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 PROPERTIES OF MATTER & ACOUSTICS PH101

UNIT- I: ELASTICITY-I **(24 Hours)**

Hooke's law – stress – strain diagram – Modulus of elasticity - Relation between elastic constants – Poisson's ratio- Expressions for Poisson's ration in terms of elastic constants – work done in stretching and twisting a wire – Twisting couple on a cylinder — Torsional pendulum with and without masses– Rigidity modulus and moment of inertia – Rigidity modulus by static torsion - q, n and σ by Searle's method .

UNIT- II: BENDING OF BEAMS **(24 Hours)**

Cantilever – Expression for bending moment – Expression for depression – Cantilever (static & dynamic methods)– Expression for time period and Experiment to determine Young's Modulus – Non-Uniform bending – Uniform bending – expressions - Experiment to determine Young's modulus using pin & microscope and optic lever – Experiment to determine Young's modulus by Koenig's method (Non-Uniform bending).

UNIT- III: FLUIDS **(24 Hours)**

Surface Tension – Molecular Interpretation - dimensions of surface tension – Excess of pressure over curved surfaces – Application to spherical and cylindrical drops and bubbles – Variation of surface tension with temperature – Jaegar's method

Viscosity: Co-efficient of viscosity and its dimensions – Rate of flow of liquid in a capillary tube – Poiseuille's formula – Experiment to determine co-efficient of viscosity of a liquid – variation of viscosity of a liquid with temperature and pressure – Viscosity of a gas – Rankine's method Applications of viscosity.

UNIT-IV: WAVES AND OSCILLATIONS **(24 Hours)**

Transverse and longitudinal waves – Equation of wave motion – Plane Progressive wave – velocity of transverse wave on a string - Superposition of waves – Interference, reflection and transmission of waves – Resonance - intensity and loudness of sound - sound level – Decibel –Beats - stationary waves – organ pipes – Doppler effect.

UNIT-V: ULTRASONICS & ACOUSTICS **(24 Hours)**

Ultrasonic - Piezo electric effect - Piezo electric crystal generator – Magnetostriction effect – Magnetostriction generator – Applications – Acoustics of buildings – Reverberation and time of reverberation & measurement – Sabine's formula – Absorption co-efficient – Acoustic aspects of halls and auditorium.

TEXT BOOKS:-

1. Murugeshan .R, 2006., Properties of Matter and Acoustics, New Delhi, S. Chand & Co.
2. Mathur D.S., 2006, *Properties of matter*, New Delhi: S. Chand & Co.
3. Brij Lal & Subrahmanyam, *Text Book of Sound*, New Delhi: N. Vikas Publishing House.

REFERENCE BOOKS:-

1. Baldevraj, *Science & Technology of Ultrasonic*, Narosa.
2. Bajaj N.K.,Physics of Waves&Oscillations,Tata McGraw Hill.

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-concept-definition-characteristics-division of values-important of value education

Unit II
Personal values;self concept,self esteem,self acceptance,attitude

Unit III
Youth problems;career decision and unemployment,emotional and sexual adjustment, autonomy versus dependence feeling of inferiority,marriage and family,identity of roles,vocational problems and social discrimination,suggestions to cope up with stress.

Unit IV
Social values
Relationship with (family,college,and friendship)and social responsibility
Moral values-honesty love and concern for others-truthfulness-justice.

Unit V
Religious values and cultural values - Various religious of the world - Religions tolerance - Unity in diversity – secularism - Ahimsa vs terrorism

Text Book
Value Education - P. Paul

SEMESTER – I PRACTICAL – I PHP101

(Any nine out of the given 12 experiments**)**

1. Young's Modulus by Non-Uniform Bending – Pin and Microscope
2. Young's Modulus by Non-Uniform Bending – Optic Lever.
3. Rigidity modulus- Torsional Pendulum – n of a wire (without masses)
4. Rigidity modulus -Torsional Pendulum – n (with masses)
5. Sonometer – Determination of Frequency.
6. Sonometer – Determination of Specific Gravity of Solid and Liquid.
7. Surface tension by drop weight and Interfacial liquid
8. Comparison of Viscosity of two liquids
9. Focal Length and Refractive Index of Convex Lens (u-v method and conjugate foci methods for 'f' and Boyle's method for R).
10. Spectrometer – μ of Solid Prism or Liquid Prism
11. Potentiometer – Calibration of low range voltmeter.
12. Rigidity modulus by Static Torsion (mirror and telescope method).

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 THERMAL PHYSICS PH202S

UNIT- I: TRANSMISSION OF HEAT (24 Hours)

Thermal conductivity – good & bad conductors – Forbe's method - Lee's disc method– relationship between thermal and electrical conductivities - Wiedman Franz law - Radiation- Prevost's theory of heat exchanges - law of cooling – Black body radiation - Kirchoff's law - Wien's laws of energy distribution in black body radiation - Wien's displacement law- Rayleigh-Jean's law -Plank's law – pyrometry - solar constant – sources of solar energy & applications.

UNIT- II: KINETIC THEORY (24 Hours)

Expression for pressure **-** Transport phenomenon – expression for mean free path - thermal conductivity and diffusion of gases - distribution of molecular velocities – energy distribution function - Degrees of freedom - equipartition law of energy - C_P , C_V and γ of a gas - theory of Brownian motion – Perrin's experiment – Langevin's theory.

UNIT- III: GASSES AND LOW TEMPERATURE PHYSICS (24 Hours)

Molar heat capacities – Mayar's relation reversible adiabatic and isothermal changes– equations – Clement and Desormers method of determining C_p / C_v – Andrew's work on Co_2– regenerative cooling – the Linde process – Liquid air, oxygen, hydrogen and Helium – He I and He II – super fluidity - practical applications of low temperatures – refrigerating machines– electroflux refrigerator – Frigidaire – air conditioning machines – effects of CF_2 and Cl_2 on Ozone layer.

UNIT- IV: THERMODYNAMICS (24 Hours)

Intensive and extensive variables – I & II laws of thermodynamics – reversible and irreversible processes – Heat engines – Otto and diesel engines – thermodynamic scale of temperature - entropy - change of entropy in reversible and irreversible processes – T-S diagram– entropy for a perfect gas - third law of thermodynamics.

UNIT- V: STATISTICAL THERMODYNAMICS (24 Hours)

First Latent heat equation (Clausius – Clapeyron equation), effect of pressure on melting and boiling point – second Latent heat equation - Maxwell's Thermodynamical relations– derivations .Phase space – microstates and macrostates.

TEXT BOOKS:-

1. Murugeshan.R.,2009., Thermal Physics., S. Chand & Co.,
2. Brijlal and Subramanyam, 2000, *Heat and Thermodynamics*, S. Chand and Co.
3. Gupta and Kumar, *Elements of Statistical Mechanics*, Meerut: Pragathi Prakashan.

REFERENCE BOOKS:-

1. Nelkon Parker, *Advanced Level Physics*, (Vol.V), Arnold Publication, Berkely Series .
2. Dr.Ilangovan and Dr.D.Jayaraman, Thermal Physics., S. Chand & Co.,

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 – II PHP202

(Any nine out of the given 12 experiments**)**

1. Young's Modulus by Uniform Bending – Pin and Microscope
2. Young's Modulus by Uniform Bending – Optic Lever.
3. To find thermal conductivity – Lee's Disc Method.
4. Specific heat capacity of liquid by method of mixtures (Half-time Correction).
5. Specific heat capacity of liquid by Newton's Law of cooling.
6. Spectrometer i–d Curve.
7. Focal Length R & μ of a concave lens.
8. Potentiometer – Calibration of an Ammeter.
9. Sonometer – Relative density of solid and liquid.
10. Air wedge thickness of a wire
11. m and B_H – TanC – Deflection and vibration Magnetometer.
12. Figure of merit of a table galvanometer.

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.

Text

1. Elango, K. **Insights**: ***A Course in English Literature and Language.*** Hyderabad: Orient Black Swan Private Ltd, 2009.
2. Bhatnagar, R.P., and Bargava, Rajul. ***English for Competitive Examinations***. Chennai: Macmillan, 2002.
3. David Green, ***Contemporary English Grammar Structures and Composition***. Chennai: Macmillan, 2010.

Reference

1. Murphy, Raymond, ***Essential English Grammar***. New Delhi: Cambridge UP, 2009.

Jones; Daniel, ***English Pronunciation Dictionary.*** Singapore: Cambridge UP, 2009.

SEMESTER – III BASICS OF NEW TONIAN &CLASSICAL MECHANICS PH303T

Objectives

- To make the students to understand the basic ideas of mechanics in the field of dynamics, Statics, hydrostatics, hydrodynamics.
- To understand concepts of projectiles and friction
- To study the concepts space science
- To acquire knowledge of classical physics

UNIT-I **(24 hours)**

Statics: Centre of gravity- Centre of gravity of a solid and hollow cone- Solid and hollow hemisphere-Thrust-Centre of pressure- Vertical rectangular lamina.

Hydrostatics: Law of floatation- Metacenter- Metacentric height of a ship. **Hydrodynamics**: Equation of continuity of flow- Energy of the fluid- Euler's equation of unidirectional flow -Bernoulli's theorem.

UNIT-II **(24hours)**

Dynamics: Rigid body- Moment of inertia- Radius of gyration- moment of inertia of a solid cylinder, cylindrical shell, solid sphere, spherical shell, hollow sphere with external and internal radii- Bifilar pendulum- Compound pendulum-Determination of g and k.

UNIT-III **(24 hours)**

Projectile: Projectile motion- Range of a projectile, maximum height reached and angle of projection for maximum height- Resultant velocity at a given instant(Definitions only)- Projectile on an inclined plane

Friction: Laws of friction- Sliding friction - Angle of friction- Cone of friction- acceleration down an inclined plane- Rolling friction and stability.

UNIT IV **(24 hours)**

Space Science: Rockets and satellites- Basic principles of rocket motion Rocket equation, Thrust and acceleration- Escape velocity of multistage rockets- Liquid, solid and cryogenic - Propellant rockets- Space shutter- Orbital velocity- Launching of satellites - Types of satellite Orbits.

UNIT-V **(24 hours)**

Classical Mechanics: Mechanics of a system of particles- Generalized Co-ordinates- transformation equations- configuration space- principle of Virtual work- D' Alembert's principle- Lagrange's equations and its applications-Compound pendulum - Atwood's machine.

TEXT BOOKS:-

1. Narayana moorti and Nagarathnam, 1997, Statics, Hydrostatics and Hydrodynamics,III Edition
2. Murugeshan, 2005, Mechanics and mathematical methods,S.Chand and Co
3. Gupta Kumar and sharma, 2001, classical Mechanics

Reference books:

1. MathurD.S., 2006 II Edition, Mechanics,S.Chand& co.
2. Feynmann R.P, Leighton R.B and Sands M, Ther feymann Lectures on Physics, Vols 1,2 and 3-Narosa, New Delhi.(1998)
4. Brijlal and Subramaniyam, Mechanics and Electrodynamics, Edition 2005

Bhatia V.B., Classical Mechanics, Tamil Nadu Book House

SEMESTER – III ALLIED CHEMISTRY FOR PHYSICS ACH301

UNIT-I NUCLEAR CHEMISTRY

Atom - classification of nuclides, nuclear stability, magic number, Radioactive elements, Decay kinetics, Photonuclear reaction, nuclear fission and fusion, Nuclear Reactor – Detectors - Application of Radioactivity.

UNIT-II SPECTROSCOPY & PROPERTIES OF DILUTE SOLUTIONS

Spectroscopy – Types, electromagnetic radiation, characteristics of electromagnetic radiation, electromagnetic spectrum, absorption & emission spectra.IR : Types of vibration, selection rule
UV: Electronic energy levels - electronic transition & selection rule - Beer –Lambertz law, chromophores, auxochrome - Bathochromic shift, Hypsochromic shift.Colligative properties : Lowering of Vapour pressure, Raoult's law, Osmosis, derivation of osmotic pressure, reverse osmosis, elevation of boiling point, determination of molar mass, freezing point depression, and cryoscopic constant, Vant - Hoff factor.

UNIT-III INORGANIC & SOLID STATE CHEMISTRY

Bragg's equation – Principles of X-ray diffraction – Comparison of X-ray, electron and neutron diffraction. Crystal lattices – laws of crystallography – elements of symmetry – crystal systems – unit cell, space lattices – Bravis lattice – Miller Indices - ionic crystal structures of simple inorganic compounds.

UNIT IV ANALYTICAL CHEMISTRY

Acid, base titrations, complexation, precipitation and redox titrations, voltammetry, amperometry and conductometry, basic principle and uses.

UNIT V MATERIAL SCIENCE AND ELECTRODICS

MATERIAL SCIENCE: Super conductivity -characters of Superconductors- types of Superconductors- application of Super conductors.
ELECTRODICS: Types of electrodes and cells – Nernst equation - EMF measurements and its application - principles of chemical and electrochemical corrosion - corrosion control.

Text Books:

1. H.J. Arnikar, Essentials of Nuclear chemistry, New Age International (P) Ltd. 4th edition, 2003.
2. S. Glasstone, Principles of electrochemistry, Oxford University Press, 3rd edition, 2004.
3. P.S. Kalsi, Spectroscopy of Organic Compounds, New Age International (P) Ltd. 5th edition, 2004.
4. A.G. West, Solid Chemistry, New Age International (P) Ltd, 2003.

Reference Books :

1. P.W. Atkins, The elements of Physical chemistry, Oxford University Press, 3rd edition, 2004.
2. D.A. Skoog, D.M. West, F.J. Holler & S.R. Crouch, Fundamentals of Analytical chemistry, Thomson. Brooks / Cole, 2004.
3. D.F.Shriver and P.W.Atkins, Inorganic chemistry, Oxford University Press, 3rd edition, 2002.

COMMERCE IN PRACTICE A0CMP301

UNIT-1

Commercial banking – definition - functions and classification – types of accounts – steps in opening an account.

UNIT-2

E – Banking – Meaning – Internet Banking – Meaning

E – Banking Vs Internet Banking – Services.

UNIT-3

Investment Avenues – objectives of investors – New Issue Market – Meaning – Secondary Market – Meaning – book Building.

UNIT-4

Stock Exchange – Functions – Stock trading system – Dealers – Specialists – Market Brokers – Listing of securities – credit rating.

UNIT-5

Income tax – Assessment – Assessee – person – Assessment year – previous year – Income - filing of returns and due date steps in filing- who should file – tax deducted at sources – permanent Account Number (PAN) – E-Filing.

SEMESTER – III Practical – III PHP303

(Any nine out of the given 12 experiments**)**

1. Compound Pendulum
2. Bifilar Pendulum
3. Kater's pendulum
4. Youngs modulus-cantilever- oscillations dynamic method-pin and microscope.
5. Youngs modulus cantilever –scale and telescope
6. Sonometer ac frequency using steel wire
7. Sonometer ac frequency using brass wire
8. Spectrometer-grating-normal incidence method
9. Spectrometer-grating-minimum deviation method
10. Surface tension of liquid
11. Young's Modulus by Koneing's method(Non-Uniform Bending)
12. Potentiometer- Resistence- Specific Resistance of a wire

SEMESTER – III ALLIED CHEMISTRY PRACTICAL ACHP301

Conductometric titrations:

1. Determination of cell constant
2. Estimation of the amount of HCl by titrating with Standard NaOH conductometrically.
3. Estimation of the amount of CH_3COOH by titrating with Standard NaOH, conductometrically.

Potentiometric titrations:

1. Estimation of the amount of FAS, potentiometrically, by titrating with Standard $KMnO_4$.
2. Determination of pka of CH_3COOH, by performing potentiometric titration using standard NaOH solution.
3. Estimation of the amount of KCl by titrating with Standard $AgNO_3$ potentiometrically.

பருவம்: நான்காம் பருவம் **பாடக் குறியீட்டு எண்: LT404S**

அலகு **பாடங்கள்**

1 1.1 புறநானூறு – 74,192,312
1.2 அகநானூறு – 02,07,34
1.3 குறுந்தொகை – 23,38,40
1.4 நற்றிணை – 149,60,110
1.5 ஐங்குறுநூறு – வேட்கைப் பத்து (1-5)
1.6 கலித்தொகை – பாலைக் கலி (9.11)

2 2.1 பட்டினப்பாலை (120-192)
2.2 சிறுபாணாற்றுப்படை
2.3 மதுரைக்காஞ்சி
2.4 முல்லைப்பாட்டு

திருக்குறள்

3 3.1 அறிவுடைமை
3.2 நட்பாராய்தல்
3.3 புலவி நுணுக்கம்

இலக்கிய வரலாறு

4 4.1 எட்டுத்தொகை,
4.2 பத்துப்பாட்டு
4.3 ஆற்றுப்படைகள்
4.4 திருக்குறள் கீழ்க்கணக்கில் பெறுமிடம்

மொழித்திறன்

5 5.1 விண்ணப்பங்கள்
5.2 சுருக்கி வரைதல்
5.3 நேர்காணல்

SEMESTER – IV ENGLISH THROUGH LITERATURE –IV LE404S

OBJECTIVES:

1. To enable students be aware of career prospects.
2. To make them prepare for their career.
3. To introduce students to the realm of fiction with special emphasis on character study.

UNIT- 1 SELECTED SCENES FROM SHAKESPEARE

i. HE KILLS SLEEP
MACBETH

Act One Scene VII and Act Two Scene II

ii. PLAY OUT A PLAY??
HENRY IV PART I

Act Two Scene IV

iii. PATTERNS OF LOVE
AS YOU LIKE IT

Act Four Scene I

UNIT- II POETRY

1. The Road Not Taken – Robert Frost
2. La Belle Dame Sans Merci – John Keats
3. Punishment in Kindergarten- Kamala Das

UNIT- III SHORT STORY

1. The Purple Dress – O'Henry
2. Chameleon – Anton Chekhov
3. The Reaping Race- Liam o' Flaherty

UNIT- IV

1. Phonetic Transcription (Sentences)

UNIT- V Basic Grammar

1. Use of wrong prepositions
2. Unnecessary use of Articles.
3. Use of wrong Tenses
4. Punctuation & Capitals
5. The uses of prefixes & suffixes

Text

1. ***Selected scenes from Shakespeare's plays***. ed., Board of Editors. Chennai: Emerald publishers, 2002.
2. Mohanty P.K and Mahapatra, S. ***An Anthology of Short Stories***. New Delhi: S. Chand & Company Ltd, 1997.
3. Ambika Sen Gupta. ***Selected College Poems***, Madras: Orient Longman, 1994.
4. O' Conor, J.D.***Better English pronunciation.*** New Delhi: Cambridge UP
5. ***Popular Short Stories*** ed. Board of Editors. Chennai: Oxford UP, 1998.

Reference

1. Krishnasamy, N& Sriraman T. ***Creative English for Communication***. Chennai: Macmillan, 2006.
2. Burton, S.H: Macmillan Master Series, Macmillan.

Jones, Daniel. ***English Pronouncing Dictionary***. Singapore: Cambridge UP, 2006.

SEMESTER – IV PH404T ELECTRICITY & MAGNETISM

UNIT I ELECTROSTATICS (24 hours) Coulom's law – electric intensity and electric potential – electrical images- electric intensity and potential due to an earthed conducting sphere applying the principle of electrical images- electric dipole – potential and intensity due to a dipole – capacity – capacitance of a spherical and cylindrical capacitor – energy of a charged capacitor – loss of energy due to sharing of charges

UNIT II CHEMICAL EFFECTS OF ELECTRIC CURRENT (24 hours)

Faraday's laws of electrolysis – ionic velocities and mobility – calculation and experimental determination of ionic mobility – transport number- thermoelectricity- Peltier coefficient – Thomson coefficient – application of thermodynamics to a thermocouple and connected relations- thermoelectric diagram and uses

UNIT III DC CIRCUITS (24 hours)

Growth and decay of current in a circuit containing resistance and inductance – Growth and decay of charge in a circuit containing resistance and capacitor-

Growth and decay of charge in a LCR circuit – condition for the discharge to be oscillatory – frequency of oscillation – network analysis – Thevenin and Norton's theorems

UNIT IV ALTERNATING CURRENTS (24 hours)

Peak, average and RMS values of AC voltage and current – power factor and current values in an AC circuit contain LCR(reactance and impedance) series and parallel resonant circuits – power in an AC circuit – wattless current- choke coil- construction and working of transformers- energy losses – AC motors – single phase, three phase – star and delta connection –electric fuses- circuit breakers

UNIT V MAGNETIC PROPERTIES OF MATERIALS (24 hours)

Susceptibility- permeability- intensity of magnetization and the relation B= u(H+I), I-H and B-H curves for a magnetic material using magnetometer method and ballistic galvanometer method – Terrestrial magnetism – magnetic elements- dip circle.

TEXT BOOKS:

1. Murugeshan R,2006,Electricity and magnetism,8th edition,New Delhi,S.Chand&co.
2. Brijlal and N.Subramanian, Electricity and magnetism,6th edition,Agra,Ratan&Prakash
3. Narayanamoorthy M&Nagarathnam N, Electricity and magnetism,4TH edition,Meerut,National publishing Co.
4. Tewari K K ,2001, Electricity and magnetism,3RD EDITION,new Delhi,S.Chand&co.

REFERENCE BOOK:

1. David J Griffith,1997,Introduction to electrodynamics,2ND EDITION,New delhi,Prentice Hall of India Pvt.Ltd.
2. Sehgal D.L. Chopra K L and Sehgal N K , Electricity and Magnetism,New Delhi,Sultan chand&co
3. Brij Lal,Subramanian N and Jivan Seshan,2005,Mechanics and Electromagnetics ,New Delhi, Eurasia Publishing House Pvt .Ltd

SEMESTER-IV BIOPHYSICS ABC401

UNIT I NUCLEIC ACIDS **[15 hrs]**

Fundamental units of nucleic acids – purine pyrimidine, nucleosides and nucleotides. DNA-double helical structure, Watson Crick model and base pairing. Nucleic acid-denaturation and annealing of DNA, DNA-carrier of genetic information by an experimental proof- RNA- Types - central dogma (DNA –RNA-Protein)

UNIT II PROTEINS **[15 hrs]**

Classification of amino acids based on structure, Classification of proteins, Zwitter ion, pH dependent ionization of amino acids, Structure of proteins (primary, secondary, tertiary and quaternary).Different types of bonds that stabilize the protein. Denaturation and renaturation of proteins.Biological functions of fibrous proteins (Eg-collagen) ,globular protein (Hemoglobin) and lipoproteins

UNIT III MEMBRANE BIOPHYSICS **[15 hrs]**

Nerve cell-structure, bioelectrical and biochemical conduction of nerve impulses, Membrane potential, Resting potential, action potential-bioelectrical phenomenon of ECG and EEG-Molecular basis of muscle contraction

UNIT IV RADIATION BIOPHYSICS **[15 hrs]**

Radioactive isotopes, types of radioactive decay, units of radioactivity, Biological effects of radiation – Applications of radioisotopes in biology (tracing metabolic pathways, isotope dilution techniques radio dating and RIA) – Detection and measurement of radioactivity-GM counter and scintillation counter, Autoradiography.

UNIT V BIOINSTRUMENTATION **[15 hrs]**

Principle and biological application of UV-VIS Spectrophotometry, Spectrofluorimetry, X-ray Diffraction and Flame photometer

TEXTBOOKS:

1. P.Narayanan ,"Essentials of Biophysics",2nd ed , New Age Publishers, New Delhi
2.Dr.A.C.Deb,1983, "Fundamentals of biochemistry" 8th edition, Kolkata, New Central Book Agency

REFERENCES:

1. M.A.Subramanian, " Biophysics- Principles And Techniques",MJP publishers, Chennai
2. M.V.Volbenshtein , "Biophysics", MIR publishers, Moscow ,1983
3. William huges , "Aspects of biophysics",John Wiley and sons,N.Y,1979
4. L.E.Ackermann, "Biophysical Science", L.B.E.Eillis And Williams ,1979
5. J.L.Jain, Sanjay Jain and Nitin Jain,1997, "Fundamentals of Biochemistry",6th Edition, New Delhi, S.Chand& company Ltd

SEMESTER – III ENVIRONMENTAL STUDIES EVS401

Unit I : Environmental studies and Natural resources (20 Hrs)

Definition, scope and importance of environmental studies – forest resources: deforestation, mining, dams – water resources: over – utilization, floods, drought – mineral resources: exdploitation, extraction and usage – food resources: food problems, overgrazing, pesticide problems, water logging, salinity – energy resources: energy needs, renewable and non renewable energy – land resources: land degradation, landslides, soil erosion and desertification – conserving natural resources.

Unit II: Ecosystems : (20 Hrs)

Concept, structure and function of an ecosystem – producers, consumers and decomposers – energy flow – ecological succession – food chains, food webs and ecological pyramids – types, characteristics, structure and function of forest ecosystem, grassland ecosystem, desert ecosystem and aquatic ecosystem –

Unit III: Biodiversity: (20 Hrs)

Definition of biodiversity – genetic, species and ecosystem diversity – value of biodiversity – India as a mega diversity nation – hot spots – threats to biodiversity – endangered and endemic species of India – In-situ and Ex-situ conservation of biodiversity.

Unit IV: Environmental Pollution: (20 Hrs)

Cause, effects and control measures of air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution and nuclear hazards – solid waste management: causes, effects, control measures and disposal of wastes – disaster management: floods, earthquakes, cyclone, land slides and tsunami.

Unit V: Social Issues, Human population and the Environment: (20 Hrs)

Water conservation, rain water harvesting, watershed management – environmental ethics: issues and possible solution – climate change, global warming, acid rain, ozone depletion, nuclear accidents and holocaust – wasteland reclamation – Environment protection Act – Wildlife protection Act – Forest Conservation Act – public awareness – Population explosion – Environment and human health – Role of Information Technology in Environment and human health.

Field work: (20 Hrs)

1. Visit to a local area to document environmental assets – river / forest / grassland/mangrove.
2. Visit to a local polluted site – urban / rural / industrial / agricultural.
3. Study of common plants, insects, birds.
4. Study of simple ecosystems – pond, river, forest, etc.,
5. Practical work

Reference Books:

1. Joseph C.Daniel,2004. Principles of Environmental Science. Brightson's Publications,Chennai.
2. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
3. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad - 380 013, India, Email:mapin@icenet.net
4. Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi
5. Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co.
6. Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA,
7. Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut
8. Trivedi R.K., Hand book of Environmental Laws, Rules Guidelines, Compliances and Standards. Vol I and II, Enviro Media9.Wanger K.D., 1998. Environmental Management. W.B. Saunders Co. Philadelphia, USA

SEMESTER – IV Practical – IV PHP404

(Any nine out of the given 12 experiments**)**

1. Potentiometer –comparison of EMF
2. Potentiometer- high range voltmeter
3. Spectrometer-dispersive power of a grating
4. Spectrometer-dispersive power of a prism
5. P.O.Box –resistence-temperature coefficient
6. Field along the axis of a circular coil .deflection magnemeter
7. Carry Fosters bridge- temperature Co-efficeint of Resistance
8. Series Resonant circuit
9. Parallel resonant circuit
10. Field along the axis of a circular coil vibrational magnemeter
11. Variation of resistance with temperature (thermistor)
12. LCR Studies- Two Resistors- Two Capacitors – Two Inductors

ABCP401 - ALLIED BIOPHYSICS
PRACTICAL SYLLABUS
(IV semester)

Volumetric Analysis

1. Estimation of Glycine by formal titration method
2. Estimation of Ascorbic acid using dichlorophenol indophenol dye as link solution.
3. Estimation of Glucose by Benedict's Method.
4. Estimation of protein by Biuret method (Colorimetric Estimation)

Qualitative analysis

a) Qualitative analysis of carbohydrates Glucose, fructose, Lactose, sucrose and starch
b) Qualitative analysis of Amino acids -Tyrosine, Tryptophan, Arginine and Histidine

Nucleic acid extraction (Demonstration)

1. Isolation of DNA
2. Isolation of RNA

PRACTICAL MARKS: 60

Volumetric analysis / Colorimetric analysis	- 25
Qualitative analysis	- 25
Record	- 10

SEMESTER – V OPTICS AND SPECTROSCOPY PH505

Unit – I : LENSES

Convex lens – Optic Centre – Cardinal Points – Principal foci and principal points – Optic centre of a lens – Spherical aberration and lenses – Methods of minimizing spherical aberration – Condition for minimum spherical aberration in the case of two lenses separated by a distance – Chromatic aberration in lenses – Condition for achromatism of two thin lenses (In contact and out of contact) – Coma - astigmatism – Curvature of the field, Ramsden and Huygen's eyepieces.– Velocity of light – Kerr cell method .

DISPERSION

Dispersion produced by a thin prism – Angular dispersion – Dispersive power – combination of prisms to produce dispersion without deviation – Deviation without dispersion – Achromatic prisms Direct vision spectroscope – Constant deviation spectrometer – calculation of characteristic wave number of spectral lines.

Unit – II : INTERFERENCE

Colours of thin films – Air wedge – Determination of diameter of a thin wire by air wedge – Test for optical flatness – Michelson's Interferometer – Theory – Applications - λ, thickness of thin transparent material and resolution of spectral lines – Brewster's fringes – Refractive index of gases – Jamin's & Rayleigh's Interferometers – Stationary waves in light.

UNIT III : DIFFRACTION

Fresnel diffraction – Diffraction at circular aperture , opaque circular disc, straight edge and narrow wire- Fraunhofer diffraction – single slit – double slit – plane diffraction grating – theory and experiment to determine wavelength – normal incidence – oblique incidence- Missing orders – Overlapping spectra Rayleigh's criteria – Resolving power of telescope, prism, microscope and grating.

UNIT – IV: POLARIZATION

Double refraction – Nicol prism – polarizer and analyzer – Huygen's explanation of double refraction in uniaxial crystals – Dichroism – polaroids and their uses – plane, circularly and elliptically polarized light – production and detection – Optical Activity – Fresnel's explanation of optical activity – Specific rotatory power – Determination using Laurent's half shade polarimeter – Kerr effect and Faraday effect.

UNIT - V : SPECTROSCOPY

Infrared spectroscopy – Techniques and Instrumentation (Outline) – Raman spectroscopy, Quantum theory and classical theory – Molecular structure.

Basic concepts of Resonance spectroscopy, ESR, NMR, NQR and Mossbauer spectroscopy –experimental setup and applications.

MASER, Semiconductor LASER – applications of LASER in communications.

Text Books

1) Optics by Subramaniam N & Brijlal, S Chand & Co. Pvt. Ltd., New Delhi, 1990.
2) Optics by Khanna D R & Gulati H R, R Chand & Co. Pvt. Ltd., New Delhi, 1979.
3) Optics and Spectroscopy by R. Murugesan, S. Chand & Co. Pvt. Ltd., New Delhi,2009,

References

1. Fundamentals of Optics by Jenkins A Francis and White E Harvey, McGraw Hill Inc., New Delhi, 1976.
2. Optical Physics by Lipson S G, Lipson H and Tannhauser D S, Cambridge University Press 1995.
3. Fundamentals of Optics by Raj M G, Anmol Publications Pvt Ltd, New Delhi ,1996.
4. Fundamentals of Physics, 6th Edition, by D Halliday, R Resnick and J Waler, Wiley NY 2001.
5. Physics, 4th Edition Vols I & II extended by D Halliday, Resnick and K. S. Krane, Wiley, Ny, 1994.
6. The Feynman Lectures on Physics, Vols.I , II and III by R P Feynman, R B Leighton and M Sands, Narosa, New Delhi 1998.
7. Spectroscopy, G.Aruldhas

SEMESTER – V ATOMIC PHYSICS PH506

UNIT I : DISCHARGE PHENOMENON THROUGH GASES

Motoin of a charge in transverse electric and magnetic fields – specific charge of an electron – Dunnington's method – Magnetron method – positive rays – Thompson parabola method – Aston and Dempster's mass spectrograph.

UNIT II : ATOMIC STRUCTURE

Vector atom model – Pauli's exclusion principle – explanation of periodic table – various quantum numbers – angular momentum and magnetic moment – coupling schmes – LS and JJ coupling – spatial quantization – Bohr magneton – Stern and Gerlach experiment.

Spectral terms and notations – selection rules – intensity rule and interval rule – fine structure of sodium D lines – alkali spectra – fine structure of alkali spectra – spectrum of Helium.

UNIT III : IONISATION POTENTIAL AND SPLITTING OF ENERGY LEVELS

Excitation and ionization potential – Davis and Goucher's method – Zeeman effect – Larmor's theorem – Debye's explanation of normal Zeeman effect – Anamalous Zeeman effect – theoretical explanation- Lande's 'g' factor and explanation of splitting of D1 and D2 lines of sodium – Paschen Back effect – theory – Stark effect (Qualitative treatment only)

UNIT IV: PHOTOELECTRICITY Photoelectricity: Photoelectric emission laws – Lenard's experiment-

Richardson and Compton experiment- Einstein photoelectric equation -experimental verification of Einstein's photoelectric equations by Millikan's experiment-photoelectric cells

UNIT V: X-RAYS: Continuous and characteristic X-RAY spectra absorption of X-RAYS by matter- concept of reciprocal lattice –Diffraction of X-RAYS -details of Laue, rotating crystal and powder methods- Compton effect-derivation of expression for change in wavelength-experimental verification

Books for study

1. Modern Physics by R. Murugeshan, S. Chand & Co., New Delhi – 2009
2. Atomic and Nuclear Physics by N. Subramanian and Brij Lal, S chand & Co. -
3. Atomic Physics by J B Rajam, S chand Publishing Co.

Books for Reference

1. Atomic Physics by A B Gupta and Dipak Ghosh – Books and Allied Publishers
2. Modern Physics by J H Hamilton and Yang, McGraw Hill Publication 1996.
3. Concepts of Modern Physics by A Beiser, Tata McGraw Hill, New Delhi 1997
4. Fundamentals of Physics, 6th edition, by D Halliday, R Resnick and J Walker, Willey NY 2001

SEMESTER – V SOLID STATE PHYSICS PH507

Unit I : **BONDS IN CRYSTAL STRUCTURE**

Crystal lattice- primitive and unit cell- seven classes of crystals – Bravais lattice- Miller indices- structure of crystals- simple cubic, Hexagonal close packed structure-Face centred cubic structure, Body centred cubic structure, Simple cubic structure-Sodium chloride structure, Zinc Blende structure, Diamond structure

Unit II: X-RAY DIFFRACTION

Diffraction of x-rays by crystals-Bragg's law in one dimension-Experimental method in x-ray diffraction-Laue method, Rotating crystal method-Powder photograph method-von Laue's equations-Point defects-Line defects- Surface defects- Volume defects-Effects of crystal imperfections

Unit III: MAGNETISM

Different type of magnetic materials- Classical theory of Diamagnetism(Langevin's theory)-Langevin's theory of Paramagnetism – Weiss theory of Paramagnetism- Qualitative explanation of Heisenberg's Internal Field and Quantum Theory of Ferromagnetism.

Unit IV: DIELECTRICS

Fundamentals definitions in dielectrics – different types of electric polarization- Frequency and Temperature Effects on Polarization – Dielectric loss – Local Field on internal field Clausius-Mosotti Relation- Determination of Dielectric Constant – Dielectric Breakdown – Properties of Different types of insulating materials

Unit V: SUPERCONDUCTIVITY

Introduction-Meissner effect-Limitation- Type I& II Superconductivity-Vortex states- BCS Theory(Qualitative treatment only)-Josephson's effect-Copper pair tunneling.

Books for study

1. An introduction to solid state physics (5th edition) C.Kitel.
2. Solid state physics Hall H.E,E.L.B.S Manchester physics series
3. Solid State Physics, Puri & Babber
4. Solid State Physics, Gupta Kumar
5. Solid State Physics, S.O.Pillai

Books for reference

1. Solid state physics, Dekker A.J.Mac million
2. Solid State Physics, Ascroft & Hermine

SEMESTER – V EPH508 BASIC ELECTRONICS

UNIT – I : SEMI CONDUCTOR DEVICES AND CHARACTERISTICS

Bonding, Band gap of semiconductors –Types of semiconductors-Elemental and Compound semiconductors-intrinsic and extrinsic semiconductors – effect of temperature on Fermi level – PN junction diode – Zener diode - photo diode – different modes of operation – transistor biasing – H-parameters-characteristics in CB & CE modes – α and β of a transistor.

UNIT –II : RECTIFIERS AND AMPLIFIERS

Half-wave , full-wave and bridge rectifier – expression for efficiency and ripple factor – choke input filter – capacitor input filter – π section filter – zener regulated power supply .

RC coupled amplifier – frequency response curve – analysis of mid-frequency region – classification of amplifiers – class A power amplifier – Push-pull, class B power amplifier – Emitter follower.

UNIT –III : OSCILLATORS

Voltage gain of a feedback amplifier – Barkhausen criterion – Hartley, Colpitt's, phase shift and Weinbridge oscillators – expression for frequency of oscillations and condition for sustained oscillations in each case – crystal oscillator – frequency stability.

UNIT –IV : WAVE SHAPING CIRCUITS AND MULTI VIBRATORS

Clipping and clamping circuit – biased clipper – integrating and differentiating circuits – RC time constants. Multivibrators – Astable – Mono stable and bi-stable multivibrators – Schmitt trigger

UNIT –V: RADIO COMMUNICATION AND TELEVISION

Principles of transmission and reception –types of modulation – amplitude modulation – frequency modulation and phase modulation –detector – AM detector – FM Discriminator – AM and FM transmitter and receiver – Block diagram of TV transmission and reception – Principle of color TV - Applications.

Text Books

1. Principles of electronics by V K Mehta, S Chand & Co., 5th edition 2001
2. Elements of electronics by Bagde and S P Singh
3. Functional electronics by Ramanan
4. Monochrome and Color TV by Gulati
5. Basic and applied electronics by M Arul Thalapathi, Comptek publishers, Chennai 2005.

References

1. Electronics principles by Malvino
2. Electronic devices and circuits by Allen Mottershed
3. Monochrome and colour TV Gulati
4. Basic Television and video systems by B Grob
5. Solid state electronics by Manna, Tata McGraw Hill

Basic electronics, 6th edition by B Grob, McGraw Hill, NY 1989.

SEMESTER – V EPH509S DIGITAL ELECTRONICS & MICROPROCESSOR

UNIT– I Digitial Fundamentals

Number systems – decimal, binary, octal and hexadecimal systems – conversion from one number system to another Codes – BCD code – excess 3 code, Gray code – ASCII code – Binary arithmetic – Binary addition – subtraction – unsigned binary numbers – sign magnitude numbers – I's and 2's complement – Binary multiplication and division.

Logic gates and logic families

AND, OR circuits using diodes and transistors – NOT using transistors – NAND, NOR and EXOR – functions and truth tables. NAND & NOR as universal gates.

UNIT – II Boolean algebra and simplification of logic circuits

Laws and theorems of Boolean algebra – De Morgan's theorems and their circuit implications – Duality theorem, simplification of Boolean equations – Karnaugh map – pairs, quads, octets – 2,3 and 4 variables –SOP method – NAND – NAND circuits – POS method – NOR – NOR circuits.

UNIT - III Arithmetic circuits and Sequential logic circuits

Arithmetic building blocks – Half adder – Full adder – parallel binary adder – Half subtractor – Full subtractor – The adder- subtractor – digital comparator – parity checker/generator. Flip-flops –JK flip – flop – JK master slave flip-flop –Flip flop applications. Shift register functions- Shift right-shift left-Shift register applications.

UNIT – IV: D/A and A/D Converters

Introduction – variable resistor network – binary ladder – D/A converter – D/A accuracy and resolution – A/D converter – simultaneous conversion – A/D accuracy and resolution.

UNIT – V: Introduction to Microprocessor 8085

Basics of semiconductor memory- RAM ROM, PROM and EPROM. Microcomputer organization-8085 Microprocessor-pin functions-architecture-machine and assembly language-programmer's model of 8085-8085 addressing modes.

Text Books

1. Malvino and Leech, Digital Principles and Application, 4th edition, Tata Mcgraw Hill, New Delhi, (2000)
2. Millman and Halkias, Integrated Electronics, International edition, McGraw Hill, New Delhi, (1972).
3. Arul Thalapapathi, Fundamentals of digital comuters, Comptek publishers, Chennai, 1995.
4. Vijayendran,Fundamentals of Microprocessor8085, S.Viswanathan Pvt.Ltd,2006.

References

1. Computer architecture and logic design by T C Bartee, McGraw Hill, 1991.
2. Solid state electronics by I. Agarwal and Anit Agarwal.
3. Digital integrated electronics by Herbert Taub and Donald Schilling, McGraw Hill
4. Anokh Singh and A K Chhabra, Fundamentals of Digital Electronics and Microprocessors, 2nd revised and enlarged Ed., 2. Chand & Co. Ltd., New Delhi,(2005).
5. Digital fundamentals – Floyd – Pearson Education 8th Edition S. Chand Publications, (2004).

SEMESTER - V PRACTICAL (GENERAL) PHP505

(Any Ten Of The Following)

1. Youngs modulus – Koenig's method – non uniform bending
2. Newtons rings – R1, R2 and μ of a convex lens
3. Spectrometer i – i' curve
4. Spectrometer – narrow angled prism – angle of deviation – normal incidence and normal emergence.
5. Spectrometer – Cauchy's constant
6. Spectrometer- grating –Rydberg's constant
7. Field along the axis of circular coil – deflection magnetometer – M and B.
8. Field along the axis of circular coil – Vibration magnetic needle – Bн
9. EMF of a thermocouple – mirror galvanometer (or) table galvanometer
10. Potentiometer – emf of a thermocouple.
11. Potentiometer – calibration of high range voltmeter.
12. Potentiometer - Conversion of galvanometer into voltmeter
13. BG – quantity sensitiveness
14. BG – comparison of capacitances
15. BG – absolute capacitance of a capacitor
16. BG – comparison of emfs
17. Transistor characteristics – CE mode
18. Construction of a low range power pack
19. Basic Logic gates using diode- AND, OR & NOT gates using transistor.

SEMESTER – VI RELATIVITY, QUANTUM MECHANICS AND MATHEMATICAL METHODS PH610S

UNIT - I : Relativity

Frames of references – Michelson – Morley experiment – significance of negative result – postulates of special theory of relativity – Lorentz transformation equations – Length contraction – Time dilation – Relativity of simultaneity – Law of addition of velocities – variation of mass with velocity – relativistic kinetic energy equations – postulates of general theory of relativity – gravitational red shift.

UNIT - II Wave Mechanics

Matter Waves – de Brogile wavelength – wave velocity and group velocity – Heisenberg's Uncertainty principle – proof of Uncertainty principle for one dimensional wave packet – postulates of wave mechanics – properties of wave function – operator formalism – eigen functions – eigen values – expectation values.

UNIT - III : Schrodinger equations and its applications

Schrodinger equation – time dependent and time independent – application of Schrodinger equations – linear harmonic oscillator – zero point energy – particle in a one dimensional box – barrier penetration and tunneling effect rigid rotator – hydrogen atom.

UNIT - IV : Mathematical Physics

Gauss divergence theorem – stokes theorem – Greens theorem – applications of vectors to hydrodynamics.

Spherical polar coordinates – expressions for gradient, div in Cartesian & spherical coordinates.

UNIT - V : Special Functions

Beta and gamma functions– relation between them – harmonics-Bessel's differential equations – Legendre's differential equations – Hermite's differential equations – Laguerre's differential equations – series solutions.

Text Books

1. Quantum Mechanics by V. Devanathan, Narosa, Chennai, 2005.
2. Modern physics by R. Murugeshan, Kiruthigs, Sivaprasath S Chand & Co. (2007)
3. Quantum Mechanics by V K Thangappan, Wiley Eastern
4. A Text Book of Quantum Mechanics by P M Mathews and Venkatesan, McGraw Hill
5. Mathematical Physics by Sathya Prakash
6. Mechanics and mathematical methods by Murugeshan, S Chand Publishing & Co.

References

1. Mathematical physics by B D Gupta
2. Quantum mechanics by Ghatak and Loganathan, McMillan
3. Basic Quantum mechanics by A Ghatak, McMillan India (2002)
4. Introduction to boundary value problems by Murray Spiegal (Scahaum's series)

SEMESTER – VI NUCLEAR AND RADIATION PHYSICS PH611

UNIT - 1 : NUCLEAR STRUCTURE

Nuclear spin – determination of magnetic dipole moment, electric quadruple moment, parity of nuclei, isospin, theories of nuclear composition, proton and electron hypothesis, proton – neutron hypothesis, nuclear forces – meson theory of nuclear forces.

Liquid drop model – Bethe Weizacker's mass formula – application to alpha decay – Bohr – Wheeler theory – shell model – evidences – theory – energy level diagram – spin orbit interaction – magic numbers – nuclear stability

UNIT - II : RADIOACTIVE DECAY

Radioactive disintegration – law of successive disintegration – transport and secular equilibrium – radioactive series – Geiger – Nuttal law – Age of earth – alpha particle disintegration energy – alpha particle spectra – theory of alpha decay (Qualitative treatment).

Beta ray spectra – origin – neutrino theory of beta decay – electron capture – gamma rays – determination of wavelength by Dumond – crystal spectrometer – nuclear isomerism.

UNIT - III : PARTICLE ACCELERATORS AND DETECTORS

Cyclotron – synchrocyclotron – Betatron – electron synchrotron – proton synchrotron (Bevatron)-GM counter – ionization chamber – bubble chamber – scintillation counter – photographic emulsion techniques.

UNIT - IV : REACTORS AND RADIATION PHYSICS

Nuclear fission – Chain reaction – four-factor formula – reactor theory – critical size of a reactor – general aspect of reactor design – reactor shielding – reactor control – classification of reactors – pressurized heavy water reactor – fast breeder reactor-Introduction to recent rectors.

Radiation hazards – biological effects of radiation - radiation sickness – radiation units and operational limits radiation survey meters – pocket dosimeter –control of radiation hazards – radiation therapy – radioisotopes used for therapy – nuclear medicine – industrial applications – food preservatives.

UNIT - V : ELEMENTARY PARTICLES

Classification – types of interaction – symmetry and conservation laws – hadrons – leptons – baryons – mesons – strangeness – hyperons – antiparticles – antimatter – basic ideas about quarks – types of quarks.

Text Books

1. Modern physics by R. Murugeshan, S.Chand & Co.2009
2. Introduction to Modern Physics by Rich Meyer, Kennard, Coop Tata McGraw Hill Publishing Co.
3. Atomic and nuclear physics by Littlefield & Thorley
4. Modern physics by R. Murugeshan & Kiruthiga, Sivaprasath S.Chand & Co. (2009)

References

1. Nuclear physics S N Ghoshal – S Chand & Co. Edition 2003
2. Nuclear Physics D C Tayal – Himalayan Publishing House
3. Elements of Nuclear physics – M L Pandya & R P S Yadav Kedar Nath Ram Nath (2000)
4. Nuclear Physics – Irving Keplan
5. Nuclear Physics – J B Rajam, S chand Publishing Co.

SEMESTER – VI LASER AND FIBER OPTIC COMMUNICATION PH612S

UNIT - I : LASER Physics

Basic Principle of Laser – Einstein Coefficients – condition for light amplification – Population Inversion – Threshold Condition – Line shape function – Optical Resonators – Three level and four level systems.

UNIT - II : Types of lasers and output modulation methods

Solid State lasers – Gas lasers – He-Ne and CO_2 lasers – semiconductor lasers – Heterojunction lasers - Argon ion and Eximer Laser– Q switching and mode locking.

UNIT - III : Applications of laser

Application of laser in industry – cutting and welding – Drilling – surface Hardening – Medical applications - laser as diagnostic and therapeutic tool – Holography – Theory of recording and reconstruction – application of Holography.

UNIT - IV : Optic fibers

Fiber optic revolution – basic characteristics of optical fiber – acceptance angle – numerical aperture – propagation of light through optical fiber – theory of mode formation – classification of fibers – step index and graded index fibers – single mode and multi mode fibers – losses in fibers – fabrication techniques of fibers.

UNIT - V : Fiber Optic Communication

Source and detectors for fiber optic communication – Laser and LED – Analog and digital modulation methods – principle of optical detection – pin and APD photodetectors – Noise – Design consideration of a fiber optic communication system.

Text Books

1. Laser theory and applications by K. Thyagarajan and Ajoy Ghatak, Cambridge University Press, 1999.
2. An Introduction to laser : Theory and Applications by M N Avadhanulu, S. Chand & Co., New Delhi 2001.
3. Introduction to Fiber optics by K. Thyagarajan and Ajoy Ghatak, Cambridge University Press, 1999.

References

1. Optical Fiber communications by john M. Senior, Cambridge University Press, 1996.
2. Fiber – Optic communication systems, Govind p. Agrawal, John- Willey & Sons.
3. P K Palanisamy, Physics for engineering, Scitech publishing pvt Ltd., Chennai.

SEMESTER VI APPLIED ELECTRONICS EPH613

UNIT - I : SPECIAL DEVICES AND APPLICATIONS

FET _ Characteristics – parameter FET as amplifier – FET as VVR – MOSFET – Depletion and enhancement – UJT characteristics – UJT as relaxation oscillator – SCR characteristics.

UNIT - II : LINEAR OPERATIONAL AMPLIFIER CIRCUITS

OPAMP – Parameters – inverting and Non-inverting amplifier – gain – Miller effect – Virtual ground – offset voltage – offset current – PSRR - CMRR.

OPAMP – Sign and scale changer – adder, subtractor and averager – integrator and differentiator – DC voltage follower – ac voltage follower – solving simultaneous linear equation.

UNIT – III : APPLICATIONS OF OPAMP

OP AMP logarithmic amplifer – antilogarthmic amplifer – Logarithmic multiplier – Logarithmic divider.

Comparator – Schmitt trigger – Astable multivibrator – Monostable multivibrator – Bistable multivibrator – Wein Bridge oscillator – phase shift oscillator.

UNIT - IV : 555 TIMER AND PLL

555 Timer block diagram - Monostable operation – Astable operation – Schmitt trigger.Phase – Locked Loops (PLL): Basic principles – phase Detector

Comparator – Analog phase detector – Digital phase detector – voltage controlled oscillator (VCO).

UNIT - V : D / A and A / D Converter

Weighted resistor D/A converter – 4bit R-2R ladder DAC – Analog to Digital converter – Stair case ADC– Successive approximation ADC.

Text Books

1. Basic and Applied Electronics by M. Arul Thalapathi – Cometak Publisher Chennai, 2005.
2. Digital principles and applications – Malvino Leach – 4th Edn., - Tata McGraw Hill 1992.
3. Integrated Electronics by Jacob Millman and Christos C. Halkias – McGraw Hill International 1971.
4. Linear Integrated Circuits by D. Roy Choudhury and Shall Jain – New age International (p) Ltd.
5. OP–AMPS and linear integrated circuits – by Ramakant A. Gayaward - Printice Hall of India 1994.

References

1. Digital Computer electronics by Albert paul Malvino–TMH Edition 1992
2. Electronics – Analog and Digital – I J Jagrath – Prentice – Hall of India – New Delhi – 1999.
3. Operational amplifier and linear integrated circuits – Prentice Hall Inc. N.J. 1977.

SEMESTER VI NUMERICAL METHODS & BASIC COMPUTER PROGRAMMING ELECTIVE-II EPH614S

Unit 1: SOLUTION OF EQUATION

Eigen values, Eigen vectors, Cayley Hamilton ; characteristic equation of a matrix –Solution of simultaneous equations – Gauss elimination method – Gauss-Jordan method.

Unit 2: INTERPOLATION

Linear and Lagrange interpolation – Newton's forward & backward interpolation polynomial equation & determination of roots – Newton-Raphson method.

Unit 3: NUMERICAL INTEGRATION AND DIFFERENTIATION

Trapezoidal rule – Simpson rule 1/3 & 3/8 – Solution of first & second order differential equation: Taylor series – Euler's method (Improved & Modified) – Solutions of forth order Runge-Kutta method.

Unit 4: DATA TYPE OPERATORS

History & Features of C Language - Variable name – data type and sizes – declaration – arithmetic, relational and logical operators – perecedence and order of evaluation.

Unit 5: CONTROL STATEMENTS

Unconditional control statements – GOTO and labels – Conditional control statements – simple IF, IF..ELSE, nested IF..ELSE, ELSE IF ladder – switch case – break – continue statement. Looping statement – while – do..while – for – nested for loop – (**Basic Programs - Qualitative studies only)**

Books for study

1. Mathematical physics: Satya Prakash – 4th ed. Sultan chand & sons publication, New Delhi.
2. Numerical methods: A. Singaravelu – 1st ed. Meenakshi publication, Tamil Nadu.
3. Let us 'C' : Yeshwant kanitkar.
4. Numerical methods and computers: Kuo-Addison-Wesely London, 1966
5. Computer oriented numerical methods: Rajaram-3rd ed.prentice hall, New Delhi.

SEMESTER – VI PRACTICAL (ELECTRONICS) PHP606

1. Bridge rectifier – Zener diode regulated power supply
2. Construction of a full wave rectifier-solid state using two diodes
3. 5V – Ic regulated power supply – characteristics
4. Single stage amplifier – gain and frequency response using transistor
5. Amplifier with feed back
6. RC-coupled amplifier using transistor(voltage gain and variation with load)
7. Hartley oscillator
8. Colpitt's oscillator
9. Differentiating and intergrating circuits
10. Transistor – Astable multivibrator
11. NAND, NOR universal gates
12. Half adder and Full adder – mixture of gates
13. Half subtractor and Full subtractor
14. Multiplexer and demultiplexer
15. RS, T flip flop using NAND gates only
16. Four bit ripple counter
17. Shift registers
18. Verification of De Morgan's theorem.
19. Basic logic gates using transistor –AND, OR & NOT gates.

SEMESTER – VI JPH601 ELECTRONICS PROJECT

SEMESTER – VI EU601 EXTENSION ACTIVITIES

SEMESTER VI ENERGY PHYSICS

Unit I

Conventional Energy Sources: World's reserve of commercial energy sources and their availability-various forms of energy- renewable and conventional energy systems- comparison and natural gas – availability –statistical details-applications-merits and demerits

Unit II

Non-Conventional Energy Sources: Renewable energy sources- solar energy- nature of solar radiation- components-solar heaters- crop dryers- space cooling-solar ponds-solar cookers-water desalination- photovoltaic generation basics- merits and demerits of solar energy

Unit III

Biomass energy-classification- photosynthesis- biomass conversion process- gobar gas plants- wood gasification- ethanol from wood- advantages and disadvantages of biomass as energy source

Unit IV

Geothermal energy- wind energy- ocean thermal energy conversion(OTEC)-energy from waves and tides(basic ideas, nature, applications, merits and demerits)

Unit V

Energy storage and impacts of Non-conventional energy: Conversion of energy-patterns of energy consumption in domestic, industrial, transpotation, agricultural sectors- conservation principles in these sectors- energy crisis and possible solutions- energy options for the developing countries- energy storage and hydrogen as a fuel (basics)-impact due to non-conventional energy sources-global warming

Text Books Cyclostyled text

References

Sukhatme