம்.எஸ்.உதயமூர்த்தி

அலகு- **4 (இலக்கிய வரலாறு)**

4.1 சைவ சமயக் குரவர்
4.2 ஆழ்வார்கள் (ஆண்டாள், குலசேகர ஆழ்வார் மட்டும்)
4.3 சிற்றிலக்கியங்கள் (பரணி, பள்ளு, பிள்ளைத் தமிழ், கலம்பகம் மட்டும்)
4.4 இசுலாமும் தமிழும்
4.5 உரைநடை வளர்ச்சி

அலகு – 5 **(மொழித் திறன்)**

5.3 கலைச் சொல் ஆக்கம்
5.3.1 அறிவியல்
5.3.2 ஆட்சித்துறை
5.3.3 கணினி
5.3.4 புழங்கு பொருட்கள்
5.4 மொழிபெயர்ப்புப் பகுதி
5.4.1 கடிதங்கள்

SEMESTER – II ENGLISH THROUGH LITERATURE – II LE202S

UNIT -1 **[15 HRS]**

PROSE : Contemporary Issues

The First Atom Bomb – Marcel Junod

Climatic Change and Human Strategy – E. K. Fedcrov

Corruption : Causes, Consequences and Agenda for Further Research – Paolo Mauro

UNIT- 2

LIFE STORIES **[15 HRS]**

The Diary of a young girl – Anne Frank

Wings of Fire – A.P.J. Abdul Kalam

Mother Teresa – F. G. Herod

UNIT - 3 **[15 HRS]**

BASIC GRAMMAR

Articles

Pronouns – Personal, Reflexive and Emphatic

Pronouns – Demonstrative, Indefinite, Interrogative, Distributive and Reciprocal.

Pronouns – Relative

Verbs – Transitive and Intransitive, Active and Passive Voice

Verbs – Mood and Tense

UNIT - 4.

WRITTEN COMMUNICATION SKILLS **[15 HRS]**

Precis Writing

Note Making

Report Writing

Text

1. Elango, K. Insights : **A Course in English Literature and Language**. Hyderabad: Orient Black Swan Private Limited, 2009.
2. Bhatnagar, R.P., and Rajul Bharagava. **English for Competitive Examinations**. Chennai: Macmillan India Press, 2002.
3. David Green, **Contemporary English Grammar: Structures and Composition**. Chennai: Macmillan India Limited, 2004.

Reference

1. Prince, Donna. **Skills for Success**, New York: CUP 1998.
2. Wallace, Michael, J. **Study Skills in English**. Kottayam: CUP, 2004.

SEMESTER – II INORGANIC CHEMISTRY – I CH203T

Unit – I Atomic orbitals and General periodic properties of elements (12 hrs)

1.1. Atomic orbitals - Shapes of s, p, d, f orbital. Hund's rule of maximum multiplicity-applications of Hund's rule- Aufaubau principle - Pauli's exclusion principle - electronic configuration of elements - Stability of half filled and completely filled orbitals - classification of s, p, d and f block elements.

1.2. General periodic properties of elements - Periodic table- IUPAC - nomenclature of Inorganic compounds - Atomic radii and ionic radii – size - ionization energies – electron affinity - oxidation states and variable valency - Inert pair effect – electro negativity - Pauling's and Mulliken scale- Alfred Rochow scale.

1.3. Applications of electronegativities – Calculation of partial ionic character of a covalent bond, Calculation of enthalpies of formation of compounds - Calculation of bond length - Explanation of diagonal relationship.

Unit – II - Chemistry of Alkali and Alkaline earth metals (12 hrs)

2.1. Chemistry of Alkali metals: Occurrence, comparative study of elements - oxides, halides, hydroxides and carbonates. Exceptional properties of Li. Diagonal relationship of Li with Mg.

2.2. Chemistry of Alkaline earth metals : Comparative study of elements – oxides - hydroxides, halides, sulphates and carbonates. Exceptional properties of Be. Diagonal relationship of Be and Al. Comparison of alkali metals with alkaline earth metals. Mg acting as bridging element between II A & II B groups resemblance of Mg with Zn.

2.3. Hydrogen bonding – Intra and Inter molecular hydrogen bonding – properties of hydrogen bonded Nitrogen, Oxygen and Fluorine compounds.

Unit – III - Chemistry of p – block elements - Boron family (12 hrs)

3.1. Chemistry of p – block elements – Boron family- group discussion – anomalous behavior of B - diagonal relationship between B & Si - electron deficiency & electron acceptor behavior of BX_3.

3.2. Boron hydrides - Bonding in diborane, (VBT & MOT approach) Bonding in tetraborane. Borax- sodium borate, sodium tetraborate, or disodium tetraborate - Boric acid.

3.3. Compounds of Boron with Nitrogen - Borazole and Boron nitrides.

Unit – IV Ionic,Covalent bonding and Acid- Base concepts (12 hrs)

4.1 Ionic Bond : Conditions for the formation of ionic bond – Radius ratio rules and its limitations – formation of NaCl – Hydration energy – Lattice energy and their applications – Born haber cycle. General properties of ionic compounds.

4.2 Covalent bonding : Polarisation and Fajan's rule, Effects of polarization , VBT conditions for the formation of covalent bond – orbital overlap– hybridization- sigma and pi bonds - Characteristics of Covalent Compounds. Hannay smith equation.

4.3 Acid- Base concepts – Lewis - Bronsted, Lux flood , Isanovich concepts & HSAB approach.

Unit – V - VSEPR Theory and Molecular Orbital Theory (12 hrs)

5.1. VSEPR Theory**:** Molecular shapes predicted by Sidgwick's powell theory – Effect of lone pairs and Electronegativity – Effects of bonding and lone pairs on bond angles. Geometries of ClF_3, IF_7, XeF_6, BF_4^-, BO_3^{3-}, NH_4^+, I_3^-.

5.2. Molecular Orbital Theory **:** LCAO method, criteria of orbital overlap – types of molecular orbitals - sigma and pi molecular orbitals, combination of atomic orbital to give sigma and pi molecular orbitals and their schematic illustration.

5.3. Qualitative molecular energy level diagram of homo and hetero diatomic molecules – H_2, N_2, O_2, CO, NO & HCl – bond order and stability of molecules.

Text Books:

1. J.D. Lee, A New Concise Inorganic Chemistry, 3rd Edn., ELBS, 1987.
2. R.D. Madan, Modern Inorganic Chemistry , 3rd Edn., Sulthan Chand Publications, 1988.
3. D.F. Shriver, P.W. Atkins, C.H. Langford, 3rd Edn. Inorganic Chemistry, ELBS. 1999.
4. W.V.Mallik, G.D. Tuli, R.D. Madan, Selected topics in Inorganic Chemistry, 4rd Edn., Sulthan Chand Publications,1992.
5. P.L. Sony & Mohan Katyal , Text book of Inorganic Chemistry, Sulthan Chand Publications, 1985.

Reference Books:

1. F.A. Cotton, G. Wilkinson, Advanced Inorganic Chemistry, 5th Edn., John Wiley. 1985.
2. B. Douglas, D. McDaniel, J. Alexander, Concepts and Models of Inorganic Chemistry, 3rd Edn., John Wiley,2001.
3. J.E. Huheey, Inorganic Chemistry, 5th Edn., Harper International. 1993.

SEMESTER – II ANALYTICAL CHEMISTRY- I CH204T

UNIT – I **(12Hrs)**

Theory of Errors – idea of significant figures and its importance with examples – Precision, Accuracy-methods of expressing accuracy – Error analysis – minimizing errors – method of expressing precision – average deviation – Standard deviation – Confidence limit.

UNIT – II **(12Hrs)**

Definitions of Molality – Normality – Mole fraction and their calculations – Definition and examples for primary and secondary standards – Calculation of equivalent. Theories of acid base – Redox, complexometric and Iodometric titrations. Theories of indicators – acid, base, redox, metal ion and adsorption indicators and choice of indicators.

UNIT – III **(12Hrs)**

Problems on Volumetric analysis-strengths of solutions – Equivalent weights of Compounds – Law of Normalities – acid, Alkali titrations – Double and back titrations. Chemical formulae and percentage composition – Determination of empirical Formulae – Determination of molecular formulae. Law of conservation of mass – Law of constant composition – Law of multiple proportions – Law of reciprocal proportions – Gay Lussac's law of Gaseous volumes.

UNIT – IV **(12Hrs)**

Chemical Instrumentation: Elementary Electronics, Simple integrated circuit, Semiconductor, Power supply, transformer, Operational amplifier, Detectors (Oscilloscope and recorders), transducers, Rectifiers, Signal to noise ratio, Electronic components (Resistors, capacitors, inductors, transistors), Measuring instruments for pressure, temperature, pH, speed, flow, current and voltage.

UNIT – V **(12Hrs)**

Significant figures – Rounding off – addition – subtraction – multiplication – division using Significant figures – calculation of absolute error – Relative error – percentage error – calculation of molarity – molality – mole fraction – normality – calculation of equivalent weight of acids, bases, salts, oxidising agents and reducing agents – problems on laws of chemical combination.

Text Books:

1. R.Gopalan, P.S.Subramanian, K.Rengarajan, S.Chand and sons (1997) - Elements of Analytical Chemistry.
2. G. R. Chatwal, S. K. Anand - Instrumental Methods of Chemical Analysis – Himalaya Publishing House (2000)

Reference Books

1. D.A. Skoog and D.M. West, Fundamental of Analytical Chemistry, International Edition, 7th Edition (1996), Saunders College Publishing, Philadelphia, Holt, London.
2. R.L. Pecsok, L.D. Shields, T. Cairns and L.C. Mc William, Modern Methods of Chemical Analysis, 2nd (1976), John Wiley & Sons, New York.

SEMESTER – II ALLIED MATHEMATICS – II AMT202

Unit-1: THEORY OF EQUATIONS [18 HRS]

Polynomial Equations with real Coefficients – Irrational roots – Complex roots – Symmetric functions of roots – Transformation of equation by increasing or decreasing roots by a constant – Reciprocal equations – Newton's method to find a root approximately-problems .

Unit-2: TRIGONOMETRY [18 HRS]

Expansions of $\sin^n \theta$, $\cos^n \theta$, $\sin n\theta$, $\cos n\theta$, $\tan n\theta$ – Expansions of $\sin \theta$, $\cos \theta$, $\tan \theta$ in terms of θ – Hyperbolic and inverse hyperbolic functions – Logarithms of complex numbers.

Unit-III: APPLICATION OF INTEGRATION [18 HRS]

Evaluation of double, triple integrals – Simple applications to area, volume and centroid.

Unit-IV:PARTIAL DIFFERENTIAL EQUATIONS [18 HRS]

Formation-complete integrals and general integrals-Four standard types-Lagranges equation.

Unit-V: VECTOR ANALYSIS [18 HRS]

Gradient- Directional derivatives –Unit vector normal to a surface – angle between the surfaces-divergence, curl-Line and surface integrals – Gauss, Stoke's and Green's theorems [without proofs) problems based on these theorems.

Text Book:

1**.** P. Duraipandian and S. Udayabaskaran. 1997. Allied Mathematics. Vol I & II. Chennai: Muhil Publishers.

Reference Books

1. P. Balasubramanian and K. G. Subramanian. 1997. Ancillary Mathematics, Vol I & II. New Delhi: Tata McGraw Hill.
2. S.P.Rajagopalan and R.Sattanathan. 2005. Allied Mathematics. Vol I & II. New Delhi: Vikas Publications.
3. P. R. Vittal 2003. Allied Mathematics.Chennai: Marghan Publications.
4. P.Kandhasamy, K. Thilagavathy . 2003. Allied Mathematics Vol I & II. New Delhi: S. Chand & Co Ltd.

பருவம் : இரண்டாம் பருவம் பாடக் குறியீட்டு எண் : **EBT 201**

அலகு – 1

எளிய முறையில் தமிழ் கற்றல்.

1. பட்டம் – சட்டம் – கட்டடம் – தட்டு – வட்டம் – மாமா
2. பாடம் – சட்டி – கட்டி – தட்டி – வடம் – மாமி
3. பட்டி – சடை – கடை – தடை – வடை – மாதா
4. படி – சாதம் - கார் - தார் - வான் - மாதம்
5. படை – சாவி – காவி – தாள் - வான் - அம்மா – அப்பா
6. பாப்பா –
7. பாட்டி –
8. பாட்டு –

சிறு தொடர்.

பாப்பா படி – பாட்டி கடை – கட்டடம் கட்டித்தா –
பாப்பா பாடம்படி – பாட்டி தட்டு –
பாப்பா பாட்டு படி – பாட்டி வடைத்தட்டு

பயிற்சி.

குடும்பத்தினர் (அ) நண்பருடன் பேச்சுத் தமிழில் உரையாடல்
குறில் நெடில் வேறுபாட்டால் பொருள் மாறுபடும் சொற்கள்
பரம் – பாரம் கரம் – காரம் வரம் – வாரம் சரம் – சாரம்
தரம் – தாரம்

அலகு – 2

உயிரெழுத்துக்கள், ஆய்த எழுத்து, மெய்யெழுத்துக்கள் - வகை, எண்ணிக்கையுடன் அறிதல்.

உயிர்மெய் எழுத்துகள் உருவாதலைக் கற்றல்:
(வல்லின மெய்கள்)
க் + அ – க ..... ற் + ஒள – றௌ
K + A – KA ..... RR + OU - RROU

அலகு – 3

உயிர்மெய் எழுத்துகள் மெல்லினம், இடையினம்
ங் + அ = ங ..... ன் + ஒள – னௌ
NG + A – NGA ..... N + OU – NOU

ய் + அ = ய ..... ள் + ஒள – ளௌ
Y + A – YA ..... LL + OU - LLOU

ஒலி வேறுபாட்டால் பொருள் மாற்றம் (ர-ற, ன-ண, ல-ள, ழ)
அரம் - அறம்
உன் - உண்
வால் - வாள் - வாழ்

ஒவ்வொன்றிற்கும் ஐந்து எடுத்துக்காட்டு தருக.

அலகு – 4

சொல்-வகை

ஒரெழுத்து ஒருமொழி

பெயர்:

ஆ, பூ, தீ, தை, கா (சோலை)

வினை:

வா, போ, ஈ (கொடு)

தா, கா (காத்தால்)

ஈரெழுத்து ஒருமொழி:

பெயர்:

கனி, பனி, வான், காடு, வீடு

வினை:

நில், படி, பார், காண், எழு

தொடர்மொழி: பெயர்:

கபிலர், வெள்ளிவீதியார், திருவள்ளுவர், ஆண்டாள், கம்பர், பாரதியார்

முக்கனி, முத்தமிழ், மூவேந்தர், நாற்றிசை, ஐம்பொறி - இவற்றிற்கு விளக்கம் தருக.

முறைப்பெயர் (உறவுப்பெயர்) அம்மா, அப்பா, மாமா, ...

அலகு – 5

உடலுறுப்புப் பெயர்கள்:

தலை முதல் அடி வரை உள்ள உறுப்புகள்

முதலெழுத்து மாற்றத்தால் பொருள் மாற்றம் பெறும் உடலுறுப்புகள் சான்றாக:

உதயம் – இதயம்	ஊக்கு – மூக்கு
பண், மண் – கண்	படி – அடி
மரம், வரம் – கால்	கல் – பல்
ஆல், பால் – கால்	கொடை – தொடை
அலை, இலை – தலை	மாது – காது
பாக்கு, வாக்கு – நாக்கு	கிழி – விழி
எழுத்து – கழுத்து	

பறவைப் பெயர்கள்:

மயில், அன்னம், கிளி, புறா, குயில்

வீட்டு விலங்குகள்:

பசு, ஆடு, குதிரை, நாய், பூனை

மலர்கள்:

தாமரை, மல்லிகை, முல்லை, செண்பகம், அல்லி

நிறங்கள்:

வானவில்லின் வண்ணங்கள் - அறிதல்

எண்கள்:

ஒன்று முதல் ஐம்பது வரை எழுத்தால் எழுதுதல்

சிறுகதை:

“புலியை ஏமாற்றிய நரி” தமிழ் - நான்காம் வகுப்பு, தமிழ் நாட்டுப் பாடநூல் கழகம், சென்னை.

SEMESTER – II PERSONALITY DEVELOPMENT EPD201

Unit I
Personality
Meaning-definition-major determinants of personality genetic determinants, social determinants, cultural determinants, psychological determinants, theories Jung's typology trait theory psychoanalytical theory importance of personality development guidance to improve personality.

Unit II
Mental health
Meaning-concept-definition-characteristics - influential factors - biological factors - psychological factors - socio-economic and cultural factors

Unit III
Stress and its management
Meaning,definition causes of stress, major life changes and environmental events - conquence of stress,stress manangement techniques.

Unit IV
Part-a
Anger and its manangement;
Meaning, definition, nature-causes-symtoms and consequence of anger - physiological effects and psychological effects ,techniques to control anger.
Part-b
Suicidal prevention

Unit V
Soft skills development - Presentation skill - Interpersonal skill - Body language

Text Book;
Mental health of rural youth

Reference;
Personality development-Elizabeth .B.Hurlock

SEMESTER – II PRACTICAL CHEMISTRY – I CHP201

VOLUMETRIC ANALYSIS

UNIT-I TITRIMETRIC QUANTITATIVE ANALYSIS

Preparation of a standard solution
Making up a given solution and doing a titration
Preparing a standard solution and doing a titration
Estimation of Hcl by NaOH using a standard oxalic acid solution
Estimation of Na_2CO_3 by Hcl using a standard Na_2CO_3 solution
Estimation of Oxalic acid by $KMnO_4$ using a standard oxalic acid solution
Estimation of Iron (II) Sulphate by $KMnO_4$ using a standard Mohr's salt solution
Estimation of Iron (II) Sulphate by $K_2Cr_2O_7$ using a standard Mohr's salt solution
Estimation of Copper (II) Sulphate by $K_2Cr_2O_7$ solution.
Estimation of Magnesium(II) by EDTA solution.

UNIT – II

SOME APPLIED EXPERIMENTS

Estimation of total Hardness of water
Estimation of antacid
Estimation of Bleaching powder

Reference books:

1.Venkateswaran V, Veerasamy R., Kulandaivelu A.R.1997. Basic principles of Practical Chemistry. (2nd ed) New Delhi:Sultan chand & Sons
2. Basset.J.,et al.1985. Vogel's Textbook of Quantitative Inorganic Analysis, (4th ed) ELBS Longmann.

SEMESTER – II QUALITATIVE ANALYSIS CHP202

UNIT – I SEMI – MICRO QUALITATIVE ANALYSIS

1. Analysis of simple acid radicals:
   Carbonate,Nitrate, Sulphate, Chloride
2. Analysis of interfering acid radicals:
   Fluoride, Oxalate, Borate, Phosphate
3. Elimination of interfering acid radicals and identifying the groups of the basic Radicals
4. Analysis of basic radicals(group-wise):
   Lead, Copper, Bismuth, Cadmium, Aluminium , Iron, Cobalt, Nickel,Manganese, Zinc, Barium, Calcium, Strontium
5. Analysis of mixtures containing two cations and two anions(of which one Is interfering)

UNIT –II PREPARATION OF INORGANIC COMPOUNDS

1.Tetrammine Copper(II)Sulphate
2.Tris (thiourea) Copper I Chloride
3.Ferrous Ammonium Sulphate
4.Microcosmic salt
5.Potassium tris oxalate ferrate II
6.Chloropentammine Cobalt III Chloride

Reference books:

1.Inorganic Qualitative Analysis- V.V. Ramanujam
2.Practical Chemistry – B.Sharma

பருவம்: மூன்றாம் பருவம் **பாடக் குறியீட்டு எண்: LT303S**

அலகு **பாடங்கள்**

அலகு -1

1.1 சிலப்பதிகாரம் - வழக்குரை காதை
1.2 மணிமேகலை – பாத்திரம் பெற்ற காதை

அலகு – 2

2.1 சீவகசிந்தாமணி – கேமசரியார் இலம்பகம்
2.2 கம்பராமாயணம் - மந்தரை சூழ்ச்சிப் படலம்

அலகு – 3

3.1 பெரியபுராணம் - பூசலார் நாயனார் புராணம்
3.2 தேம்பாவணி – வளன் சனித்த படலம்
3.3 சீறாப்புராணம் - மானுக்குப் பிணை நின்ற படலம்

அலகு- 4 **(இலக்கிய வரலாறு)**

4.1 ஐம்பெருங்காப்பியங்கள்
4.2 கிறிஸ்துவக் காப்பியங்கள்
4.3 இசுலாமியக் காப்பியங்கள்
4.4 சோழர்காலக் காப்பியங்கள்
4.5 இரட்டைக் காப்பியங்கள்

அலகு – 5

5.1 பண்பலை வானொலி நிகழ்ச்சித் தொகுப்பு
5.2 வாடிக்கையாளர் சேவை மைய அலுவலர்
5.3 சுற்றுலா வழிகாட்டி
5.4 கடிதங்கள்
5.5 பொதுக்கட்டுரை

SEMESTER – III ENGLISH THROUGH LITERATURE –III LE303S

OBJECTIVES:

1. To enable the students learn the art of communication through reading literature.
2. To enable them appreciate literary works.
3. To make them learn the relationship between Language & Literature.

UNIT- I SPORTS

1. Swami and Friends – R.K. Narayan (Prose)
2. See Off the Shine – Imogen Grosberg (Poem)
3. The Sporting Spirit – George Orwell (Prose)

UNIT–II MASS MEDIA

1. Building an Internet Culture – Philip Agre (Prose)
2. Odds against Us – Satyajit Ray (Prose)
3. TV as Babysitter – Jerzy Kosinski (Prose)

UNIT – III BASIC GRAMMAR

1. Agreement of the Verb with the subject
2. Non – Finite Verbs
3. Strong and Weak verbs
4. The Auxiliaries
5. Anomalous Finites

UNIT – IV BASIC LANGUAGE SKILLS

1. Paragraph Writing
2. Phonetic symbols, transcription (words)
3. Idioms & Phrases:
   i. List of Idioms: An absent minded person, apple- pie order, an armchair critic, a big shot, a burning question, a cock and bull story, crocodile tears, a flying visit, laughing stock, asquare deal, a tall order, birds of a feather, fish out of water, the lion's share, storm in a tea cup.
   ii. List of Phrases: Bear with, call on, call off, carry out, find out, give up, hand over, keep on, keep up, look after, set out, take over, turn down, wind up, work out.

SEMESTER – III INORGANIC CHEMISTRY-II CH305S

Unit I - Principles of Inorganic Qualitative Analysis and Types of Solvent (12 hrs)

1.1 Principles of acid-base equillibria - Common ion effect, solubility product and their applications in qualitative analysis. Reactions involved in the separation and identification of cations and anions in qualitative analysis – Spot reagents – aluminon, Cupferon, DMG, Thiourea, magneson, alizarin and Nessler's reagent.

1.2 Types of solvents: Physical properties of solvents, protic and aprotic solvents, amphiprotic and amphoteric solvents – aqueous and non aqueous solvents – Liquid NH_3 as a solvent - HF as a solvent-solvation number – medium effect - Vander waal's forces - ion-dipole-dipole interactions

Unit II - Carbon family and Types of Chemical reactions (12 hrs)

2.1. Carbon family: Group discussion - valencies, oxides, halides, hydrides of C and Si - catenation and hetero catenation – allotropy of carbon, comparison of properties of C & Si. Carbides: salt like carbides – Interstitial carbides – covalent carbides – applications of carbides in Industry.

2.2. Silicates: Ortho, pyro, cyclic, chain – pyroxenes and amphiboles, sheet silicates, 3D silicates. Silicones – synthesis – properties and uses.

2.3. Types of chemical reactions: Acid – Base, oxidation – reduction, electron transfer, double decomposition reaction – balancing chemical reactions by oxidation number and ion, electron method.

Unit III - Nitrogen and Oxygen family (12hrs)

3.1. Nitrogen and Oxygen group elements:

Nitrogen family - Comparative study of N, P, As, Sb, Bi oxides – N_2O_3, P_4O_6, N_2O_5 and P_4O_{10}. Oxoacids – HNO_2, HNO_3, H_3PO_2, H_3PO_3 and H_3PO_4 – preparation and structure. Halides – NCl_3, PCl_3, PCl_5 – properties and structure. Hydrides – NH_3, PH_3, AsH_3 and BiH_3 – structure, trends in boiling point, basic character and hydrogen bonding. – preparation, properties, structure and uses of hydrazine, hydroxylamine.

3.2. Oxygen family: Comparative study of O, S, Se, Te elements – anomalous behavior of Oxygen, hydrides – H_2R type trend in melting point boiling point, bond angle and bond length. oxides – SO_2 and SO_3. Oxoacids of sulphur – H_2SO_3, H_2SO_4 and $H_2S_2O_7$ preparation, properties and structure. Peroxosulphuric acids- Caro's acid, Marshall's acid - preparation, structure and comparison – Dithionic and Polythionic acids. Chemistry of ozone.

Unit IV - Halogens and Noble gases (12hrs)

4.1. Halogens – Comparative study of F, C1, Br, I, At elements – reactivities – comparison of fluorine with oxygen – hydrogen halides – preparation and properties of HF, HCl, HBr and HI – Bleaching powder, estimation of available of chlorine. Oxyacids of halogens – Sodiumhypochloride and Soduim chlorite – Poly halides - interhalogen compounds ($C1F_3$, ICl, BrF_3, $C1F_5$, BrF_5, IF_5 structure and properties) – Psuedo halogens (CN^-, SCN^-, N_3^- structure and properties). Basic properties of halogens - positive iodine – exceptional properties of fluorine, similarities between H_2O & HF.

4.2. Noble gases: electronic configuration – reasons for placing in zero group – position in the periodic table - chemical inertness of noble gases – reasons – applications – clathrates – hybridization and geometries of XeF_2, XeF_4, XeF_6, $XeOF_4$. Uses of noble gases.

Unit V - Chemistry of d-block elements and Metallurgical processes (12hrs)

5.1. Chemistry of d-block elements - Characteristics of d-block elements - occurrence - oxidation states, magnetic properties and color - comparative study of Ti, V, Cr, Mn & Fe group. Preparation and uses of $(NH_4)_2MoO_4$, V_2O_5, UF_6.

5.2. Metallurgical processes: Methods involved in ore concentration, isolation and purification. Metallurgy of Ti, V, W, Cr.

Text Books:

1. Vogals, Text book of quantitative chemical analysis, 6th Ed, PRENTICE HALL, 2000.
2. J.D.Lee, A New Concise Inorganic Chemistry, 3rd Edn., ELBS, 1987.
3. R.D.Madan, Modern Inorganic Chemistry , 3rd Edn., Sulthan Chand Publications,1988.
4. W.V.Mallik, G.D.Tuli , R.D.Madan , Selected topics in Inorganic Chemistry, 4rd Edn., Sulthan Chand Publications,1992.
5. P.L.Sony & Mohan Katyal , Text book of Inorganic Chemistry , Sulthan Chand Publications,1985.

Reference Books:

1. F.A.Cotton, G.Wilkinson, Advanced Inorganic Chemistry, 5th Edn., John Wiley.1985.
2. B.Douglas, D.McDaniel, J.Alexander, Concepts and Models of Inorganic Chemistry, 3rd Edn., John Wiley,2001.
3. J.E. Huheey, Inorganic Chemistry, 5th Edn., Harper International.1993.

SEMESTER – III ANALYTICAL CHEMISTRY- II CH306S

UNIT – I **[12 Hrs]**

GRAVIMETRIC ANALYSIS

Characteristics of precipitating agents- Choice of precipitants and conditions of precipitation – Specific and selective precipitants- Use of sequestering agents- Co-precipitation- Post precipitation- Peptisation- Differences- Reduction of error – Precipitation from homogeneous solution- Calculations in gravimetric methods- use of gravimetric factors.

Thermal Analytical Methods

Principle involved in thermogravimetric analysis and differential thermal analysis- Discussion of various components with block diagram- Characteristics of TGA&DTA- Factors affecting TGA & DTA curves- Thermometric titrations

UNIT II

SEPARATION AND PURIFICATION TECHNIQUES **[12 Hrs]**

Principles involved in the separation of solids- Purification of solid organic compounds- Crystallisation- Fractional crystallization- Sublimation- Purification of liquids- Experimental techniques of distillation- Fractional distillation- Vaccuum distillation- Steam distillation- Eletrophoresis.

UNIT III

POLAROGRAPHY **[12 Hrs]**

Principle – concentration polarization- dropping mercury electrode- advantages and disadvantages – convention- migration and diffusion currents- Ilkovic equation (derivation not required) and significance- experimental assembly- electrodes- capillary solutions- current voltage curve- oxygen wave- influence of temperature and agitation on diffusion layer- Polarography as an analytical tool in quantitative & qualitative analysis. **Amperometry** – basic principle & uses. **Polarimetry** principle- instrumentation- comparison of strengths of acids- Estmation of glucose.

Unit IV

UV- VISIBLE SPECTROSCOPY

Absorption laws- calculations involving Beer – Lambert's law – instrumentation – photocalorimeter and spectrophotometer – block diagram with description of components with theory – types of electronic transitions – chromophore – auxochromes – absorption bands and intensity – factors governing absorption maximum and intensity.

X- Ray methods – Bragg's equation – explanation of terms – experimental methods – Rotating crystal technique – powder technique – determination of structure of NaCl.

Unit V

TECHNOLOGY OF WATER [12 Hrs]

Hardness of water – Hard water – soft water – Temporary and permanent hardness- problems on calculating temporary and permanent hardness – Estimation of hardness using EDTA method and their problems – Water treatment – lime soda process – calculation of amount of soda lime required for water softening – zeolite process – problems – Demineralisation process – Reverse osmosis – Electrodialysis – biological oxygen demand – chemical oxygen demand - treatment of domestic water supply – sedimentation – coagulation – filtration – sterilization of water

Text Books:

1. R. Gopalan, P.S. Subramanian and K. Rengarajan "Elements of Analytical Chemistry", 2nd edition (1991). Sultan Chand & sons educational publishers.
2. B. K. Sharma, "Industrial chemistry" Seventeenth edition (2004) Goel publishing house, Meerut.
3. G. R. Chatwal, S. K. Anand " Instrumental Methods of Chemical Analysis" Enlarged edition (2007) Himalaya publishing house Mumbai.
4. S. S. Dara, " A Text Book of Engineering Chemistry" fifth revised edition (1996) S Chand company limited, New Delhi.

Reference Books:

1. Skoog and D. M. West, "Fundamentals of Analytical Chemistry", International edition, seventh edition (1996), Saunders college publishing Philadelphia, Halt, London.
2. Jagmohan, Spectroscopy of Organic chemistry, Narosa Publications

SEMESTER – III ALLIED PHYSICS APH301S

UNIT- I: PROPERTIES OF MATTER & ACOUSTICS (15 hours)

Sound: Transverse vibrations of a stretched string- expression for the velocity of transverse wave – laws of transverse vibrations- A.C frequency measurement using sonometer- velocity of sound in a gas-Ultrasonics-production and uses.

UNIT- II: ELECTRICITY & MAGNETISM (15 hours)

Capacitor-energy of charged capacitors-loss of energy due to sharing of charges DC circuits – growth and decay of charge containing resistance and capacitor (RC) circuit & inductance and resistance (LR) circuit - -potentiometer-measurement of internal resistance of a cell and unknown resistances - Moment and pole strength of a magnet

UNIT- III: OPTICS (15 hours)

Physical Optics: Interference in thin films- Coherent sources- Interference in wedge shaped film- Newton's rings- Measurement of wave length and radius of curvature with theory- Air wedge - Theory of plane transmission grating- determination of wavelength of Hg lines by normal incidence

UNIT- IV: RELATIVITY & QUANTUM MECHANICS (15 hours)

Elements of relativity and Postulates of theory of relativity- Lorentz transformation equations- derivation- length contraction- time dilation- mass energy equivalence.

Quantum mechanics: De Broglie's waves - Uncertainty principle- postulates of wave mechanics- - Schrodinger's equation (one dimensional) - application to a particle in a box.

UNIT- V: ELECTRONICS (15 hours)

Basic electronics: PN Junction diode- transistor-characteristics of CE mode- Zener diode-voltage regulator- LED

Digital electronics: Boolean algebra- - verification AND, OR, NOT gates- construction using diodes and transistors- NAND- verification of Demorgan's theorem - ICs – SSI, MSI, LSI and VLSI.

Text Books

1.Principle of physics-Brijlal Subramaniyam
2.Allied physics-R.Murugesan.
3.Text book of sound- Brijlal Subramaniyam
4.Principle of Electronics-V.K.Metha.

SEMESTER – III ALLIED PRACTICAL APHP301

(Any TEN out of the FOURTEEN experiments can be selected**)**

1. Determination of Young's modulus –non-uniform bending -Pin and microscope.
2. Determination of Rigidity modulus- Torsional pendulum (without masses).
3. Determination of Rigidity modulus – Static torsion
4. Sonometer – verification of laws and frequency of tuning fork.
5. Sonometer – A.C frequency - Steel and Brass wire.
6. Air wedge – thickness of a wire.
7. Newton's rings – Determination of Radius of curvature
8. Spectrometer – Grating-Determination of wavelength of Hg lines.
9. Potentiometer – Calibration of Low range voltmeter.
10. Figure of merit of a galvanometer (Table galvanometer).
11. Construction of AND, OR NOT gates using diodes and transistors.
12. NAND gate as a universal gate.
13. Zener diode - Voltage regulation characteristics.
14. Field along the axis of a circular coil-deflection magnetometer-B_H and M.

SEMESTER-III FOOD PROCESSING TECHNOLOGY AOFT301

UNIT I: Aim and objectives of preservation and processing of foods – classification of foods by ease of spoilage – methods of food preservation – principles of food preservation – asepsis – removal of microorganisms – maintenance of anaerobic conditions.

UNIT II: (10hrs)

Preservation of food by use of high and low temperature. Factors affecting heat resistance (Thermal death time) – heat penetration – heat treatments employed in processing foods – canned foods – low temperature storage – chilling and freezing – freezing of foods and its consequences.

UNIT III: (10hrs)

Preservation of foods by drying, additives and radiation. Methods of drying – treatments of foods before drying – procedures after drying – intermediate moisture foods – antimicrobial preservatives – added preservatives – developed preservatives – Ultra violet radiation – ionizing radiations – gamma rays and cathode rays – microwave processing.

UNIT IV: (8hrs)

Food sanitation - Microbiology of the food product – good manufacturing practices – Hazard Analysis Critical Control Points – health of employees.

Food control – enforcement and control agencies – international agencies (FAO, WHO, FDA & ISO) – national agencies (Agmark, ISI, BIS).

UNIT V: (7hrs)

Food and food components – Food Adulteration – Food additives. - Dairy Technology. Market milk – Special milk - Cream – Butter – Ice Cream – Cheese – Dried milk products – Packaging of milk and milk products.

Text Books:: William C. Frazier., Dennis C. Westhoff, *Food Microbiology*, 1995 (Fourth Edition), Tata McGraw Hill, New Delhi.

Reference Books: Sukumar De, *Outlines of Dairy Technology*, 1991, Oxford University Press. A.Y. Sathe, *A First Course in Food Analysis*, 1999 New Age International (P) Limited, Publishers, New Delhi.