

VIVEKANANDA COLLEGE

(Residential & Autonomous – A Gurukula Institute of Life-Training)

(Affiliated to Madurai Kamaraj University)

Reaccredited with ‘A’ Grade (CGPA of 3.57 out of 4.00) by NAAC

TIRUVEDAKAM WEST, MADURAI DISTRICT – 625 234



DEPARTMENT OF PHYSICS

B.Sc. PHYSICS

SYLLABUS

Choice Based Credit System

(For those who joined in June 2013 and after)

ABOUT THE COLLEGE

Vivekananda College was started by Founder-President Swamiji Chidbhavanandhaji Maharaj of Sri Ramakrishna Tapovanam, Tirupparaithurai, Trichy in 1971 on the banks of the river Vaigai which is blissfully free from the noise and hurry, the crowds and distraction of the city.

Vivekananda College is a residential college functioning under Gurukula pattern. It is Man-making education, that is imparted in this institution, Culture, character and curriculum are the three facets of ideal education that make man a better man. This is possible only when the teacher and taught live together, The Gurukula system of Training is therefore a humble and systematic attempt in reviving the age old GURUGRIHAVASA for wholesome education, Attention to physical culture, devotion to duty, obedience to teachers, hospitality to guests, zest for life, love for the nation, and above all, humility and faith in the presence of God etc. are the values sought to be inculcated. All steps are taken to ensure the required atmosphere for the ideal life training.

Vivekananda College, Tiruvedakam West, Madurai District-625 234 is an aided college established in 1971 and offers UG and PG courses. This College is affiliated to the Madurai Kamaraj University, Madurai. The College was reaccredited with 'A' grade (CGPA 3.57 out of 4.00) by NAAC in March 2010.

VISION AND MISSION

Our Vision : To raise an army of neo-graduates steeped in the hoary culture of the motherland and dedicated to serving her as potential leaders in the manifold spheres of national effort.

Our Mission : A harmonious enrichment of physical, emotional and intellectual facets of a student's personality to bring out his inherent PERFECTION.

OBJECTIVES OF THE INSTITUTION

1. To inculcate spiritual, ethical, moral and social values in all disciplines of study.
2. Simultaneous education of the Hand, Heart and Head. Only a sound body can hold a sound mind.
3. Provide opportunities for all round development of the students and excellence in higher education, research and extension in different disciplines.
4. Disseminate the findings of research to the community to facilitate its development.
5. To provide society citizens of sterling character.
6. To cater to the needs of the educationally backward people – the most backward, scheduled caste and tribe.

GURUKULA ADMINISTRATIVE SET UP

Secretary	Swami Niyamananda Maharaj
Principal	Dr. B. Ramamoorthy
Vice-Principal & NAAC Coordinator	Dr. S. Raja
Academic Affairs	Dr. M. Ganesan
Controller of Examinations	Dr. E. Jayakumar
IQAC Coordinator	Dr. S. Raja
IGNOU Coordinator	Sri. V. Parthasarathy
ICT Coordinator	Dr. N.Nagendran
Grievence Cell Coordinator	Dr. T. Kaliappan
Director, Certificate Courses	Dr. N. Nattuthurai
Sessional Examination	Sri. P. Muthukumaran, HOD of Maths
	Sri. P. Natarajan
	Sri. G.Sanjevi
	Sri. C. Rajan
	Sri. P.Madasamy

I Eligibility for Admission

Admission to B.Sc. – Physics Programme is open to candidates with +2 pass with Maths, Physics, Chemistry, Biology as major subjects.

For B.Sc.- Physics course offered in the college, a pass in the Higher Secondary Examination conducted by the Government of Tamil Nadu or an examination accepted as equivalent there to by the Syndicate of the MKU, subject to such conditions as may be prescribed therefore.

II Duration

The course is for a period of three years. Each academic year shall comprise of two semesters viz. Odd and Even semesters. Odd semesters shall be from June to November and Even Semesters shall be from December to April. There shall be not less than 90 working days which shall comprise 450 teaching clock hours for each semester (Exclusive of the days for the conduct of university end-semester examinations) for each semester.

III CBCS System

All Programmes offered in the college are run on Choice Based Credit System (CBCS). It is an instructional package developed to suit the needs of students to keep pace with developments in higher education and the quality assurance expected of it in the light of liberalization and globalization in higher education.

IV Semesters:

An academic year is divided into two semesters. In each semester, courses are offered in 15 teaching weeks. Each week has 30 working hours spread over 6 days a week.

V Credits:

The term 'Credit' refers to the weightage given to a course, usually in relation to the instructional hours assigned to it. The total minimum credits, required for completing the B.Sc. Programme is 140. The details of credits for individual components and individual courses are given in the above table.

VI Course:

Each Course is to be designed variously under lectures / laboratory / seminar / practical training / assignments to meet effective teaching and learning needs.

VII Examinations:

i). There shall be examinations at the end of each semester, for odd semesters in the month of October / November; for even semesters in April/May. A candidate who does not pass the examination in any course(s) shall be permitted to appear in such failed course(s) in the subsequent examinations to be held in October / November or April/May.

ii). A candidate should get registered for the first semester examination. If registration is not possible owing to shortage of attendance beyond condonation limit / regulations prescribed or belated joining or on medical grounds, the candidates are permitted to move to the next semester. Such candidates shall re-do the missed semester after the completion of the programme.

VIII Condonation

Students must have 75% of attendance in each paper for appearing the examination. Students who have 65% to 74% of attendance shall apply for condonation in the prescribed form with the prescribed fee. Students who have 50% to 64% of attendance shall apply for condonation in prescribed form with the prescribed fee along with the Medical Certificate. Students who have below 50% of attendance are not eligible to appear for the examination. They shall compensate the shortage after the completion of the programme.

IX Question Paper Pattern

Time: 3 Hours

Maximum Marks: 75

SECTION-A (10 X 1 =10 Marks)

Answer All Questions

(1-5) Multiple Choice

(6-10) Short Answer Questions

Two questions from each unit

SECTION-B (5 X 7 = 35 Marks)

Answer All Questions

(11-15) Questions shall be in the format of either (a) or (b)

One question from each unit

SECTION-C (3 X 10 = 30 Marks)

Answer any THREE Questions

(16-20) One question from each unit.

X Evaluation:

Performance of the students are evaluated objectively. Evaluation is done both internally and externally. They will be assessed continuously through Internal Assessment System and finally through summative (end) semester examination. To assess internally, there will be three examinations conducted centrally with a duration of two hours for each paper. In addition to continuous evaluation, the summative semester examination, which will be a written examination of three hours duration, would also form an integral component of the evaluation. The ratio

of marks to be allotted to continuous internal assessment and to end semester examination is 25 : 75.

The pattern of internal valuation shall be:

Test: 20 Marks (the average of best two tests out of three tests)

Assignment: 5 marks

Total: 25 marks.

In respect of practical papers, the ratio of marks to be allotted to internal assessment and to summative (end) semester examination is 40 : 60. The internal marks will be calculated on the basis of marks secured at the model examination and marks awarded for the preparation of practical note book. The external marks will be calculated on the basis of the marks awarded by the internal examiner and the external examiner at the summative semester examination.

XI Passing Minimum:

There is no passing minimum for Internal Assessment. The passing minimum for external Examinations shall be 27 out of 75 marks and passing minimum for a paper is 40%.

XII Classification of Students:

Candidates who have secured not less than 40% of marks in each paper shall be declared to have passed in that paper. Candidates who obtain 40% and above but below 50% shall be declared to have passed in Third Class. Candidates who obtain 50% and above but below 60% of the aggregate marks in Part-III shall be declared to have passed in Second Class and those who obtain 60% of marks and above shall be placed in the First Class. Candidates who obtain 75% and above shall be declared to have passed in Distinction provided he has not re-appeared for any paper during the course of the study.

XIII Failed Candidates:

A candidate who has arrears in any paper in a semester examination will be permitted to proceed to the next semester classes. A candidate who has arrears may appear again in these failed papers at the November/April examinations. The internal assessment marks already obtained by him shall be carried over for the subsequent appearance also.

XIV Improvement of Internal Marks:

The student desirous of improving the internal assessment marks may request the Head of the Department. After obtaining permission from the Staff Council Meeting by the Head, the student may write improvement examinations in consultation with the course teacher. The marks obtained (when it is more than the previous marks) will be submitted to the Controller of Examinations for further adoption.

XV Study Tour

Students are expected to participate in the field visit and the study tours organized by the department. Though study tour/field trip carries no credit, it is compulsory for the students to attend whereby the students can get an opportunity to gain practical knowledge. As such, observational visit to selected social welfare organizations, industries, trade centres, exhibitions, places of historical importance and the like will be considered as extra-curricular activities.

VISION AND MISSION OF PHYSICS DEPARTMENT

VISION

Inculcating the basic and up to date knowledge in physical science to the first generation students from rural areas – by student centered learning methods and a mixture of traditional, current, and integrative pedagogical techniques.

The department has dedicated itself for lifelong learning through academics and social programs.

MISSION

Prepare the student in assets of physics and the principles of analytical methods required for the competitive physical tests in the competitive world.

Kindle the knowledge of students to pursue higher studies and research programs. Making the students self employable with the Physics knowledge gained during their degree course of study.

To provide the tools and skills for advancing our knowledge of the universe and for providing solutions to challenges we face as individuals, communities, and societies.

A Brief History of the department of Physics

At the time of inception of the college to Madurai University in the year 1971 Prof.R.Murugeshan was the first staff appointed in Physics department as a demonstrator to teach Physics for PUC. Three year B.Sc., Physics Major Course was introduced in the academic years 1973-1974. After the induction of Physics major course Prof M.Muthusamy and Prof. K.S.Srinivasanambirajan were appointed as Assistant Professors. Prof.M.Muthusamy leads the department as head of the department till to his retirement 31-05-2003. Prof.K.S.Srinivasanambirajan also retired from his service in the same academic on 31-05-2003. After that Prof.R.Murugeshan leads the department as head of the department of Physics till to his retirement on 31-05-2004. During his service Prof.R.Murugeshan published several books on different topics of Physics. His book on “Modern Physics” is very popular throughout our nation and is being prescribed as a text book in majority of the Indian Universities for under graduate course. Prof.A.P.Selvarajah acted as HOD from 01-06-2004 to 31-05-2014. Dr.P.K.Veeran has taken over the charge as HOD of Physics from 01-06-2014 to till date. The department take special interest in teaching medical instrumentation, house hold electrical appliances and house wiring (Certificate Course) which are much useful for self employment. The department took special interest in teaching ideas, concepts and physical laws which is very useful to get through in the competitive examinations for appointments and to get admission in higher studies. Thursday meet is a unique programme conducted in our department which is organised, conducted and participated by our department students by taking seminars on current topics, conducting Science quiz and having a good academic discussion on current topics in the presence of faculty members which is not only useful to enhance their subject skill but to enrich their communicative skills also. Lab on wheel and Science exhibition are other programmes which are very useful for school students in nearby villages. Seminars, Guest lectures are frequently conducted inviting subject experts from Higher Academic Centres like IIT, ISRO, IAP, etc.,

Department of Physics
TIME TABLE

SEMESTER-I

DAY /PERIOD	I	II	III	IV	V
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					

SEMESTER-II

DAY /PERIOD	I	II	III	IV	V
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					

SEMESTER-III

DAY /PERIOD	I	II	III	IV	V
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					

SEMESTER-IV

DAY /PERIOD	I	II	III	IV	V
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					

SEMESTER-V

DAY /PERIOD	I	II	III	IV	V
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					

SEMESTER-VI

DAY /PERIOD	I	II	III	IV	V
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					

SCHEME OF EXAMINATION
(For those who joined in 2008 and After)
FIRST SEMESTER

Part	Study Component	Subject Code	Title of the Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
I	Tamil	P1LT11	Tamil: Ikkalaka Kavithaiyum Urainadaium	6	3	25	75	100
	Sanskrit	P1LS11	Fundamental Grammar & History of Sanskrit Literature – I					
II	English	P2LE11	Communicative English Spoken English – I	5	2	25	75	100
III	Core	06CT11	Mechanics	4	4	25	75	100
	Core	06CT12	Optics and Sound	4	4	25	75	100
	Core		Major Practical	2	-	-	-	-
	Allied	07AT01	Allied Paper I : Inorganic, Organic. & Physical Chemistry- I	4	4	25	75	100
	Allied		Allied: Volumetric Estimation	2	-	-	-	-
IV	Non Major	06NE11	Non Major Elective Paper I : Space Science	2	2	25	75	100
			TOTAL	30	19			

SECOND SEMESTER

Part	Study Component	Subject Code	Title of the Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
I	Tamil	P1LT21	Tamil: Ikala Ilakkiyamum Makkal Thagavaliyalum.	6	3	25	75	100
	Sanskrit	P1LS21	Poetry, Grammar & History of Sanskrit Literature – II					
II	English	P2LE21	Functional English	5	2	25	75	100
	English	P2LE22	Spoken English-I	1	1	100	--	100
III	Core	06CT21	Thermodynamics and Statistical Mechanics	4	4	25	75	100
	Core	06CT22	Electromagnetism	4	4	25	75	100
	Core	06CP23	Major Practical –I	2	1	40	60	100
	Allied	07AT02	Allied Paper II : Inorganic Organic & Physical Chemistry-II	4	4	25	75	100
	Allied	07AP03	Allied : Volumetric Estimation	2	2	40	60	100
IV	Non Major	06NE21	Non Major Elective Paper II: Household Appliances	2	2	25	75	100
			TOTAL	30	23			

THIRD SEMESTER

Part	Study Component	Subject Code	Title of the Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
I	Tamil	P1LT31	Kappiyamum Pakthi Ilakiyamum Nadakamum	6	3	25	75	100
	Sanskrit	P1LS31	Prose , Poetics & History of Sanskrit Literature – III					
II	English	P2LE31	English through Drama & Poetry Spoken English – II	5 1	2	25	75	100
III	Core	06CT31	Numerical Methods	4	5	25	75	100
	Core	06CT32	Atomic and Molecular Spectroscopy	5	5	25	75	100
	Core		Major Practical	2	-	-	-	-
	Allied	05AT01	Allied paper I : Mathematics – I	6	5	25	75	100
IV	Skill Based	06SB31	Skill Based Paper I: Energy Science-I	2	2	25	75	100
			TOTAL	30	22			

FOURTH SEMESTER

Part	Study Component	Subject Code	Title of the Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
I	Tamil	P1LT41	Sanga Ilakkiyamum Neethi Ilakkiyamum	6	3	25	75	100
	Sanskrit	P1LS41	Drama and History of Sanskrit Literature – IV					
II	English	P2LE41	English through classiscs	5	2	25	75	100
	English	P2LE42	Spoken English – II	1	1	100		100
III	Core	06CT41	Electronics and Communication-I	4	5	25	75	100
	Core	06CT42	Programming in C	5	5	25	75	100
	Core	06CP43	Major Practical –II	2	1	40	60	100
	Allied	05AT02	Allied Paper IV: Mathematics-II	6	5	25	75	100
IV	Skill Based	06SB41	Skill Based Paper II : Energy Science – II	2	2	25	75	100
			TOTAL	30	24			

FIFTH SEMESTER

Part	Study Component	Subject Code	Title of the Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
II	English	P2LE51	English for Career Development	1	1	100	--	100
III	Core	06CT51	Solid State Physics	6	5	25	75	100
	Core	06CT52	Electronics & Communication – II	6	5	25	75	100
	Core	06CP53	Major Practical –III	8	4	40	60	100
	Elective	06EP51	Object Oriented Programming with C++	5	5	25	75	100
IV	Skill Based	06SB51	Opto Electronics-I	2	2	25	75	100
	ES	ESUG51	Environmental Studies	2	2	25	75	100
			TOTAL	30	24			

SIXTH SEMESTER

Part	Study Component	Subject Code	Title of the Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
II	English	P2LE61	English for Professional Excellence	1	1	100	--	100
III	Core	06CT61	Nuclear Physics	4	4	25	75	100
	Core	06CP62	Major Practical-IV	6	4	40	60	100
	Elective	06EP61	Classical Mechanics, Quantum Mechanics & Theory of Relativity	5	5	25	75	100
	Elective	06EP62	Project	6	5	100	--	100
IV	Skill Based	06SB61	Opto Electronics-II	2	2	25	75	100
	Skill Based	06SB62	Physics for Competitive Exam.	2	2	25	75	100
	Skill Based	06SB63	Medical Instrumentation	2	2	25	75	100
	VE	VEUG61	Value Education	2	2	25	75	100
	EA	EAUG61	Extension Activities		1	25	75	100
			TOTAL	30	28			

FACULTY MEMBERS

- 1. Sri P.JEYASANKAR, M.Sc., M.Phil., PGDCA.,
Head and Assistant Professor of Physics,**
- 2. Sri N.S.LAKSHMIKANTHAN, M.Sc., M.Ed., M.Phil., PGDCA., MCA.,
Assistant Professor of Physics,**
- 3. Sri V.RAJENDRAN, M.Sc., M.Phil.,
Assistant Professor of Physics,**
- 4. Sri S.GANESHAN, M.Sc., M.Phil.,
Assistant Professor of Physics,**
- 5. Sri R.PACKIARAJ, M.Sc.,
Assistant Professor of Physics,**

முதல் பருவம்
(2015-2016ஆம் கல்வியாண்டு முதல் முதற்பருவத்தில் சேரும் மாணவர்களுக்குரிய பாடத்திட்டம்)

PART-I: Language Tamil Subject		
Subject Title: இக்காலக் கவிதையும் உரைநடையும் - தாள:1		
Subject Code: P1LT11	Hours per week: 6	Credit: 3
Sessional Marks: 25	Summative marks: 75	Total Marks: 100

அலகு: 1 தமிழ்ச் செய்யுள்: மரபுக்கவிதைகள்

1. பாரதியார் கவிதைகள்
 1. தமிழ் (நான்கு பாடல்கள்)
 2. அறிவே தெய்வம் (10 கண்ணிகள்)
2. பாரதிதாசன் கவிதைகள்
 1. சஞ்சீவி பர்வதத்தின் சாரல்
3. நாமக்கல் கவிஞர் வெ.இராமலிங்கம் பிள்ளை
 1. குருதேவர் இராமகிருஷ்ணர் (3 பாடல்கள்)
4. கவிமணி தேசிய விநாயகம் பிள்ளை
 1. கோவில் வழிபாடு
5. அரசஞ்சண்முகனார்
 1. மதுரை ஸ்ரீமீனாட்சியம்மைத் திருவடிப்பத்து (முதல் ஐந்து பாடல்கள்)

அலகு: 2 தமிழ்ச்செய்யுள்: புதுக்கவிதைகள்

6. அன்னை - கவிஞர் கண்ணதாசன்
7. கிழக்கு விழிக்கும் நேரம் - கவிஞர் வைரமுத்து (கொடிமரத்தின் வேர்கள்)
8. அவர்கள் வருகிறார்கள் - மு.மேத்தா - (சுதந்திர தாகம்)
9. புதுக்கவிதைகள் - க.நா.சுப்ரமண்யம் - கவிதை
10. நாம் இருக்கும் நாடு - வாக்கு வரம் தரும் தெய்வம் -தமிழன்பன்
11. தீர்த்தக்கரையினிலே - ஒலிபெருக்கி - முருகு சுந்தரம்
12. ஹைக்கூ கவிதைகள் - க.ராமச்சந்திரன்

அலகு: 3 தமிழ் உரை நடை இலக்கியம் - சுவாமி சித்பவானந்தரின் சிந்தனைகள்

அலகு: 4 தமிழ் இலக்கணம் - எழுத்து

1. முதல் எழுத்துக்கள்
2. சார்பெழுத்துக்கள்
3. மொழி முதல் எழுத்துக்கள்
4. மொழி இறுதி எழுத்துக்கள்
5. வல்லெழுத்து மிகும் இடங்கள், வல்லெழுத்து மிகா இடங்கள்

அலகு: 5 தமிழ் இலக்கிய வரலாறும் பயன்பாட்டுத் தமிழும்

- அ) 1. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும்
2. மரபுக்கவிதையின் தோற்றமும் வளர்ச்சியும்
- ஆ) மரபுப்பிழை நீக்குதல் - பிறமொழிச் சொற்களை நீக்குதல் - பிழையற்ற தொடரைத் தோந்ததெடுத்தல் - ஒருமை பன்மை மயக்கம் - ஒரு எழுத்து ஒரு மொழிக்குரிய பொருள் - ஒலி வேறுபாடுகளும் பொருள் வேறுபாடுகளும் - பொருத்தமான பொருள் - பொருத்தமான தொடர்

பாடநூல் - தமிழ் செய்யுள் தொகுப்பு

சுவாமி சித்பவானந்தரின் சிந்தனைகள். - தமிழ்த்துறை வெளியீடு
தமிழ்ச் செய்யுட் தொகுப்பு - தமிழ்த்துறை வெளியீடு

பார்வை நூல்:

தமிழ் இலக்கிய வரலாறு - பாக்யமேரி
தமிழ் இலக்கிய வரலாறு - எம்.ஆர்.அடைக்கலசாமி

SEMESTER I
(For those who join in June 2015 and after)

PART - I Sanskrit Paper I		
Subject Title : Fundamental Grammar & History of Sanskrit Literature – I		
Subject Code: P1LS11	Hours per week: 6	Credit: 3
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

FUNDAMENTAL GRAMMER & HISTORY OF SANSKRIT LITERATURE -I
Following portions for Grammar:

Declension of the following nouns and pronouns:

- a) Akarantha
Akarantha Masculine, Akarantha Feminine & Akarantha Neuter.
- b) Asmad and Yusmad Sabdas

Conjugation of the following verbs in present, past & future tense
Bhava, Pada, Vada, Gacha, Vasa, Dris (Pas) Krida, Dhava.

History of Sanskrit Literature:

- a) Vedas and Puranas
- b) Itihasa
- c) Court Epics – Mahakavyas

Translation:

- a) From Sanskrit to English:
Passages exercises 2, 3 and 4 from the prescribed texts.
- b) From English to Sanskrit:
Passages exercises 1, 2 and 3 from the prescribed texts.

The prescribed text: “SAHITHYA RASA KANAH”

(Published by A.M.G. Publications, Madurai – 625 016)

Sanskrita Sri Patamala Book 1: Publication: Sanskrit Educational Society,
Madras – 18.

A short history of Sanskrit Literature

(Published by A.M.G. Publications, Madurai – 625 016)

SEMESTER I
(For those who join in June 2015 onwards)

PART II – Paper I		
Subject Title : Communicative English		
Subject Code: P2LE11	Hours per week: 5	Credit: 3
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

Objectives: Total number of hours per semester: **75 Hrs**

- ❖ *To develop listening and speaking skills*
- ❖ *To increase the vocabulary of students*
- ❖ *To improve reading skills*
- ❖ *To develop competency in grammar*
- ❖ *To develop continuous writing*

Unit – I - Listening, Speaking and Reading Components **15 Hrs**

1. Rabindranath Tagore – Cabuliwallah
2. Khushwant Singh – Karma
3. R.K. Narayan – Sweets for Angels
4. Premchand – The Golden Watch

Unit – II

- Sentences, Clauses and Phrases
- Parts of Speech
- Nouns
- Pronouns
- Determiners
- Articles
- Adjectives
- Verbs
- Adverbs
- Some Common Adjectives and Adverb

Book: *A Textbook of English Grammar and Usage* by **K.V. Joseph** (Page. No.1-184)
Second Edition (2012), TATA McGraw Hill Education Private Limited, New Delhi.

Unit – III Composition **15 Hrs**

- Letter writing – Formal Letters & Informal Letters
- Descriptive Writing – General topics (Paragraph)

Unit – IV - Extensive Reading: Short Stories **15 Hrs**

- Young Naren - by Brahmachari Amal.
[From “A Simple life of Swami Vivekananda” Advaita Ashrama, Kolkata.
- A Story of Initiation - by Sri Aurobindo Society.
From “Stories and Anecdotes from the Mother”
Pondicherry.
- Glory At Twilight - Bhabani Bhattacharya
- The Martyr’s Corner- R.K. Narayan

Unit – V - Translation **15 Hrs**

Translation of Sentences and Stories from Tamil to English / English to Tamil
(Passages will be supplied)

SEMESTER – I
(For those who joined in June 2008 and after)

PART III: Core Subject Theory		
Subject Title: MECHANICS		
Subject Code: 06CT11	Hours per week : 4	Credit: 4
Sessional Marks: 25	Summative marks: 75	Total Marks: 100

Objectives

- ❖ *To enable the students in order to learn the basic principles, theory and concepts of mechanics.*
- ❖ *To gain knowledge by the students in order to learn motion of bodies.*
- ❖ *To inspire interest for the knowledge of concepts in fluid dynamics.*

UNIT I: MOTION IN ONE DIMENSION AND NEWTON'S LAWS:

One Dimensional Kinematics - Motion with Constant Acceleration - Freely Falling Bodies - Newton's First Law - Force - Mass - Newton's Second Law - Newton's Third Law - Weight and Mass.

UNIT II: MOTION IN TWO AND THREE DIMENSIONS:

Motion in Three Dimensions with Constant Acceleration - Newton's Laws in Three Dimensional Vector form - Projectile Motion - Uniform Circular Motion - Frictional forces - The Dynamics of Uniform Circular Motion.

UNIT III: MOMENTUM AND SYSTEM OF PARTICLES:

Collisions - Linear Momentum - Impulse and Momentum - Conservation of Momentum - Two Body Collisions - Many Particles Systems - Center of Mass of Solid Objects - Conservation of Momentum in a System of Particles.

UNIT IV: ANGULAR MOMENTUM AND WORK AND KINETIC ENERGY Angular Momentum of a Particle - System of Particles - Angular Momentum and Angular Velocity - Conservation of Angular Momentum - Work done by a Constant Force - Power - Work done by a Variable Force - Kinetic Energy and the Work Energy Theorem - Work and K.E. in Rotational Motion.

UNIT V: FLUID STATICS AND FLUID DYNAMICS:

Fluids and Solids - Pressure and Density - Variation of Pressure in Fluid at Rest - Measurement of Pressure - General Concepts of Fluid flow - Streamlines and Equation of Continuity - Bernoulli's Equation - Applications of Bernoulli's Equation and Equation of Continuity.

TEXT BOOK: Physics, Volume 1, DAVID HALLIDAY, ROBERT RESNICK, & KENNETH S. KRANE 2002, fifth edition, John Wiley & Sons, INC.

Unit I: 2-4, 2-5, 2-6, 3 - 2, 3 - 3, 3 - 4, 3 - 5, 3- 6, 3 - 7

Unit II: 4 -1, 4 -2, 4 - 3, 4 - 5, 5 - 3, 5 - 4

Unit III: 6-1, 6-2, 6-3, 6-4, 6-5, 7 -3, 7-4, 7-5

Unit IV: 10-1, 10-2, 10-3, 10-4, 11-1, 11-2, 11-3, 11-4, 11-6, 11-7

Unit V: 15-1, 15-2, 15-3, 15-3, 15-5, 16-1, 16-2, 16-3, 16-7.

REFERENCE BOOKS:

1. Physics for Scientists and Engineers with Modern Physics ,Raymond A. Serway, Fourth Edition, , Sounders College Publishing, 1995.
2. Mechanics- D.S. Mathur - S.Chand and Company Ltd., 2007.
3. Modern Physics- R.Murugesan, Kiruthiga Sivaprasath- 14th Revised multicolor Edition 2008
4. Introduction to Solid Mechanics” by I.H. Shames, 2009.

SEMESTER – I
(For those who joined in June 2008 and after)

PART – III : Core Subject Theory		
Subject Title : OPTICS AND SOUND		
Subject Code: 06CT12	Hours per week: 4	Credit: 4
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

Objectives :

- ❖ *To provide a good foundation in optics*
- ❖ *To provide a knowledge of the behaviour of light*
- ❖ *To inspire interest for the knowledge of concepts in physical and geometrical optics*
- ❖ *To gain knowledge by the students in order to learn sound waves*

UNIT I – INTERFERENCE:

Total Internal Reflection - The Doppler Effect for Light - Two - Source Interference - Double Slit Interference - Coherence Intensity in Double Slit interference - Michelson's interferometer.

UNIT II – DIFFRACTION:

Diffraction and the Wave theory of Light - Single Slit Diffraction - Intensity in Single - Slit Diffraction - Diffraction at a Circular Aperture - Double-Slit interference and diffraction combined – Multiple slits - Diffraction Gratings - Dispersion and Resolving power - X-ray Diffraction - Holography.

UNIT III – POLARIZATION:

Polarization of Electromagnetic waves - Polarizing Sheets - Polarization by Reflections - Double Refraction - Circular polarization - Polarization by Scattering.

UNIT IV - OSCILLATIONS:

Oscillating systems - The Simple Harmonic Oscillator - Simple Harmonic Motion - Energy in Simple Harmonic Motion - Applications of Simple Harmonic Motion - Simple Harmonic Motion and Uniform Circular motion - Damped Harmonic Motion - Forced Oscillations and Resonance - Two body Oscillations.

UNIT V - SOUND WAVES :

Properties of Sound Waves - Travelling Sound Waves - The Speed of Sound - Power and Intensity of Sound Waves - Interference of Sound Waves - Standing longitudinal Waves - Vibrating Systems and Sources of Sound.

TEXT BOOK:

Physics, Volume 1, David Halliday - Robert Resnick , Kenneth S. Krane 2002,

Unit IV: Chapter 17:17.1 - 17.9 Units V: Chapters 19: 19.1 - 19.7

Unit I: Chapter 39:39.5, 39.6 Units I: Chapters 41: 41.1 - 41.4, 41.6

Unit II: Chapter 42: 42.1 - 42.3, 42.5 Unit II: Chapter 43: 43.1 - 43.5

Unit III: Chapter 44:44.1, 44.2, 44.3, 44.4, 44.5, 44.6.

Physics Volume 2, David Halliday _ Robert Resnick, Kenneth S.Krane. Fifth Edition, John Wiley & Sons, INC.

REFERENCE BOOK:

1. Physics for Scientists and Engineers with Modern Physics, Raymond A. Serway, Fourth Edition, - Saunders College Publishing, 1995,
2. A Text Book of Physics, N. Subrahmanyam Brijlal, S.Chand & Company Ltd., 2003.
3. Optics, Sanjay Yadav, Krishna Nandan Kumar, Choice International publisher, 2007.
4. Optics, Ajoy Ghatak , Mc Graw Hill Education ltd, 2008.
5. A Text book of sound – N. Subrahmanyam and Brijlal, Vikas Publishing House, 2009

SEMESTER I
(For those who join in June 2014 and after)

PART III – Allied Course Theory – I		
Subject Title : Inorganic, Organic and Physical Chemistry – I		
Subject Code: 07AT01	Hours per week: 4	Credit: 4
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

Objectives:

To enable the students

- ❖ *To learn the basic Principles of Titrimetry*
- ❖ *To gain basic knowledge about Chemical Bonding*
- ❖ *To understand the theory of Nuclear Chemistry*
- ❖ *To be familiar with Selected Organic Compounds*

UNIT I: PRINCIPLES OF TITRIMETRY 12 Hrs

Concept of molecular weight, Formula weight, Equivalent weight – Concentrations of solutions – Molarity, Normality, Weight percentage. Principle of titrimetry – Primary and secondary standards – Preparing standard solutions – Standardising the secondary standard solutions .

UNIT II: CHEMICAL BONDING – I 12 Hrs

V.B. Theory – postulates of V.B. Theory – application to the formation of simple molecules like H₂ and O₂ – Overlap of atomic orbitals – s-s, s-p and p-p overlap – principle of hybridization – sp, sp² and sp³ hybridisation.

UNIT III: CHEMICAL BONDING – II 12 Hrs

Valence shell electron pair repulsion theory (VSEPR theory).
M.O. Theory: Formation of Molecular orbitals – bonding, anti-bonding and non-bonding molecular orbitals – Molecular orbital diagrams for H₂, He₂ and O₂

UNIT IV: NUCLEAR CHEMISTRY 12 Hrs

1. Composition of nucleus – nuclear forces – mass defect – binding energy – nuclear stability.
2. Soddy's group displacement law – illustration – law of radioactive disintegration.
3. Nuclear fission: Definition – application of fission – the principle of atom bomb.
4. Nuclear fusion: Definition – emission of energy – stellar energy – hydrogen bomb.
5. Applications of radioactivity – In medicine, agriculture, industry and analytical fields – carbon dating.

UNIT V: SOME SELECTED ORGANIC COMPOUNDS 12 Hrs

Preparation, properties and uses of TNT, BHC, Aspirin, Phenolphthalein, Malachite green, Crown Ethers and Lithium Aluminium hydride

TEXT BOOK

1. Ancillary chemistry Dr. K.Ratinamuthu (Study material will be provided)
Semester I and II

REFERENCE

1. Advanced Organic Chemistry by Bahl & Arun Bahl, S.Chand & Company Ltd, New Delhi, 2012 Edition.
2. Text book of Inorganic Chemistry by P.L.Soni, Mohan Katyal, Sultan Chand & Sons, New Delhi, 2010 Edition.
3. Essentials of Physical chemistry Arun Bahl, B.S.Bhal & G.D.Tuli, S.Chand Publishing Company, New Delhi, 2010 Edition.

SEMESTER – I
(For those who joined in June 2008 and after)

PART – IV : Non Major Elective		
Subject Title : SPACE SCIENCE		
Subject Code: 06NE11	Hours per week: 2	Credit: 2
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

Objective:

- ❖ *To enable the students in order to learn the concepts of Solar System*
- ❖ *To acquire basic knowledge of communication*
- ❖ *To understand the satellite launching*

UNIT I: PLANATORY SYSTEM

Solar system – The Moon: Closed Neighbor veiled Venus – Scorched Mercury – Mars, the Red planet – Jupiter the Giant – Saturn and its Rocky rings – Mysterious Uranus, Neptune – Other Giant, Pluto, The Far traveller – STARS, Galaxies, and the Universe and how it all began.

UNIT II: COMMUNICATION SYSTEM

Information – Transmitter – Channel – Noise Receiver – Modulation – AM – FM – Band Width requirements – Fiber Optics Technology.

UNIT III: SATELLITE AND LAUNCHING

Multistage Rocket – Pay load – Geo stationary Satellites – Fuel used in satellites – Launching

TEXT BOOKS:

1. Satellite Operations, John T. Garner and Malcolm Jones 1990
2. Electronic Communication Systems, Kennedy DAVIS, Tata McGraw Hill, 1999,
3. The History of Science from 1946 to the 1990's, Ray Spangenburg and Diane K. Moser, The Universities Press Book

Books for Reference:

1. Fundamentals of Space Systems, V. L. Pisacane and R. C. Moore, Oxford University Press, 1994
2. Encyclopedia of space, Heather Couper, Nigel Henbest Publisher: Dorling Kindersley, 2009
3. Concepts in Space Sciences Edited by R.R. Daniel, 2009

இரண்டாம் பருவம் - பாடத்திட்டம்
(2015-2016ஆம் கல்வியாண்டு இரண்டாம் முதற்பருவத்தில் சேரும் மாணவர்களுக்குரிய பாடத்திட்டம்)

PART-I: Language Tamil Subject		
Subject Title: இக்கால கதை இலக்கியமும் மக்கள் தகவலியலும் - தாள்:2		
Subject Code: P1LT21	Hours per week: 6	Credit: 3
Sessional Marks: 25	Summative marks: 75	Total Marks: 100

அலகு:1 தமிழ்ச் சிறுகதை இலக்கியம் - சிறுகதைகள் பத்து

அலகு:2 தமிழ் நாவல் இலக்கியம் - துணிந்தவன்

அலகு:3 மக்கள் தகவலியல் - பாடப்பகுதிகள்

1. இதழியல் வளர்ச்சி வரலாறு
2. செய்தித்தாளின் அடிப்படை வரலாறு
3. இந்திய இதழியல் - தொடக்க காலம்
4. 19ஆம் நூற்றாண்டில் இந்திய இதழியல்
5. இந்திய விடுதலை இயக்கமும் இதழ்களும்
6. இதழ்கள் தொடங்குவதற்குரிய வழிமுறைகள்
7. செய்தித்தாள் நிர்வாக அமைப்பு

அலகு:4 தமிழ் இலக்கணம் - சொல்

1. நான்கு வகைச் சொற்கள்
2. வினா - விடை வகைகள்
3. வேற்றுமைகள்
4. தொகைகள் - வேற்றுமைத் தொகை, வினைத்தொகை, பண்புத்தொகை. உவமைத்தொகை. உம்மைத்தொகை.

அன்மொழித்தொகை

அலகு: 5 தமிழ் இலக்கிய வரலாறும் பயன்பாட்டுத்தமிழும்

- அ) 1. சிறுகதையின் தோற்றமும் வளர்ச்சியும்
2. புதின இலக்கியத்தின் தோற்றமும் வளர்ச்சியும்
- ஆ) தொடரும் தொடர்பும் அறிதல் - பிரித்து எழுதுதல் - பொருந்தாச் சொல்லைக் கண்டறிதல் - வழுவச்சொற்களை நீக்கிய தொடரைக் குறிப்பிடுதல்- சொற்களை அகர வரிசைப்படுத்தல்- வேர்ச்சொல்லைத் தேர்வு செய்தல் - எவ்வகை வாக்கியம் எனக் கண்டு எழுதுதல் - சொற்களை ஒழுங்குபடுத்திச் சொற்றொடர் ஆக்குதல் - ஆங்கிலச்சொல்லுக்கு நிகரான தமிழ்ச் சொல் அறிதல்.

பாடநூல்:

- 1.சிறுகதைகள் பத்து - தொகுப்பாசிரியர். முனைவர். ஆ.ஜோசப்சார்லி - ஆ.தாஸ் நியு செஞ்சரி புக் ஷவுஸ்(பி.லிட்). சென்னை - 98.
- 2.நாவல் - துணிந்தவன் - வல்லிக்கண்ணன்-பாவை பப்ளிகேஷன்ஸ். சென்னை -14.
- 3.இதழியல் கலை - டாக்டர்.மா.பா.குருசாமி
- 4.தமிழ் இலக்கிய வரலாறு - பாக்யமேரி

பார்வை நூல்:

1. மக்கள் தகவல் தொடர்பியல் அறிமுகம் - டாக்டர் கி. இராசா.
2. இதழியல் - ச.ஈஸ்வரன்
3. இதழியல் - டாக்டர் இரா.கோதண்டபாணி
4. இதழியல் ஓர் அறிமுகம் - டாக்டர் அந்தோணி இராசு.
5. தமிழ் இலக்கிய வரலாறு - எம்.ஆர்.அடைக்கலசாமி

SEMESTER – II : PAPER – II
(For those who join in June 2015 and after)

PART – I Sanskrit Paper II		
Subject Title : Poetry Grammar & History of Sanskrit Literature – II		
Subject Code: P1LS21	Hours per week: 6	Credit: 3
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

POETRY

Selected portions from the : KALIVIDAMBANAM &

SABHARANJANASATAKAM

Published by Sadguna Publications, Cidambaram

Kalividambanam

Unit I : Scholars and Teachers Verse No.1-10

Unit II : Astrologers & Physicians V.14-30

Unit III : Relatives & Pseudo monks Vv.41-50, 84-93.

Sabharanjanasatakam

Unit IV : Wisdom and it's acquisition Vv.1-12

Unit V : Donor and Donation and Values of Human Vv.31-42, 77-91.

LYRICS & CHAMPU KAVYAS –

A short history of Sanskrit Literature

(Published by A.M.G. Publications, Madurai – 625 016 Page No. 51 – 60, 42 – 45)

SEMESTER II
(For those who join in June 2015 onwards)

PART II – Paper I		
Subject Title : Functional English		
Subject Code: P2LE21	Hours per week: 5	Credit: 3
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

Objectives: Total number of hours per semester: **75 Hrs**

- ❖ To develop listening, speaking and reading skills
- ❖ To develop Information and Communication Technology (ICT) skills
- ❖ To develop presentation skills
- ❖ To develop competency in grammar

Unit – I Listening, Speaking and Reading Components **15 Hrs**

Prose

- | | | |
|-------------------------------|---|--------------------------|
| 1. My Visions for India | - | A.P.J. Abdul Kalam |
| 2. Mahatma Gandhi | - | V.S.Srinivasa Sastri |
| 3. Computers and Common Sense | - | Roger Hunt & John Shelly |
| 4. The Golden Age of Cricket | - | Neville Cardus |
| 5. On Keyhole Morals | - | A.G. Gardiner |

Unit – II Language Study **15 Hrs**

- Tenses and Their Uses
- Concord or Agreement
- Conditional Sentences
- Active and Passive Voice
- Preposition

Book: *A Textbook of English Grammar and Usage* by **K.V.Joseph**
Second Edition (2012), TATA McGraw Hill Education Private Limited,
New Delhi.

Unit – III Composition **15 Hrs**

- Letter writing – Informal Letters
- Hints Development
- Descriptive Writing

Unit – IV Extensive Reading: Short Stories **15 Hrs**

Extensive Reading

- | | | |
|----------------------------|---|-----------------------|
| 1. Upper Division Love | - | Manohar Malgonkar |
| 2. The Tiger in the Tunnel | - | Ruskin Bond |
| 3. A Devoted Son | - | Anitha Desai |
| 4. <i>The Lost Child</i> | - | <i>Mulk Raj Anand</i> |
| 5. Tree Speaks | - | C. Rajagopalachari |

Unit – V Translation **15 Hrs**

• Translation of Sentences and Stories from Tamil to English/English to Tamil
(Passages will be supplied)

SEMESTER – II
(For those who joined in June 2008 and after)

PART – III : Core Subject Theory		
Subject Title : THERMODYNAMICS AND STATISTICAL MECHANICS		
Subject Code: 06CT21	Hours per week: 4	Credit: 4
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

Objective:

- ❖ *The aims is to provide the students to understand the basic principle and laws of thermodynamics*
- ❖ *To understand the concepts of entropy*
- ❖ *To enable the students in order to learn the basic principles, theory and concepts of Statistical mechanics*

Unit I - Transmission of Heat:

Coefficient of thermal conductivity - Forbe's method to find K - Lee's method for bad conductors - Flow of heat in radial and cylindrical - Wiedemenn - Franz law - Stefan's Law - Derivation of Newton's Law of cooling from Stefan's law of Distribution of energy in the spectrum of a Black body - Solar constant.

Unit II - Low Temperature Physics:

Vander-walls equation of state - critical constants - corresponding states - critical coefficient - Porous Plug experiment - Theory of Porous Plug experiment - Joule Kelvin effect - Temperature of inversion - Liquefaction of air - Linde's process super conductivity.

Unit III - Thermodynamics First Law and Second Law:

Thermodynamic system - Zeroth law of thermodynamic - Heat, work - A path function - First law of thermodynamics, change in state of a closed system and applications - Isothermal process - Adiabatic process - Isochoric process - Isobaric process - work done during an isothermal process and adiabatic process

Irreversible process - Reversible process - Second law of thermodynamics - Carnot's reversible engine - Carnot's engine and refrigerator - Carnot's theorem - Thermodynamic scale of temperature - Absolute zero on work scale - work scale and ideal gas scale - Rankine cycle.

Unit IV - Classical Statistics:

Degrees of Freedom and Maxwell's Law of Equipartition of Energy - Maxwell's Law of Distribution of Velocity - Mean Free path - Statistical mechanics, Equilibrium - Probability Theorems - Maxwell - Boltzmann Distribution Law - Interm of temperatur and Ideal gas.

UnitV - Quantum Statistics:

Phase space - Fermi-Dirac Distribution Law - Electron gas - Base Einstein Distribution Law - Photon Gas - Comparison of the Three Statistics.

Books for Study: Heat and Thermodynamics by Brijlal and Subramanyam, S.Chand & Company 1990.

Units: Unit - I: Chapter - 8 (8.2, 8.7, 8.8, 8.11, 8.12, 8.17, 8.35, 8.37, 8.42 - 8.44)

Unit - II: Chapter - 5&7 (5.36, 5.39, 5.44, 5.46, 7.3, 7.13)

Unit - III: Chapter - 6 (6.1, 6.2, 6.6, 6.8, 6.14, 6.17, 6.18)

Unit - IV: Chapter - 6 (6.23 - 6.33) Unit - V: Chapter 5 & 9 (5.21, 5.23, 5.25, 9.1 - 9.6)

Unit - V: Chapter 9 (9.7 - 9.13)

Books for Reference:

1. Physics Part - II, Robert Rensic and David Halliday Fifth Edition.
2. Thermodynamics by J.P. Holman, McGraw - Hill Book Company, Fourth Edition
3. Thermodynamics and Statistical Mechanics, J. D. Gale and J. M. Seddon, Wiley-Interscience, New York (2002).
4. Thermodynamics, Kinetic Theory and Statistical Thermodynamics, F. W. Sears and G. L. Salinger, Addison-Wesley.

SEMESTER – II
(For those who joined in June 2008 and after)

PART – III : Core Subject Theory		
Subject Title : ELECTROMAGNETISM		
Subject Code: 06CT22	Hours per week: 4	Credit: 4
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

Objective: To gain knowledge about the electrical energies in order to

- ❖ *learn motion of charges*
- ❖ *acquire basic knowledge of magnetic properties*
- ❖ *know about the alternating current and its circuits*
- ❖ *get a depth of knowledge in electricity and magnetism*

Unit – I Charge and Fields:

Basic concepts - Coulomb's law - Super position Principle - Electric Field - Electric Field due to a point charge - Electric Dipole - Potential Energy of a Dipole in uniform Electric field - Electric field due to an Electric Dipole at an axial point - Electric field at a point on the equatorial line - Electric field due to an Electric dipole at any point - Lines of force - Gauss's law - Differential form of Gauss law - An Insulated conductor - Electric field due to a uniformly charged sphere - Coulomb's theorem.

Unit – II Electric Potential and Capacitors:

Potential Difference - Electric Potential as line Integral of Electric Field - Potential at a point due to a point charge - Relation between Electric field and Electric Potential. Capacitance of a spherical capacitor (outer and inner sphere earthed) - Capacitance of a cylindrical capacitor, Parallel plate capacitor - Capacitors in series and parallel - Energy stored in a charged capacitor - Change in energy of a parallel plate capacitor - Loss of energy on sharing of charges between two capacitors - Force of attraction between plates of a charged parallel plate capacitor - Types of capacitors.

Unit – III Current and Resistance Measurements:

Current and current density - Expression for current density - Equation of continuity - Ohm's law and Electrical conductivity - Carey Foster bridge - Potentiometer - measurement of low resistance (Kelvin Double Bridge method) comparison of capacitances of two capacitors - capacitance of capacitor (Kelvin's null method).

Unit – IV Magnetic Effect of Electric Current:

Introduction - The Biot - Savat Law - Magnetic induction at a point due to straight conductor, circular coil carrying current - Hemholtz Tangent Galvanometer - Magnetic Induction at any point on the axis of a solenoid - moving coil Ballistic Galvanometer - current and voltage sensitivities of moving coil galvanometer measurement of charge sensitiveness - absolute capacitance of a capacitor - comparison of two capacitance using B.G - Ampere's circuital law - Differential form of Ampere's law – Divergence of magnetic field vector B – Magnetic field inside a long solenoid.

Unit – V AC current, AC & DC Motors:

EMF Induced in a coil rotating in a magnetic field - AC circuit containing resistance, inductance and capacitance in Series - Parallel resonant circuit - Power in AC circuit. Containing resistance, inductance and capacitance - wattles current - choke coil - The transformer – Three phase AC generator – Distribution of three phase alternating current – Alternating current dynamo – Two phase AC generator- DC dynamos – Field excitation-DC motor

Book for Study:

Electricity and Magnetism by R. Murugesan, S.Chand & Company Ltd., New Delhi (Fifth Edition - 2003)

Unit - I: Chapter 1 & 2 (1.1 - 1.11, 2.2 - 2.5, 2.11)

Unit - II:Chapter 3 & 4 (3.1 - 3.4, 4.2 - 4.5, 4.8 - 4.13)

Unit - III: Chapter 6 & 7 (6.1 - 6.4, 7.1 - 7.5)

Unit - IV: Chapter 10 (10.1 - 10.6, 10.11-10.15, 10.17-10.20)

Unit - V: Chapter 13 & 16 (13.1 - 13.7, 14.1 – 14.7)

Books for Reference:

1. Electricity and magnetism by Brijlal and Subramaniam Ratan Prakashan Educational & University Publishers
2. Electricity and magnetism by D.C Tayal, Himalaya Publishing house, Mumbai, 2002.
3. Electromagnetism : Problems with solutions, by Ashutosh Pramanik, PHI,2006
4. Electromagnetic Fields, Jean G. Van BladelJohn Wiley & Sons, 2007

SEMESTER – II
(For those who joined in June 2008 and after)

PART – III : Core Subject Practical		
Subject Title : MAJOR PRACTICAL – I		
Subject Code: 06CP23	Hours per week: 2	Credit: 1
Sessional Marks: 40	Summative Marks: 60	Total Marks: 100

Objective

❖ *To develop the practical skills by applying the laws and concepts in physics experiments*

1. Compound Pendulum
2. Bifilar Pendulum
3. Torsional Pendulum
4. Surface Tension & Interfacial Surface Tension by drops
5. Viscosity – Stokes method
6. Helmholtz Resonator
7. Sonometer – Frequency of fork & Verification of Laws
8. Sonometer – Frequency of A.C.
9. Meld’s Strings – Frequency of A.C.
10. Kundt’s Tube – Young’s Modulus
11. Lee’s Disc – Thermal Conductivity of a Bad conductor
12. Thermal conductivity of Rubber
13. Spectrometer – A & D
14. Spectrometer – i-d Curve
15. Spectrometer – Dispersive power of prism
16. Spectrometer – i-i’ Curve
17. Spectrometer – Grating -Normal incidence
18. Air wedge
19. Newton’s Rings

SEMESTER II
(For those who join in June 2014 and after)

PART III – Allied Course Theory – II		
Subject Title : Inorganic, Organic and Physical Chemistry		
Subject Code: 07AT02	Hours per week: 4	Credit: 4
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

Objectives:

To enable the students

- ❖ *To be familiar with fundamentals of periodic properties*
- ❖ *To gain basic knowledge about Photochemistry*
- ❖ *To understand the theory of Solid State*
- ❖ *To be familiar with Electrochemistry*
- ❖ *To gain basic knowledge about chromatography techniques*

UNIT I: PERIODIC PROPERTIES AND CHEMICAL BONDING 12 Hrs

Periodic Properties - Interpretation of Periodic Properties of the Elements in terms of their electronic configuration – Atomic radius – van der Waals radius - Ionic radius Ionization Potential – Electron affinity - Electronegativity – Determination of Electronegativity by Pauling and Mulliken's Methods.

UNIT II: PHOTOCHEMISTRY 12 Hrs

Definition of photochemical reactions-comparison of thermal and photochemical reactions - laws of photochemistry-Lamber's law and Beer's law, lamberts-Beer's law, Grothus-Drapper law – Quantum efficiency and its determination – Consequences of light absorption by atoms and molecules – Jablonski diagram-. Chemiluminescence – Bioluminescence – Photosynthesis.

UNIT III: SOLID STATE 12 Hrs

Classification and properties of solids, crystalline state – amorphous substances – polymorphism of the elements allotropy. Crystallography – definition-unit cell-face and edge of crystal-interfacial angle – crystal lattice – space lattice.

UNIT IV: ELECTROCHEMISTRY 12 Hrs

Faraday's law of electrolytes – Specific and equivalent conductance – electrochemical cells – Nernst equation – convention regarding the sign of EMF cell – electrodes – reference electrodes – hydrogen and calomel electrodes – pH measurement using glass electrode.

UNIT V: CHROMATOGRAPHY TECHNIQUES 12 Hrs

Definition – Principle and application – Partition and adsorption chromatography – Thin layer chromatography – Column chromatography – Paper chromatography.

TEXT BOOK

1. Ancillary chemistry Dr. K.Ratinamuthu (Study material will be provided) Semester I & II.

REFERENCE

1. Advanced Organic Chemistry by Bahl & Arun Bahl, S.Chand & Company Ltd, New Delhi, 2012 Edition.
2. Text book of Inorganic Chemistry by P.L.Soni, Mohan Katyal,Sultan Chand & Sons, New Delhi, 2010 Edition..
3. Essentials of Physical chemistry Arun Bahl, B.S.Bhal & G.D.Tuli, S.Chand Publishing Company, New Delhi, 2010 Edition.

SEMESTER – II
(For those who joined in June 2008 and after)

PART – IV : Non Major Elective		
Subject Title : HOUSEHOLD APPLIANCES		
Subject Code: 06NE21	Hours per week: 2	Credit: 2
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

Objective:

- ❖ *To enable the students in order to learn the basic principles, theory and concepts of power supplies.*
- ❖ *To gain knowledge by the students in order to learn electric lamps and appliances.*

UNIT I: POWER SUPPLIES

A.C. Supply – Phase – Neutral – Earth connection – Single Phase – Two Phase – Three Phase supply – D.C. supply – Difference between A.C. and D.C.- Stabilized power supply – A.C. adopter – Transformer – Types – Choke – Uses

UNIT II: ELECTRIC LAMPS

Electric lamps – Incandescent lamp – Fluorescent lamp – Mercury and Sodium vapour lamp – Halogen lamps – Different colours – CFL(Compact Fluorescent Lamp) – LED – Seven segment display

UNIT III: ELECTRIC APPLIANCES

Electric heaters – Water heaters – Gaison heater – Instant water heater – Immersion rod heater – Air cooler – Air warmer – Electric iron box – Electric fan (Table and Ceiling fans) – Speed control using regulators in fan.

TEXT BOOK:

1. Basic Electricity – Van Vakkenburgh, Nooger & Neville, Publisher- Van Nostrand Reinheld Company – London.

முன்றாம் பருவம் - பாடத்திட்டம்
(2015-2016ஆம் கல்வியாண்டு இரண்டாம் முதற்பருவத்தில் சேரும்
மாணவர்களுக்குரிய பாடத்திட்டம்)

PART-I: Language Tamil Subject		
Subject Title: காப்பியமும் பக்தி இலக்கியமும் நாடகமும் - தாள்:3		
Subject Code: P1LT31	Hours per week: 6	Credit: 3
Sessional Marks: 25	Summative marks: 75	Total Marks: 100

அலகு:1 தமிழ்க் காப்பிய இலக்கியம்

1. சிலப்பதிகாரம் - வழக்குரை காதை
2. மணிமேகலை - ஆபுத்திறன் திறம் அறிவித்த காதை
3. கம்பராமாயணம் - வாலி வதைப்படலம்
4. வில்லிபுத்தூரார் பாரதம் - கண்ணன் தூதுச்சருக்கம்
5. கந்த பராணம் - அயனைச் சிறை நீக்கும் படலம்

அலகு:2 தமிழ் பக்தி இலக்கியம்

1. இயேசு காவியம் - மலைப்பொலிவு - கண்ணதாசன்
2. பராபரக்கண்ணி - தாயுமானவர் - 10 பாடல்கள்
3. திருப்பாவை - ஆண்டாள் - 10 பாடல்கள்
4. தேவாரம் - திருஞானசம்பந்தர் (திருவேடகப் பதிகம்)
5. திருவாசகம் - மாணிக்கவாசகர் - பிடித்த பத்து
6. திருமந்திரம் - திருமூலர் - 10 பாடல்கள்

அலகு:3 நாடகம்

வைகையில் வெள்ளம் வரும் - சேதுபதி

அலகு: 4 தமிழ் இலக்கணம்

1. அணிகள் - உவமை - உருவகம் - பிறிது மொழிதல் - தற்குறிப்பேற்றம்
வஞ்சப்புக்கழ்ச்சி - சிலேடை - வேற்றுமை அணி
2. பா வகைகள் - நான்கு வகைப்பாக்கள்
3. வேற்றுமைகள்
4. கடிதம் வரைதல் - விண்ணப்பம் - புகார்க் கடிதம் - பாரட்டுக்கடிதம்

அலகு: 5தமிழ் இலக்கிய வரலாறும் படைப்பாற்றலும்

- அ) 1. காப்பிய இலக்கிய வரலாறு
2. பக்தி இலக்கிய வரலாறு
- ஆ) பத்திரிக்கைச் செய்தி எழுதுதல் - நேர்காணல் எழுதுதல் - துணுக்கள் எழுதுதல்

பாடநூல் :

1. தமிழ்ச் செய்யுட் தொகுப்பு - தமிழ்த்துறை வெளியீடு
2. நாடகம் - வைகையில் வெள்ளம் வரும் - சேதுபதி. பாவைப்பளிகேஷன்ஸ்

பார்வை நூல்:

- தமிழ் இலக்கிய வரலாறு - பாக்யமேரி
தமிழ் இலக்கிய வரலாறு - எம்.ஆர்.அடைக்கலசாமி

SEMESTER – III : PAPER – III
(For those who join in June 2015 and after)

PART – I Sanskrit Paper III		
Subject Title : Prose ,Poetics & History of Sanskrit Literature – III		
Subject Code: P1LS31	Hours per week: 6	Credit: 3
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

PROSE

Following portions from the prescribed text: ‘SAHITYA RASA KANA’
- Published by J.M. Publications, Madurai.

1. GURU BHAKTHI
2. MATANGA CHARITAM
3. SAMSARGAJAH DOSHAGUNAAH BHAVANTHI
4. AKARNA HRIDAYO GARDABAH
5. VASUDEVA DAUTHYAM

POETICS

ALAMKARAM (POETICS) FROM THE TEXT BOOK: SAHITYA
RASAKANA:-

UPAMA, ANANVAYA, UTPREKSHA, ATHISAYOKTHI, ULLEKHA,
VYATHIREKA, SAMASOKTHI, SLESHA, ARTHANITHARANYASA.

HISTORY OF LITERATURE

Prose Romance,

Historical Kavyas, Popular Tales.

A short history of Sanskrit Literature

(Published by A.M.G. Publications, Madurai – 625 016 Page No. 35 – 40, 40 – 44, 45 - 50)

SEMESTER III
(For those who join in June 2015 onwards)

PART II – Paper I		
Subject Title : English through Drama and Poetry		
Subject Code: P2LE31	Hours per week: 4	Credit: 3
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVES: **Total number of hours per semester: 60 hours**

- ❖ *To make students read and appreciate English Plays*
- ❖ *To make students appreciate English poetry*
- ❖ *To motivate students to face Competitive Examinations*
- ❖ *To develop continuous writing in English*
- ❖ *To make students read extensively*

Unit I – One Act Plays **15 Hrs**

1. The First and the Last - John Galsworthy
2. Remember Caesar - G. Devoit
3. The Sheriff's Kitchen - Ronald Gow
4. The Boatswain's Mate - W.W. Jacobs and H.C. Sargent
5. The Pathfinder - Hermon Ould

Unit II – Poems **15 Hrs**

1. Githanjali (Poem 50) - Rabindranath Tagore
2. The Earthen Goblet - Harinranath Chattopadhyaya
3. La Belle Dame Mercy - John Keats
4. Fidelity - William Wordsworth
5. Quality of Mercy - William Shakespeare
6. The Tiger and the Deer - Sri Aurobindo

Unit - III Objective English **10 Hrs**

- Comprehension
- Spotting the Errors
- Sentence rearrangement
- Sentence Fillers
- Cloze test or Numbered Gaps

Text Book: *Objective English for Competitive Examinations* – Hari Mohan Prasad, Uma Rani Sinha, Tata McGraw Hill Education Private Limited, New Delhi. 2010, Fourth Edition

Unit – IV Composition **10 Hrs**

- Dialogue Writing
- Paragraph Writing

Unit – V Extensive Reading **10 Hrs**

Hayavadana – Girish Karnad, Oxford University Press

SEMESTER – II
(For those who joined in June 2008 and after)

PART – III : Core Subject Theory		
Subject Title : Numerical Methods		
Subject Code: 06CT31	Hours per week: 4	Credit: 5
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVES:

- ❖ *To find the roots of transcendental equations by different methods*
- ❖ *To learn the solutions of linear algebraic equations*
- ❖ *To understand the importance of interpolation in different fields*
- ❖ *To become familiar with the numerical differentiation and integration by various methods*
- ❖ *To find the solution of ordinary differential equations*

UNIT 1: The solutions of Numerical Algebraic and Transcendental Equations:

The Bisection method – Iteration method (or Method of Successive Approximation) – Regular Falsi method – Newton Raphson method

UNIT 2: Solutions of Simultaneous Linear Algebraic Equations:

Gauss elimination method – Gauss seidel method of iteration

UNIT 3: Interpolation, Central Difference Interpolation Formulae:

Gregory-Newton forward interpolation formula – Gregory-Newton backward interpolation formula – Gauss's forward interpolation formula – Gauss's backward interpolation formula

UNIT 4: Numerical Differentiation and Integration:

Newton's forward difference formula to get the derivative – Newton's backward difference formula to compute the derivative – Trapezoidal rule – Simpson's one third rule

UNIT 5: Numerical solutions of ordinary differential equations:

Power series approximations – Solution by Taylor series (Type 1) – Euler's method – Runge-kutta method

TEXT BOOK:

Numerical Methods, P Kandasamy, K Thilagavathy & K Gunavathi, S Chand & Company Ltd., New Delhi, 2014.

CHAPTERS:

- UNIT 1: 3.1.1, 3.2 – 3.4
- UNIT 2: 4.2, 4.9
- UNIT 3: 6.2, 6.3, 7.3, 7.4
- UNIT 4: 9.2, 9.3, 9.9, 9.13
- UNIT 5: 11.3, 11.5, 11.9, 11.12

REFERENCE BOOKS:

1. **Computer Oriented Numerical Methods**, V. Rajaraman, Printice Hall of India Publication, 2000.
2. **Introductory Methods of Numerical Analysis**, S.S. Sastry, Printice Hall of India Publication, 2003.

SEMESTER – III
(For those who joined in June 2008 and After)

PART – III : Core Subject Theory		
Subject Title : Atomic and Molecular Spectroscopy		
Subject Code: O6CT32	Hours per week: 5	Credit: 5
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVES:

- ❖ *To understand the developments leading to various atom models.*
- ❖ *To explain the role of different quantum number and electron spin in atomic phenomena*
- ❖ *To enable students to learn microwave spectroscopy*
- ❖ *To familiarize the basic concept of IR spectroscopy*
- ❖ *To acquire the knowledge of Raman spectroscopy and NMR spectroscopy*

UNIT-I-ATOM MODELS:

Introduction-Rutherford experiment on scattering of α –particles-Theory of α – particle scattering-Bohr atom model-Effect of nuclear motion on atomic spectra-Evidence in favour of Bohr theory-Correspondence principle – Critical potential-Atomic excitation-Experimental determination of Critical potentials – The Vector atom model

UNIT-II-QUANTUM NUMBERS AND COUPLING SCHEMES

Quantum numbers associated with Vector atom model-Coupling schemes-The Pauli’s exclusion principle-Magnetic dipole moment due to orbital motion of the electron-Magnetic dipole moment due to Spin-The Stern and Gerlack experiment-Spin Orbit coupling – Optical spectra-Zeeman effect –Larmor’s theorem-Anomalous Zeeman effect-Stark effect.

UNIT-III-MICROWAVE SPECTROSCOPY

Theory of Microwave spectroscopy-Linear molecules- Symmetric Top molecules–Instrumentation for Microwave spectroscopy- Applications of Microwave spectroscopy.

UNIT-IV-INFRARED SPECTROSCOPY

Introduction-The range of Infra red radiation-Nomenclatures of Infrared spectra-Mathematical theory of Infrared absorption spectroscopy-Linear molecules- Symmetric top molecules-Asymmetric molecules –Instrumentation

UNIT-V-RAMAN SPECTROSCOPY & NMR SPECTROSCOPY

Introduction - Principle - Characteristic properties of Raman lines-Difference between Raman spectra and IR spectra-Mechanism of Raman effect-Instrumentation-Applications of Raman Spectroscopy - Quantum description of Nuclear magnetic resonance-Chemical shift-Spin:Spin coupling – Coupling constants – Instrumentation.

TEXT BOOKS

1. **Modern Physics**, R.Murugesan & Kiruthiga Sivaprasath, S.Chand & Company Ltd, New Delhi. 2014.
UNIT-I -Chapter 6: 6.1 to 6.10, 6.12
UNIT-II-Chapter 6: 6.13 to 6.15,6.18 to 6.24 and 6.26 to 6.28
2. **Spectroscopy (Atomic and Molecular)**, Gurdeep R.Chatwal & Sham K.Anand, Himalaya Publishing House, Mumbai, 2008.
UNIT-III- Chapter 2: 2.4 & 2.5, 2.7, 2.10 & 2.11
UNIT-IV- Chapter 3: 3.1 to 3.3, 3.5 to 3.9
UNIT-V- Chapter 4: 4.1 to 4.6 and 4.8 ; Chapter 7: 7.2,7.6,7.8 to 7.10

REFERENCE BOOKS:

- 1) **Atomic Physics**, J.B. Rajam , S.Chand & Company Ltd, New Delhi, 2008.
- 2) **Fundamentals of Molecular Spectroscopy**, Colin N. Banwell and Elaine M.McCash, Tata McGraw-Hill Publishing Company Ltd., New Delhi 2013.
- 3) **Molecular Structure and Spectroscopy**, G. Aruldhas, Printice Hall of India Publication, 2005.

SEMESTER – III
(For those who joined in June 2013 and After)

PART – III : Allied Subject Theory		
Subject Title : MATHEMATICS – I		
Subject Code:05AT01	Hours per week: 6	Credit: 5
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVE

❖ *To develop the skill of solving problems.*

Unit – I: Trigonometry

Expression for $\sin n\theta$, $\cos n\theta$ & $\tan n\theta$ - Expression for $\sin^n \theta$ and $\cos^n \theta$ - Expansion of $\sin\theta$, $\cos\theta$ and $\tan\theta$ in powers of θ - Hyperbolic functions and inverse hyperbolic functions.

Unit – II: Differential Calculus

Differentiation Methods (successive differentiation (up to second order deviation only omit Leibnitz theorem))

Unit –III: Integral calculus:

Properties of definite integrals – Reduction formula for $\int \sin^n x dx$, $\int \cos^n x dx$ & $\int \sin^m x \cos^n x dx$. Double and triple integrals (simple problems).

Unit IV: Vector Differentiation:

Differentiation of vectors - Gradient of a vector -Directional derivative and its maximum value – Divergence and curl of a vector – solenoidal and irrotational vectors.

Unit V: Line and Surface Integrals

Statements of Green's theorem, Stoke's theorem and Gauss Divergence theorem (simple problems).

TEXT BOOK:

Ancillary Mathematics by Dr.S.Arumugam & Issac. Vol I – IV (Relevant Chapters)

Publisher: New Gamma Publishing House, Palayamkottai

Reference:

Ancillary Mathematics by T.K Manikavasagam Pillay & Others (Viswanathan printers and publishers) Pvt Ltd. Chennai.

SEMESTER – III
(For those who joined in June 2008 and After)

PART – IV : Skill Based Subject		
Subject Title : Energy Science – I		
Subject Code: :06SB31	Hours per week: 2	Credit: 2
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVES:

- ❖ *To familiarize the solar radiation and importance*
- ❖ *To study the different solar collectors*
- ❖ *To enable knowledge about air heater*
- ❖ *To develop the solar energy storing devices*

UNIT – I

The structure of the sun – The solar constant – Solar radiation outside the Earth's atmosphere - Solar energy measuring equipments – Pyranometers – Sunshine recorder

UNIT – II

Solar collectors – Focusing type – Introduction – solar concentrators and Receiver Geometries

UNIT – III

General description of flat-plate collectors – Effect of dust and shading – Selection of materials for flat-plate collectors

UNIT – IV

Types of Air heaters – Application of Air heaters – Heating and Drying of Agricultural products

UNIT – V

Storage of solar energy – Introduction - Types of energy storage

Text Book:

Solar energy utilization, G.D.Rai, Khanna Publishers, Delhi, 2006

Unit I: 3.1, 3.2, 3.4, 4.1, 4.3, 4.4 Unit II: 7.1, 7.3.

Unit III: 5.3, 5.11, 5.12 Unit IV: 6.2, 6.4, 6.5 Unit V: 9.1, 9.2

Reference Book: **Non-Conventional Energy Sources**, G.D.Rai, Khanna Publishers, Delhi, 2005

நான்காம் பருவம் - பாடத்திட்டம்
(2015-2016ஆம் கல்வியாண்டு இரண்டாம் முதற்பருவத்தில் சேரும் மாணவர்களுக்குரிய பாடத்திட்டம்)

PART-I: Language Tamil Subject		
Subject Title: சங்க இலக்கியமும் நீதி இலக்கியமும் - தாள்:4		
Subject Code: P1LT41	Hours per week: 6	Credit: 3
Sessional Marks: 25	Summative marks: 75	Total Marks: 100

அலகு:1 தமிழ்ச் சங்க இலக்கியம்- பத்துப்பாட்டு

1. பத்துப்பாட்டு - முல்லைப்பாட்டு தமிழ்ச் செய்யுள் தொகுப்பு -தமிழ்த் துறை வெளியீடு

அலகு:2 தமிழ்ச் சங்க இலக்கியம் - எட்டுத்தொகை

1. நற்றிணை
2. குறுந்தொகை
3. கலித்தொகை
4. அகநானூறு
5. புறநானூறு
6. பரிபாடல்

அலகு:3 தமிழ் நீதி இலக்கியம்

1. திருக்குறள் : செய்நன்றியறிதல் - அதிகாரம் -11
காலமறிதல் - அதிகாரம் - 49
குறிப்பறிதல் - அதிகாரம் 71
2. பழமொழி நானூறு - கல்வி அதிகாரம்
3. நாலடியார் - கல்வி அதிகாரம்

அலகு: 4 தமிழ் இலக்கணம் - பொருள்

1. அகப்பொருள் - அகத்திணைகள்
2. புறப்பொருள் -புறத்திணைகள்
3. உள்ளுறை இறைச்சி

அலகு: 5 தமிழ் இலக்கிய வரலாறும் பயன்பாட்டுத்தமிழும்

- அ)
 1. சங்க இலக்கிய வரலாறு
 2. நீதி இலக்கிய வரலாறு
- ஆ) புத்தகமதிப்பரை -தமிழ்த் திரைப்பட விமர்சனம்.

பாட நூல்:

1. தமிழ்ச் செய்யுள் தொகுப்பு -தமிழ்த் துறை வெளியீடு
2. தமிழ்ச் செய்யுள் தொகுப்பு - தமிழ்த்துறை வெளியீடு

பார்வை நூல்:

- தமிழ் இலக்கிய வரலாறு - பாக்கியமேரி
தமிழ் இலக்கிய வரலாறு - எம்.ஆர்.அடைக்கலசாமி

SEMESTER – IV: PAPER – IV
(For those who join in June 2015 and after)

PART - I Sanskrit Paper IV		
Subject Title : Drama And History of Sanskrit Literature – IV		
Subject Code: PILS41	Hours per week: 4	Credit: 2
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

60 hours to Drama, 30 hours to Spoken Sanskrit.

DRAMA

Following portions from the prescribed text: ‘SAHITYA RASA KANA’
- Published by J.M. Publications, Madurai.

Unit I, II, III

1. Karnabharam of Bhasa

Unit IV

History of Drama Literature

A short history of Sanskrit Literature

(Published by A.M.G. Publications, Madurai – 625 016 Page No. 59 – 75)

Unit V

**30 HOURS OF ORAL TRAINING DEVELOPING THE COMMUNICATION
SKILLS THROUGH THE SANSKRIT LANGUAGE.**

SEMESTER IV
(For those who join in June 2015 onwards)

PART II – Paper I		
Subject Title : English through Classics		
Subject Code: P2LE41	Hours per week: 4	Credit: 3
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVES: **Total number of hours per semester: 60 hours**

- ❖ To motivate students to read and understand English prose
- ❖ To make students appreciate English poetry
- ❖ To enable students to face Competitive Examinations in English
- ❖ To develop continuous writing of the students
- ❖ To make students read extensively.

Unit I - Prose

1. Building Self Confidence - by Norman Vincent Peale (Personality Development)
From, English for Enrichment,
Edited by Prof. K. Chellappan.
2. Sport- A Modern Hunting Ritual - by Desmond Morris (Essay),
From, English for Enrichment,
Edited by Prof. K. Chellappan.
3. The Soft Thunder of Lumbini - by Hugh and Colleen,
(A travelogue Feature in a Newspaper)
From, English for Enrichment,
Edited by Prof. K. Chellappan.
4. She is Dancing Back in Life - by Oeborach Cowley (A True Life Story)
From, English for Enrichment,
Edited by Prof. K. Chellappan.
5. Within Without - Rabindranath Tagore.

Unit II – Poems

1. Kali the Mother Swami Vivekananda
2. Lochinvar Walter Scott
3. Yossouf James Russell Lowell
4. The Daffodils William Wordsworth
5. Much Madness Emily Dickinson
6. The Woman Who is(XCII) Kabir Das
7. Stopping by Woods on a Snowy Evening Robert Frost

Unit III - Objective English

- Sentence Completion
- Synonyms
- Antonyms
- Idioms and Phrases
- Substitution

Text Book: *Objective English for Competitive Examinations* – Hari Mohan Prasad, Uma Rani Sinha, Tata McGraw Hill Education Private Limited, New Delhi. 2010, Fourth Edition

Unit IV - Composition

- Descriptive writing - Topics on Personal Experience
- Resume Preparation
- SMS and E-Mail Preparation and sending.

Unit V Extensive Reading: Four Scenes from Shakespeare's plays.

1. **The Merchant of Venice.** Act IV – Scene I – Portia's Speech.
2. **Julius Caesar.** Act III – Scene II – Mark Antony and Brutus Speech.
3. **Twelfth Night.** Act V – Scene I – Before Olivia's House.
4. **Othello.** Act V – Scene II – A Bedchamber in the Castle.

SEMESTER – IV
(For those who joined in June 2008 and After)

PART – III : Core Subject Theory		
Subject Title : Electronics and Communication – I		
Subject Code: 06CT41	Hours per week: 4	Credit: 5
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVES:

- ❖ *To study the characteristics of diodes and their applications*
- ❖ *To familiarize bipolar and unipolar transistor and applications*
- ❖ *To enable knowledge about different transistor amplifier circuits*
- ❖ *To study the different communication systems*

UNIT- I:

Crystal diode rectifiers – Half wave rectifier – Efficiency of Half wave rectifier – Full wave rectifier – Centre tap full wave rectifier – Full wave bridge rectifier – Efficiency of full wave rectifier – Nature of rectifier output – Ripple factor – Comparison of rectifiers – Filter circuits – Type of filter circuits – Voltage stabilization – Zener diode – Equivalent circuit of zener diode – Zener diode as voltage stabilizer – Solving zener diode circuits.

UNIT- II:

Transistor as an amplifier in CE arrangement – Transistor load line analysis – Operating point – Practical way of drawn CE circuit – Output from transistor amplifier – Performances of transistor amplifier – Cut off and saturation points – Power rating of transistor – Semiconductor devices numbering system – Transistor lead identification – Transistor testing – Types of Field Effect Transistors – Junction Field Effect Transistor (JFET) – Working principle of JFET – Schematic symbol of JFET – Importance of JFET – Difference between JFET and Bipolar Transistor – JFET as an amplifier – Output characteristics of JFET – Importance terms – Expression for Drain current (I) – Advantages of JFET – Parameters of JFET – Relation among JFET parameters – JFET Biasing – JFET connections – Voltage gain of JFET amplifier – JFET applications.

UNIT- III:

Transistor biasing – Stability factor – Methods of Transistor biasing – Base resistor method – Biasing with feedback resistor – Voltage divider bias method – Midpoint biasing – Silicon versus Germanium. Practical circuit of transistor amplifier – Phase reversal – DC and AC equivalent circuits – Load line analysis – Voltage gain – AC emitter resistance – Formula for AC emitter resistance – Voltage gain in terms of AC emitter resistance – Input impedance of an amplifier – Multistage Transistor Amplifier – Important terms – RC coupled transistor amplifier.

UNIT - IV:

Positive feedback amplifier – Oscillator – Essentials of transistor oscillator – Explanation of Barkhausen criterion – Colpitts oscillator – Hartley oscillator – Principle of Phase shift oscillators – Phase shift oscillator – Wien bridge oscillator – Limitations of LC and RC oscillators – Piezo electric crystals – Working of Quartz crystal – Equivalent circuit of crystal – Frequency response of crystal – Transistor crystal oscillator – Operational amplifiers – OP-AMP applications.

UNIT – V:

Radio Broad casting transmission and reception – Modulation – Types of modulation – Amplitude modulation – Modulation factor – Analysis of amplitude modulated wave – Side band frequencies in AM wave – Transistor AM modulator – Power in AM wave – Limitations of amplitude modulation – Frequency modulation – Demodulation – Essentials in demodulation – AM diode detector – AM radio receivers – Types of AM Radio receivers – Stages of super heterodyne – Radio receiver circuit.

TEXT BOOKS :

- 1) **Principles of Electronics**, V.K.Mehta & Rohit Mehta-S.Chand & Company Ltd, 2014

Chapters: UNIT 1: 9.7 to 9.23

UNIT 2: 11.15 – 11.25, 22.1 – 22.17

UNIT 3: 12.2, 12.6 – 12.10, 12.12 – 12.14, 13.4 – 13.12, 14.1 – 14.3

UNIT 4: 17.5 – 17.7, 17.10 – 17.20

UNIT 5: 19.1 – 19.18

- 2) **Basic Electronics (Solid State)**, B.L Theraja, S.Chand & Company Ltd., 2002
UNIT 4: 31.19 – 31.31

REFERENCE BOOKS:

- 1) Electronic Principles – Albert Paul Malvino (Sixth Edition)
- 2) Electronic Devices and Circuits – Jacob Millman Christos C. Halkias

SEMESTER – IV
(For those who joined in June 2008 and After)

PART – III : Core Subject Theory		
Subject Title : Programming in C		
Subject Code: 06CT42	Hours per week: 5	Credit: 5
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVES:

- ❖ *To become familiar with the C Programming language*
- ❖ *To write programs in C language for solving scientific problems*
- ❖ *To understand the intricacies of C language through real life applications*
- ❖ *To realize the efficiency and power of the C language*

UNIT 1:

Overview of C: Importance of C – Basic structure of C programs – Programming style – Executing a C program

Constants, Variables, and Data types: Introduction – Character set – C tokens – Keywords and Identifiers – Constants – Variables – Data types – Declaration of variables – Declaration of storage class – Assigning values to variables – Defining symbolic constants – Declaring a variable as constant – Declaring a variable as volatile

UNIT 2: Operators and Expressions:

Introduction – Arithmetic operators – Relational operators – Logical operators – Assignment operators – Increment and Decrement operators – Conditional operator – Bitwise operators – Special operators – Arithmetic Expressions – Evaluation of expressions – Precedence of Arithmetic operators – Type conversions in expressions – Operator precedence and associativity – Mathematical functions

UNIT 3: Decision making and Branching:

Introduction – Decision making with IF statement – Simple IF statement – The IF-ELSE statement – Nesting of IF-ELSE statements – The ELSE IF Ladder – The Switch statement – The ?: operator – GOTO statement

Decision making and Looping: Introduction – The WHILE statement – The Do statement – The FOR statement – Jumps in Loops

UNIT 4: Arrays:

Introduction – One dimensional arrays – Declaration of One-dimensional arrays – Initialization of one-dimensional arrays – Two-dimensional arrays – Initializing two dimensional arrays – Multidimensional arrays

User-defined functions: Introduction – Need for user-defined functions – A Multifunction program – Elements of User-defined functions – Definition of functions – Return values and their types – Function calls – Function declaration – Category of functions – No arguments and no Return values – Arguments but no Return values – Arguments with Return values – No Arguments but Return a value – Recursion

UNIT 5: Structures and Unions:

Introduction – Defining a structure – Declaring structure variables – Accessing structure members – Structure initialization – Arrays of structures – Arrays within structures – Structures within structures – Unions

Pointers:

Introduction – Understanding pointers – Accessing the address of a variable – Declaring pointer variables – Initialization of pointer variables – Accessing a variable through its pointer – Chain of pointers – Pointer expressions – Pointer and arrays

TEXT BOOK:

Programming in ANSI C, E Balagurusamy , Tata McGraw-Hill Publishing Company Ltd., New Delhi, 2014

CHAPTERS:

UNIT 1: 1.2, 1.8 – 1.10, 2.1 – 2.13 UNIT 2: 3.1 – 3.12, 3.14 – 13.16
UNIT 3: 5.1 – 5.9, 6.1 – 6.5 UNIT 4: 7.1 – 7.7, 9.1 – 9.13, 9.16
UNIT 5: 10.1 – 10.5, 10.8 – 10.10, 10.12, 11.1 – 11.8, 11.10

REFERENCE BOOKS:

1. **Let us C**, Yashavant P. Kanetkar, BPB Publication, New Delhi, 2013.
2. **Programming with C**, Byron Gottfried, Tata McGraw-Hill Publishing Company Ltd., New Delhi 2013.

LIST OF PROGRAMS

- 1) Biggest among three numbers
- 2) Simple Interest and Compound Interest
- 3) Temperature conversion
- 4) Prime number
- 5) Perfect number
- 6) Armstrong number
- 7) Palindrome number
- 8) Vowel or not
- 9) Result of a student
- 10) Sum of Digits of a number
- 11) Fibonacci series
- 12) Factorial of a number
- 13) To check Leap year and to print leap years from 1901 to 2100
- 14) Quadratic equation
- 15) Numbers in ascending and descending order
- 16) Factorial of a number using Recursion
- 17) Conversion of Decimal to Binary
- 18) Conversion of Binary to Decimal
- 19) To check the given number is Binary or not
- 20) VIBGYOR – Else if ladder
- 21) VIBGYOR – Switch statement
- 22) Fibonacci series using arrays
- 23) Addition of Two matrices
- 24) Sum of Diagonal elements of the matrix
- 25) Matrix multiplication

SEMESTER – IV
(For those who joined in June 2008 and After)

PART – III : Core Subject Practical		
Subject Title : Major Practical -II		
Subject Code: 06CP43	Hours per week: 2	Credit: 1
Sessional Marks: 40	Summative Marks: 60	Total Marks:

1. Potentiometer – Ammeter calibration
2. Potentiometer –resistance & Temperature coefficient of resistance.
3. Potentiometer- Calibration of high range voltmeter.
4. Potentiometer- E.M.F. thermocouple
5. Carey Foster Bridge- measurement of low resistance
6. Self inductance- by Andersons bridge (AC method)
7. Self inductance – by Owan’s bridge (AC method)
8. M.G.-Current sensitiveness & resistance
9. M.G- E.M.F. of thermocouple
10. M.G.-Absolute capacitance
11. B.G.-comparison of capacitances a)direct method b)-Desauty’s bridge
12. B.G.-M1/M2 (comparison of mutual inductance)
13. Internal resistance of a battery using B.G
14. Internal resistance of a battery using B.G
15. M1/M2 deflection magnetometer – Tan A, Tan B
16. M & BH –Deflection Magnetometer
17. Field along the axis of circular coil – deflection methods
18. Hysteresis – magnetometer method – horizontal model
19. Grating – minimum deviation – dispersive power
20. Grating –Normal incidence – dispersive power
21. Spectrometer- small angled prism
22. $i-i'$ curve –prism-spectrometer
23. Solar spectrum – Fraunhofer lines
24. Network theorem
25. Maximum power transfer theorem
26. LCR series resonance and Parallel resonance circuit.

SEMESTER - IV
(For those who joined in June 2013 and After)

PART – III : Allied Subject Theory		
Subject Title : MATHEMATICS - II		
Subject Code: 05AT02	Hours per week: 6	Credit: 5
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVE:

❖ *To develop the skill of Knowledge in Mathematics and Solving problems*

UNIT I:

Formation of differential equation – Differential equation of first order and first Degree – variables separable, Homogeneous and Nonhomogeneous differential Equation – Linear equation.

UNIT II:

Second order differential equation with constant coefficients – Methods of finding Particular integrals for the type e^{ax} , $\cos ax$, $\sin ax$, x^m , $e^{ax}V$ – second order Differential equation with variable coefficients.

UNIT III:

Laplace Transform – Inverse Laplace Transform – solution of differential equation using Laplace Transform

UNIT IV:

Formation of partial differential equation – definition of complete, particular, singular, general integral – solving first order p.d.e.

UNIT V:

Definition of Fourier series – The cosine and sine series – Half range fourier series.

TEXT BOOK:

Ancillary Mathematics by Dr.S.Arumugam & Issac. Vol I – IV (Relevant Chapters)
Publisher: New Gamma Publishing House, Palayamkottai

Reference :

Ancillary Mathematics by T.K Manikavasagam Pillay & Others
Viswanathan (printers and publishers) Pvt Ltd. Chennai.

SEMESTER – IV
(For those who joined in June 2008 and After)

PART – IV : Skill Based Subject		
Subject Title : Energy Science – II		
Subject Code: 06SB41	Hours per week: 2	Credit: 2
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVES:

- ❖ *To understand the renewable energy sources*
- ❖ *To study the Photovoltaic solar energy conversion technology*
- ❖ *To develop different types of solar cookers*
- ❖ *To understand different types of energy sources*

UNIT – I

Introduction to energy sources – General – Energy sources and their availability – Renewable energy sources

UNIT – II

Solar cell modules – Advantages and Disadvantages of Photovoltaic Solar energy conversion – Applications of Solar Photovoltaic system – PV Technology in India.

UNIT- III

Chemical energy sources – General introduction – Fuel cells – Advantages and disadvantages of Fuel cell.

UNIT- IV

Solar furnaces – Solar cooking – Application of Solar Energy in space.

UNIT- V

Wind energy – Introduction – Advantages and disadvantages of Biological Conversion of Solar energy.

Text Book:

1. **Non-Conventional Energy Sources**, G.D.Rai, Khanna Publishers, Delhi,2005
2. **Solar energy utilization**, G.D.Rai, Khanna Publishers, Delhi,2006

Chapters:

UNIT- I: 1.1, 1.4, 1.5 **UNIT- II:** 15.6, 15.7, 15.10, 15.14

UNIT III: 10.1, 10.2, 10.2.5. **UNIT IV:** 16.1, 16.5, 16.8 **UNIT V:** 18.1, 18.1.1, 18.2.6

SEMESTER V
(For those who join in June 2015 onwards)

PART II – Paper I		
Subject Title : English for Career Development		
Subject Code: P2LE51 P2CE51	Hours per week: 1	Credit: 1
Sessional Marks: 100		Total Marks: 100

Total number of hours: 15 hours

Objectives:

- ❖ *To make students face Competitive Examinations with confidence*
- ❖ *To train students in writing book reviews*
- ❖ *To make them write reports, resolutions, minutes*
- ❖ *To make them prepare agenda for meeting.*

Unit I

- Comprehension

Unit II

- Spotting the Errors
- Sentence Improvement
- Voice
- Preposition
- Cloze Test or Numbered Gaps

Text Book: *Objective English for Competitive Examinations*, Hari Mohan Prasad Uma Rani Sinha, Tata McGraw Hill Education Private Limited, New Delhi.

Unit III

- Book Reviews

Unit IV

- Report-Writing
- Preparation of Agenda, Resolutions, Minutes

SEMESTER - V
(For those who joined in June 2008 and after)

PART – III : Core Subject Theory		
Subject Title : SOLID STATE PHYSICS		
Subject Code: 06CT51	Hours per week: 6	Credit: 5
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

Course Objective

This course aims at study of crystal structure and crystal planes, imperfections in crystals, dielectric and thermal properties, magnetic properties and super conductivity

Unit - I - Crystal Structure and Crystal Planes:

Introduction – Space lattice - Stacking sequences in metallic crystal structures - Directions in Crystals - Planes in crystals - Miller indices - Distances of separation between successive (hkl) planes.

Unit - II - Imperfections in Crystals:

Imperfections in crystals - Energy of formation of vacancy - line imperfection - Edge dislocations - Screw dislocations - Surface imperfections - Stacking faults - Twin Boundary - Volume defects - Diffraction of X-rays by crystal planes - X- Ray diffraction methods.

Unit - III - Dielectric and Thermal Properties:

Introduction - Various polarization processes - Internal field - Frequency dependence of dielectric constant - Dielectric breakdown - Ferro and Piezo electricity- Phonons of mono atomic and dimensional lattice-Specific heat of solids (classical theory, Einstein's theory of the specific heat, Debye's theory of the specific heat).

Unit - IV - Magnetic Properties:

Introduction - Classification of magnetic materials - The quantum numbers - Origin of magnetic moment - classical theory of diamagnetism - Theory of paramagnetism - Ferro magnetism - Antiferro magnetic materials - Ferrimagnetic materials - Applications of different magnetic materials.

Unit - V - Super Conductivity:

Introduction - Effect of magnetic field - Effect of current - Type I and Type II - Super conductors - Thermal properties - Isotope effect - London equations - BCS theory - Flux quantization - Josephson Effect - Applications of super conductors - High Tc super conductivity - New developments.

Text Books:

1. Solid State Physics, P.K. Palanisamy, 2004, Scitech Publications (India) Pvt. Ltd., Chennai
2. Solid State Physics, P.K. Palanisamy, 2006, SciTech Publications,(India) Pvt. Ltd., Chennai

Unit I: 2.1 - 2.3, 3.1 - 3.4

Unit II: 3.5, 3.6, 4.1- 4.8

Unit III: 7.1 - 7.6 & (7.2, 7.3 – 2006 edition)

Unit IV: 8.1 - 8.10

Unit V: 10.1 - 10.12

REFERENCE BOOKS:

- (i) Solid State Physics, S.O. Pillai, Revised Sixth Edition 2005, New Age International (P) Ltd. New Delhi
- (ii) Solid State Physics, M.A. Wahab, Second Edition 2005, Structure and Properties of Material Narosa Publishing House Pvt. Ltd., Delhi.
- (iii) Solid State Physics, S.T. Gupta and V. Kumar, Eighth Edition 2003, K. Nath & Co Publishers, Meerut.

SEMESTER - V

(For those who joined in June 2008 and after)

PART – III : Core Subject Theory		
Subject Title : Electronics and Communication - II		
Subject Code: 06CT52	Hours per week: 6	Credit: 5
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVES:

- To learn the Digital Electronic fundamentals and circuits such as Number system and Codes, Combinational circuits and Data Processing circuits
- To know more about Arithmetic circuits, Clocks and Timing circuits
- To gain in-depth knowledge about Flip-flops, Registers and Counters, A/D and D/A convertors
- To gain knowledge about Communication systems and Types of Modulation
- To learn about Microprocessor, Arithmetic operators like Addition and Subtraction

Unit I: Digital Logic, Combinational Logic Circuits, Data processing circuits and Number Systems and Codes:

Basic gates – Universal logic gates- (NOR, NAND) – AND, OR and INVERT gates - Boolean Laws and Theorems - Multiplexers - Demultiplexers - 1 of 16 decoder - BCD to Decimal decoders - Seven segment Decoders - Encoders - Exclusive OR gates - Binary to Decimal conversion - Decimal to Binary conversion - Octal numbers - Hexadecimal numbers - The ASCII code - The excess 3 code - The gray code.

Unit II: - Arithmetic circuits and Clocks and Timing Circuits:

Binary addition - Binary subtraction - Unsigned binary numbers - Sign-magnitude numbers - 2's complement representation - 2's complement arithmetic - Arithmetic building blocks - The adder subtracter.-Clock waveforms - TTL clock - Schmitt trigger - 555 Timer - Astable - 555 Timer - Monostable.

Unit III: - Flip – Flops: RS Flip- Flops - Gated Flip- Flops - Edge triggered RS Flip Flops - Edge triggered JK flip flops - Flip Flop timing - JK Master slave flip-flops.

Registers and Counters: Types of Registers – Serial In-Serial Out – Serial In-Parallel Out – Asynchronous counters - Synchronous counters

D/A Conversion and A/D Conversion: Variable, Resister Networks - Binary ladders – D/A converters(Available D/A converters only) - A/D converter (Simultaneous conversion) – A/D techniques – Dual-slope A/D conversion

Unit IV: Communication systems:

Theory of Frequency and Phase Modulation – Noise and Frequency Modulation (Effect of Noise on Carrier-Noise Triangle, Pre-emphasis and De-emphasis, Other form of Interference) – Generation of Frequency Modulation – Pulse Modulation

Unit V: Microprocessor:

Microprocessor - Initiated operations and 8085 Bus Organization - Internal Data operations and the 8085 Registers - The 8085 microprocessor (Pinout and signals diagram only) - The 8085 A microprocessor functional block diagram - The 8085 instruction set - Review of the 8085 operations - Instruction word size - Overview of the 8085 instruction set. Addition of two 8-bit numbers; Sum 8 bits –

8 bit subtraction – Find One’s Complement of an 8 bit number – Find Two’s Complement of an 8 bit number

TEXT BOOKS: UNIT I TO UNIT III

Digital Principles and Applications - D.P.Leach and A.P. Malvino. 7th Edition. Tata McGraw Hill Publishing company Pvt. Ltd., New Delhi Sixth Reprint 2013.

UNIT IV:

Electronic Communication Systems – George Kennedy & Bernard Davis 4th Edition, Tata McGraw Hill Publishing Company Pvt. Ltd., New Delhi 8th Reprint 2001

UNIT V:

- 1) Microprocessor Architecture, programming and applications with the 8085 Ramesh S. Gaonkar (Fourth Edition)
- 2) Fundamentals of Microprocessor and Microcomputers – B. Ram (6th Revised and Enlarged Edition) Dhanpat Rai Publications Pvt. Ltd, New Delhi

CHAPTERS:

UNIT I: 2.1 - 2.3, 3.1,4.1 – 4.7, 5.2 -5.8 UNIT II: 6.1 – 6.8, 7.1 – 7.5

UNIT III: 8.1 - 8.3, 8.5 – 8.7, 9.1 – 9.3, 10.1,10.3, 12.1, 12.2, 12.3(Available D/A converters only), 12.5, 12.8, 12.9

UNIT IV: 5.1, 5.2.1, 5.2.2, 5.2.3, 5.3, 13.2

UNIT V: 1) 2.11, 2.12, Figure 3.1, Figure 3.7, 5.21, 5.22, 5.31, 5.5
3) 6.3, 6.4, 6.9, 6.11

REFERENCE BOOKS:

1. Fundamentals of Digital Circuits - A. Anand Kumar, Prentice Hall of India Pvt. Ltd., New Delhi (2001).
2. Digital Electronics - Circuits and Systems - V.K. Puri, Seventh Reprint 2002, Tata McGraw Hill Publishing Company, New Delhi.

SEMESTER - V
(For those who joined in June 2008 and after)

PART – III : Core Subject Practical		
Subject Title : MAJOR PRACTICAL - III		
Subject Code: 06CP53	Hours per week: 8	Credit: 4
Sessional Marks: 40	Summative Marks: 60	Total Marks: 100

- 1) Semiconductor Diode Characteristics
- 2) JFET Characteristics
- 3) H – Parameters of Transistors
- 4) Measurement of Op-Amp parameters
- 5) Calculation of RMS value of Sine and Triangular wave form
- 6) Split Power supply
- 7) Study of Logic gates – Using discrete components
- 8) Study of Logic gates – Using ICs(7408, 7400, 7404, 7432)
- 9) Integrator, Differentiator using discrete components
- 10) Clipping and Clamping circuits
- 11) Characteristics of Zener Diode
- 12) Characteristics of Bipolar Transistors
- 13) Study of Half adder and Full adder using 7486 and 7408
- 14) Study of Half Subtractor and Full Subtractor
- 15) Rectifiers and Filters
- 16) Characteristics of UniJunction Transistor
- 17) Characteristics of Photo diode and Photo Transistor
- 18) SCR Characteristics
- 19) Transistor characteristics (CB configuration)
- 20) Transistor characteristics (CC configuration)

SEMESTER - V
(For those who joined in June 2008 and after)

PART – III : Elective Subject Theory		
Subject Title : OBJECT ORIENTED PROGRAMMING WITH C++		
Subject Code: 06EP51	Hours per week: 5	Credit: 5
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVES:

- *To learn the most widely used OOP language, the need, principles and applications of OOP.*
- *To know about the basic concepts like Tokens, Expressions, Control structures and Functions in C++.*
- *To familiarize the concepts such as Classes and Objects.*
- *To know about Constructors, their types, Destructors, Operator overloading and Type conversions.*
- *To learn salient features as Inheritance, its types and Virtual Base Class.*

Unit I

Principles of Object-Oriented Programming:

Software crisis - Software evolution - A look at procedure - oriented programming - object oriented programming paradigm - Basic concepts of object oriented programming - Benefits of OOP - Object oriented languages - Applications of OOP.

Beginning with C++:

What is C++? - Applications of C++ - A simple C++ program - More C++ statements - An example with class - structure of C++ program - More C++ statements - An example with class - Structure of C++ program - Creating the source file - compiling and linking.

Unit II:

Token, Expressions and Control Structures:

Introduction - Tokens - Keywords - Identifiers and constants - Basic Data types - User Defined Data Types - Derived Data Types - Symbolic constants - Type compatibility - Declaration of variables - Dynamic initialization of variables - Reference variables - operators in C++ - Scope resolution operator - member Dereferencing operators - Memory management operators - Manipulators - type cast operator - Expressions and their types - Special assignment expressions - Implicit conversions - Operator overloading - Operator precedence - control structures.

Functions in C++:

Introduction - The main function - function prototyping - call by reference - return by reference - Inline functions - Default arguments - const arguments - Function overloading - Friend and Virtual functions - Math Library functions.

Unit III: Classes and Objects:

Introduction - C structures revisited - specifying a class - Defining member functions - A C++ program with class - Making an outside function inline - Nesting of member functions - private member functions - Arrays within a class - memory allocation for objects - Static Data members - Static member functions - Arrays of objects - Objects as function arguments - Friendly functions.

Unit IV:

Constructors and Destructors:

Introduction - Constructors - Parameterised constructors - Multiple constructors in a class - constructors with default arguments - Dynamic initialization of objects - copy constructor - dynamic constructors - destructors.

Operator Overloading and Type conversions:

Introduction - Defining operator overloading - Overloading unary operators - Overloading Binary operators - Overloading Binary operators using friends - Rules for overloading operators - Type conversions.

Unit V: Inheritance: Extending classes:

Introduction - Defining Derived classes - Single Inheritance - Making a private member inheritable - Multi level inheritance - Multiple inheritance - Hierarchical inheritance - Hybrid inheritance - Virtual Base Classes - Abstract classes.

Text Book:

Object Oriented Programming with C++ - E. Balagurusamy,(6th Edition)
2013, Tata McGraw Hill Publishing Company Pvt. Ltd., New Delhi

Chapters: Unit I:1.1 - 1.8, 2.1 - 2.8 Unit II: 3.1 - 3.25, 4.1 - 4.12
Unit III: 5.1 - 5.15 Unit IV: 6.1 - 6.8, 6.11, 7.1 - 7.5, 7.8, 7.9.
Unit V: 8.1 - 8.10

Reference Books:

1. Programming with C++ - John R. Hubbard Schaum's outline series, McGraw Hill (1996)
2. Object oriented programming in Turbo C++ - Robert Lafore **Galgotia publications Pvt. Ltd., New Delhi (1999)**

SEMESTER - V
(For those who joined in June 2008 and after)

PART – III : Skill Based Subject		
Subject Title : OPTO ELECTRONICS – I		
Subject Code: 06SB51	Hours per week: 2	Credit: 2
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

Course Objective:

❖ *This course aims at study of refractive index, classification of optical fibres, LED, semiconductor laser and photodiodes*

UNIT I: REFRACTIVE INDEX AND VELOCITY OF LIGHT:

Propagation of Light in Different Media – Propagation of Light Waves in an Optical Fibre – Basic structure of an Optical Fibre, and Propagation of Light Wave through it – Acceptance Angle and Acceptance Cone of a Fibre – Numerical Aperture (General).

UNIT II: CLASSIFICATION OF OPTICAL FIBRES:

Fibres: Classification – Stepped Index Fibre – Stepped-Index Monomode Fibre – Disadvantage of Monomode Fibre – Graded Index Multimode Fibre – Plastic Fibres.

UNIT III: LIGHT EMITTING DIODE (LED):

Design of LED for Optical Communications – Basic Theory of a Double Heterojunction LED (DHLED) – Power and Internal Efficiency of LED – Different LED Structures.

UNIT IV: SEMICONDUCTOR LASERS:

Introduction: Basic Principle of Laser Action – Einstein Relationships for Stimulated Emission – Population Inversion – The Salient Points about the Laser Action – Efficiency of a Laser

UNIT V: PHOTO DETECTORS:

The p-n Junction Photodiode – The p-i-n Photodiode – The p-i-n Avalanche Diode – Reach-Through Avalanche Photodiode (RAPD) – Photo transistors.

TEXT BOOKS:

1. Optical Fibres and Fibre Optic Communication Systems, Subir Kumar Sarka - S. Chand & Company Ltd., New Delhi (2003)
- 2) Optoelectronics and Fiber Optics Communication, C.K. Sarkar, D.C. Sarkar, New Age International (P) Ltd., Publishers (2004)

UNIT I: 2.1 - 2.5 ,

UNIT II: 3.1 - 3.6

UNIT III: 4.13 - 4.16 (text book 2)

UNIT IV: 5.1, 5.2, 5.3, 5.11 & 5.16 (text book 2),

UNIT V: 6.3, 6.4, 6.10, 6.11 & 6.18 (text book 2)

REFERENCE BOOKS:

1. Fiber-Optic communication system, Govind P.Agrawal, A John Wiley & sons, publication (2002).
2. Optical Communication essentials, Gerd Keiser Tata McGraw-Hill Publishing Company Limited , New Delhi (2008)

SEMESTER – V
(For those who joined in June 2014 and after)

Part – IV : Common Subject Theory		
Subject Title : Environmental studies		
Subject Code: ESUG51	Hours per week: 2	Credit: 2
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

2hrs/week 24hrs

Objectives

- ❖ *Disseminate information of Environment of national and international issues*
- ❖ *Environmental consciousness creation among the students*
- ❖ *Facilitation of environmental leadership among students*

Unit-I

5 hrs

Introduction – Nature, scope and importance of Environmental studies – Natural Resources and conservation – forest, water and energy.

Unit-II

5 hrs

Ecosystem – concept – structure and function, energy flow, food chain, food web and ecological pyramids

Unit-III

5hrs

Biodiversity – definition, types – values – India, a mega diversity zone – Hotspots – Endangered and endemic species – threat to biodiversity and conservation

Unit-IV

5 hrs

Environmental pollution – Air pollution- causes and effect – Ozone depletion – Global warming – acid rain – Water pollution – Noise pollution – Solid waste management – Nuclear hazard

Unit-V

4hrs

Human population and the environment – Population growth – variation among nations – effects of population explosion – family welfare programme – environment and human health.

Text books

Environment studies – R.Murugesan (2009), Milleneum Pub. Madurai-16

SEMESTER VI - SYLLABUS
(For those who join in June 2015 onwards)

PART II – Paper I		
Subject Title : English for Professional Excellence		
Subject Code: P2LE61, P2CE61	Hours per week: 1	Credit: 1
Sessional Marks: 100		Total Marks: 100

Total number of hours: 15 hours

Objectives:

- ❖ *To make students face Competitive Examinations with confidence*
- ❖ *To prepare students to face interviews*
- ❖ *To make students familiar with books and authors in English literature*
- ❖ *To make students prepare resume*
- ❖ *To motivate students to participate in Group Discussion*
- ❖ *To make students read books on Personality Development*

Unit – I

- Sentence Completion
- Sentence Fillers
- Synonym
- Antonym
- Idioms and Phrases
- Substitution

Unit – II

- Sentence Arrangement
- Jumbled sentences
- Paragraph Reconstruction
- Analogy

Text Book

Objective English for Competitive Examinations, Hari Mohan Prasad
Uma Rani Sinha, Tata McGraw Hill Education Private Limited, New Delhi.

Unit III

- Interview Skills – mock – interview.
- Debate, Group Discussion, Resume Writing

Unit IV

- Books and authors in English literature

SEMESTER – VI
(For those who joined in June 2008 and after)

PART – III : Core Subject Theory		
Subject Title : NUCLEAR PHYSICS		
Subject Code: 06CT61	Hours per week: 4	Credit: 4
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVES:

- ❖ *Introduction to Nucleus, its structure, Detectors of nuclear Radiation and Particle Accelerators*
- ❖ *To learn about Radioactivity*
- ❖ *To gain knowledge about Artificial transmutation of elements, Discovery, Properties and Classification of neutron*
- ❖ *To learn more about Nuclear fission and fusion and Nuclear Reactors*
- ❖ *To understand the Elementary particles*

UNIT I:

Classification of nuclei – General properties of nucleus – Binding energy – Nuclear stability – Theories of nuclear composition – Nuclear forces – Meson theory of nuclear forces – The Liquid drop model – The Shell model – Ionization chamber – Proportional counter – Geiger-Muller counter – The Wilson cloud chamber – The Cyclotron – The Synchrocyclotron – The Betatron.

UNIT II:

Discovery of Radioactivity – Natural Radioactivity – Alpha, Beta and Gamma rays – Properties of Alpha, Beta and Gamma rays – Determination of charge of Alpha particles – Velocity of Alpha particles – Range of Alpha particles – Experimental measurement of Alpha particle - Alpha particle spectra – Beta rays spectra – Magnetic spectrograph – Origin of the line and continuous spectrum – The neutrino theory of Beta decay – Determination of the wavelength of Gamma rays – Origin of Gamma rays – Law of Radioactive Disintegration – The mean life – Measurement of decay constant – Units of Radioactivity

UNIT III:

The discovery of artificial transmutation – Bohr's theory of nuclear disintegration – Threshold energy of endoergic reaction – Preparation of Radioelements – Applications of Radioisotope – The discovery of Neutron – Basic properties of neutron – Classification of neutron – Neutron sources – Neutron deduction

UNIT IV:

Nuclear fission – Energy released in fission – Chain reaction – Atom bomb – Nuclear reactors – Nuclear fusion – Source of stellar energy – Pressurized water reactor – Boiling water reactor – Fast Breeder reactor.

UNIT V:

Introduction – Particles and Antiparticles – Antimatter – The fundamental interaction – The Quark model - The Big Bang theory – Thermal history of Universe – Hubble’s law – The future of the Universe – Dark matter.

Text Book: Modern Physics - R. Murugesan and Kiruthiga Sivaprasath, 7th Revised Edition 2014, S. Chand & Company Ltd., New Delhi.

Chapters:

Unit I:	27.2 – 27.11, 29.3, 29.5, 29.6, 29.7, 30.4, 30.5, 30.6		
Unit II:	31.1 – 31.6, 31.8, 31.9, 31.10, 31.11, 31.13, 31.19, 31.20, 31.21, 31.22, 31.24, 31.25, 31.30 – 31.33		
Unit III:	34.1, 34.2, 34.6, 34.10 – 31.16	Unit IV:	35.2 – 35.7, 36.1– 36.3
Unit V:	38.1 – 38.4, 38.7, 37.12 – 37.15		

Reference Books:

1. Nuclear Physics – D.C. Tayal – Himalaya Publishing House, Bombay.
2. Concepts of Modern Physics – Arthur Beiser, Shobhit Mahajan, S.Rai Choudhury sixth Edition, 2010 – Tata McGraw Hill Education Pvt. Ltd.,

SEMESTER - VI

(For those who joined in June 2008 and after)

PART – III : Core Subject Practical		
Subject Title : MAJOR PRACTICAL - IV		
Subject Code: 06CP62	Hours per week: 6	Credit: 4
Sessional Marks: 40	Summative Marks: 60	Total Marks: 100

- 1) Verification of De Morgan's Theorem using ICs
- 2) Summing and Difference Amplifiers using IC 741
- 3) Op-Amp Schmitt trigger circuits
- 4) Square and Triangular wave generators using IC 741
- 5) Opto-couplers
- 6) Study of BCD Seven Segment Decoder
- 7) Study of Counters
- 8) Shift Registers IC 7495
- 9) Digital to Analog Converter
- 10) Sine wave operator – Wien Bridge Oscillator
- 11) OP-AMP filters
- 12) Multivibrator using Transistor
- 13) Bistable Multivibrator using Transistor
- 14) Square and Triangular wave generators using IC 555
- 15) Astable Multivibrator using Transistor
- 16) Single stage Amplifier
- 17) Two Stage Amplifier – With Feedback & Without Feedback
- 18) Hartley Oscillator
- 19) Colpitt's Oscillator
- 20) Amplitude Modulation
- 21) Frequency Modulation
- 22) Dynamic Characteristics of Transistor and Load line
- 23) Assembly Level Programming – Using 8085 Microprocessor Kit
(Simple Programs)

SEMESTER - VI
(For those who joined in June 2008 and after)

PART – III : Elective Subject Theory		
Subject Title : CLASSICAL MECHANICS ,QUANTUM MECHANICS AND THEORY OF RELATIVITY		
Subject Code: 06EP61	Hours per week: 5	Credit: 5
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVES:

- ❖ *To learn the basic ideas of Lagrangian Mechanics*
- ❖ *To know about Hamiltonian Mechanics*
- ❖ *To gain idea about Particle Properties, Wave Properties of particles*
- ❖ *To learn basic concepts about Quantum Mechanics*
- ❖ *To know ideas of Theory of Relativity*

Unit - I - Lagrangian Mechanics:

Conservation principles - Mechanics of a particle - Mechanics of a system of particles - Constrained motion, constraints, degrees of freedom - Generalized coordinates - Generalized notations(only displacement and velocity)-Limitations of Newton's Laws - Introduction to calculus of variations-Hamilton's variational principles - Deduction of Lagrange's equations of motion from Hamilton's principle (for conservative systems) - D' Alembert's principle - Deduction of Hamilton's principles from D' Alembert's principle - Deduction of Newton's second law of motion from Hamilton's principle - Applications of Lagrange's equations of motion (linear Harmonic oscillator, Simple pendulum, Atwood's machine)

Unit - II- Hamiltonian Mechanics:

Phase space and the motion of the system- Hamiltonian - Hamilton's Canonical equations of motion - Physical significance of H - Advantage of Hamiltonian Approach - Deduction of Canonical equations from variational principle - Applications of Hamiltoni equations of motion (simple pendulum, compound pendulum and linear harmonic oscillator).

Unit - III Particle properties : Photoelectric effect – Compton effect-

Wave Properties of Particle: De-Broglie waves - waves of prabability - Describing a wave - phase and group velocities - Davisson and Germer experiment - Particle in a Box - Uncertainty Principle - Uncertainty principle and its applications.

Unit - IV - Quantum Mechanics:

Quantum mechanics - Wave equation - Schrodinger's equation (Time dependent form and Independent form) - Linearity and superposition - Expectation values - operators particle in a Box - Finite Potential Well - Tunnel effect -

Harmonic Oscillator - Schrodinger's equation for the hydrogen atom - Separation of Variables.

Unit - V - Theory of Relativity:

Introduction - Frame of reference - Newtonian relativity - Galilean transformation equations - The Ether hypothesis - The Michelson Morley experiment - Special theory of relativity - The Lorentz transformation equations - Length contraction - Time Dilation - Relativity of simultaneity - Addition of velocity variation of Mass with Velocity - Mass Energy equilibrium - Minkowski's Four Dimensional Space (Time Continuum) - General theory of relativity.

TEXT BOOKS:

(1) Gupta, Kumar, Sharma, Ninteenth edition 2003, Classical Mechanics, Pragati Prakashan, Meerut

Unit I - Chapter 1: 1.2 to 1.8 Chapter 2: 2.1 to 2.5, 2.9(2.9.1, 2.9.2 & 2.9.10)

Unit II - Chapter 3: 3.2 to 3.7 & 3.9 (3.9.1,3.9.2 & 3.9.4)

(2) Arthur Beiser, Sixth Edition 2004, Concepts of Modern Physics, Tata McGraw - Hill Publishing Company Limited, New Delhi.

Unit - III: Chapter 2: 2.3 & 2.7 Chapter 3: 3.1 to 3.9

Unit - IV: Chapter 5: 5.1 to 5.11 Chapter 6: 6.1 and 6.2

(3) Modern Physics - R. Murugesan and Kiruthiga Sivaprasath, 17th Revised Edition 2014, S. Chand & Company Ltd., New Delhi.

Unit V: Part I - Relativity - 1.1 to 1.16

REFERENCE BOOKS:

(1) Herbert Goldstein, Charles poole and John Safko, Third Edition, 2002, Classical Mechanics, Pearson Eduction, (Singapore) Pte. Ltd., Delhi.

(2) G. Arulldhas, 2002, Quantum Mechanics, Prentice Hall of India Private Limited, New Delhi.

SEMESTER - VI
(For those who joined in June 2008 and after)

PART – III : Skill Based Subject		
Subject Title : OPTOELECTRONICS – II		
Subject Code: 06SB61	Hours per week: 2	Credit: 2
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

Course Objective

This course aims at study of fibre fabrication, fibre losses, optic couplers, optical fibre communication and special applications.

UNIT I: FIBRE FABRICATION:

Classification of Fibre Fabrication Techniques – External chemical Vapour Deposition – Axial Vapour Deposition – Internal Chemical Vapour Deposition – Multi-element Glasses – Phasil System.

UNIT II: FIBRE LOSSES:

Attenuation in Optic Fibres – Rayleigh Scattering Loss – Absorption Loss – Bending Loss – Inverse Square Law Losses.

UNIT III: OPTICAL COUPLERS:

General – Types of Optical Couplers – Other Directional Couplers – Star Couplers.

UNIT IV: OPTICAL FIBRE COMMUNICATION:

General – Transmitter for Fibre Optic Communication – Digital Laser Transmitter – Analog Laser Transmitter – Fibre Optic Receiver – Design of a Fibre Optic Receiver.

UNIT V: SPECIAL APPLICATIONS:

Important Applications of Integrated Optic Fibre Technology – Long-haul Communication – ADM – Satellite Link – Computer Link.

TEXT BOOKS:

Optical Fibres and Fibre Optic Communication Systems- Subir Kumar Sarkar S. Chand & Company Ltd., New Delhi (2003)

UNIT I: 4.1 - 4.6 UNIT II: 7.1, 7.3, 7.4, 7.6 & 7.9

UNIT III: 12.1 - 12.5 UNIT IV: 15.1, 15.2, 15.7, 15.8, 15.12 & 15.14

UNIT V: 18.2, 18.3, 19.2, 19.4 & 19.5

REFERENCE BOOK:

Fiber Optic Communications, Joseph C. Palais Pearson Education Ltd, Delhi (2001)

SEMESTER - VI
(For those who joined in June 2008 and after)

PART – III : Skill Based Subject		
Subject Title :PHYSICS FOR COMPETITIVE EXAMINATIONS		
Subject Code: 06SB62	Hours per week: 2	Credit: 2
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

OBJECTIVES:

- To enable the students to get through in various competitive examinations like Government service, Entrance examinations for higher studies
- Objective type questions are taken from various areas of Physics like Mechanics, Properties of matter, Thermo dynamics, Optics, Sound, Electricity, Magnetism, Electronics and Modern Physics
- To enhance the basic principles and ideas of physical concepts, Reasoning can be improved

UNIT I: MECHANICS & PROPERTIES OF MATTER:

Units of physical quantities and their dimensions – Particle dynamics, projectiles, conservation laws and collision two bodies – Circular motion, Rotating frames of reference, Conical and Foucault’s pendulum – Rotational motion, Centre of mass, moment of inertia – Simple Harmonic motion and Harmonic oscillator – Gravitation, Escape velocity & Artificial satellites – Mechanics of fluids: Surface tension & Viscosity – Elasticity

UNIT II: THERMODYNAMICS, OPTICS & SOUND:

Inter molecular forces, Kinetic theory of gases and behaviour of real gases – Laws of thermodynamics – Conduction & Radiation – Nature of light – Interference – Diffraction, Resolving power & Polarization – Geometrical optics and Aids to vision – Superposition of waves – Doppler’s effect

UNIT III: MAGNETISM, ELECTROSTATICS & ELECTRICITY:

Magnetic properties of matter – Electrostatics – Electric potential – Capacity and Capacitors – Kirchhoff’s Laws and steady current – Magnetic effects of current – Potentiometer & Thermoelectricity – Electromagnetic induction – Heating & Chemical effects of current – Alternating current

UNIT IV: MODERN PHYSICS & ELECTRONICS:

Atomic structure and positive rays – X rays and photoelectric effect – Matter waves, uncertainty principle, wave mechanics and special theory of relativity – Radioactivity and Atomic Nucleus – Electronics and semiconductors – Solids – Universe.

UNIT V: PHYSICS PROBLEMS AND REASONING:

Mathematical introduction – Mechanics – General properties of matter – Heat – Vibrations and waves – Optics – Magnetism – Electrostatics – Current electricity – Modern Physics – Miscellaneous Test Questions

TEXT BOOKS:

- 1) Objective Physics by Dr. S.L. Kakani, Sultan Chand & Sons, New Delhi, 6th Edition, 1995
- 2) Schaum’s Solved Problems Series by Dr. Alvin Halpern, Tata McGraw Hill Publishing Company Ltd., New Delhi, 2003
- 3) Objectives and Problems in Physics by D. Chatopadhyay & P.C. Rakshit, New Age International Pvt. Ltd., Publishers, New Delhi, 1997

CHAPTERS:

UNIT I:	Text Book 1 Chapter 1	Pages 60 to 278
UNIT II:	Text Book 1 Chapters 2 & 3	Pages 279 to 471
UNIT III:	Text Book 1 Chapter 4	Pages 472 to 617
UNIT IV:	Text Book 1 Chapter 4	Pages 618 to 767
UNIT V:	Text Book 2 Chapter 1	Pages 1 to 20
	Text Book 3 Chapter 1	Pages 1 to 105

SEMESTER - VI
(For those who joined in June 2008 and after)

PART – III : Skill Based Subject		
Subject Title : MEDICAL INSTRUMENTATION		
Subject Code: 06SB63	Hours per week: 2	Credit: 2
Sessional Marks: 25	Summative M	Total Marks: 100

OBJECTIVES:

- ❖ *To learn basic design principles of Medical Instruments and their components*
- ❖ *To know about Electrocardiography – Principles, Lead configuration*
- ❖ *To study about Electroencephalography – Brain waves, Placement of Electrodes and Analysis*
- ❖ *To gain knowledge about Operation Theatre Equipments, Surgical diathermy*
- ❖ *To provide in-depth study of Bio-Medical Instrumentation like Lasers, Nuclear Imaging Techniques, Magnetic Resonance Imaging, Positron Emission Tomography*

Unit I:

MEDICAL INSTRUMENTS: Introduction – Design of Medical Instruments
– Components of Bio-Medical Instrument system

Unit II:

ELECTROCARDIOGRAPHY (ECG): Origin of cardiac action potential
ECG lead configuration – Block diagram of ECG Recording set up

Unit III:

ELECTROENCEPHALOGRAPHY (EEG): Origin of EEG – Brain waves
- Placement of electrodes – Recording set up – Analysis of EEG

Unit IV:

OPERATION THEATRE EQUIPMENT: Introduction – Surgical
diathermy – Ventilators – Anesthesia machine

Unit V:

ADVANCES IN BIOMEDICAL INSTRUMENTATION. Lasers in
Medicine(Basic principle of Laser action, Laser instrumentation, Advantages of
Laser surgery) – Nuclear Imaging Techniques – Magnetic Resonance Imaging
(MRI) (Magnetic Resonance phenomenon, MRI instrumentation) – Positron
Emission Tomography(PET)

TEXT BOOK: Bio-Medical Instrumentation – Dr.M. Arumugam
Anuradha Publications, Kumbakonam – Tenth Reprint-2006

REFERENCE BOOK: Bio-Medical Electronics & Instrumentation
– Prof. S.K. Venkata Ram

CHAPTERS:

Unit I: 2.1 – 2.3 Unit II: 4.1, 4.3 Unit III: 4.4

Unit IV: 6.1, 6.2, 6.8, 6.9

Unit V: 10.3 (Basic principle of Laser action, Laser instrumentation,
Advantages of Laser surgery), 10.6, 10.10.1, 10.10.8, 10.11

SEMESTER – VI
(For those who joined in June 2008 and after)

PART – IV : Common Subject Theory		
Subject Title : Value Education		
Subject Code: VEUG61	Hours per week: 2	Credit: 2
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

UNIT I: The heart of Education:

Introduction – Eternal Value – Integrated approach to value education - one for all and all for one – Responsibilities of a citizen – Habit Vs wisdom – purifying mind pollution – Respect for all Religions – Parents, teachers and fellow students – The need and benefit of exercise and meditation for students.

UNIT II:

The Value of Body and Life Energy

Introduction – what are the causes for pain, Disease and death? Three Basic needs for all living Beings – Personal Hygiene Five Factors of Balance in Life – The need and benefits of physical Exercise – The value and Base of Life energy – The value and Base of Bio-magnetism - You are your own best caretaker.

The Marvelous nature of mind

Introduction- Bio-magnetism – The base of the mind – characterisation of the Genetic Centre – mental frequency – practice for a creative mind - benefits of meditation.

UNIT III:

Analysis of Thought

Introduction – An Exposition on the nature of thought– six roots for thoughts – Introspection for analysis of thoughts-practical techniques for analysis of thoughts.

Benefits of Blessings

Effects of good vibrations – Make Blessing a Daily Habit

UNIT IV:

Moralisation of Desire

Introduction – moralization of desire - Analyse your desires – Summary of practice.

Neutralisation of Anger:

Introduction – meaning – characteristics of Anger – Anger is a Destructive emotion – Anger spoils our relationship with others – Some common misconception about anger – will power and method success through awareness – method of neutralisation of anger.

UNIT V:

Eradication of Worries

Worry is a mental disease – Nature’s Law of cause and effect – factors beyond our control – How to deal with problems – analyse your problem and eradicate worry

Harmonious Relationships

Introduction – Three angles of life – The value of harmony in personal relations – Love and Compassion – pleasant face and loving words – appreciation and gratitude to parents and teachers – Bringing needed reforms in educational institutions – Why should we serve others? Brotherhood – A scientific Basis for Universal Brotherhood protection of the environment – non-violence and the five fold moral culture.

Text Book: Value Education for Health, Happiness and Harmony

(Based on the Philosophy and Teachings of Swami Vethanthiri Maharisi)

Published By: Brain Trust, Aliyar A Wing of World Community Service Centre

SEMESTER – VI
(For those who joined in June 2008 and after)

PART – V : Common Subject Theory		
Subject Title : EXTENSION ACTIVITIES		
Subject Code: EAUG61	Hours per week:	Credit: 1
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

UNIT-I: Community Development-I:

Definition – structure and composition – community based issues – need for awareness – Developmental Programmes.

UNIT – II: Community Development–II:

Rural Scenario – need of the Community – need for the community service – role of youth in community building – communal harmony – literacy – Educational Recreation.

UNIT – III: Volunteer Empowerment:

Women’s Emancipation – formation of Youth Clubs – Self-Help Groups – Youth and Development.

UNIT – IV: Social Analysis:

Social issues – cultural invasion – media infiltration – human rights Education/Consumer Awareness – Adolescents Reproductive – HIV/AIDS/STD – Social harmony/National integration – Blood Donation.

UNIT – V: Introduction to NSS:

Basic Concepts – profile – aims – objectives – symbol – Motto – structure – Regular activities – Special Camping Programme – Adventure Programme – National Days and Celebrations.(Applicable to NSS Students)

(OR)

NCC - Origin – Organisation – Ministry of Defence – Armed forces – commands – Defence establishments in Tamil Nadu
Civil Defence – Aid to civil authorities – Disaster management – Leadership – Man management – Adventure activities – Social service

Reference: National Service Scheme Manual (Revised), Ministry of Human Resources Development, government of India.

SEMESTER - I

(For those who joined in June 2008 and after) For MATHS & CHEMISTRY MAJOR

PART – III : Allied Subject		
Subject Title : ANCILLARY PHYSICS – I		
Subject Code: 06AT01	Hours per week: 4	Credit: 4
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

Course Objective

- ❖ *This course aims at study of mechanics, properties of matter, sound, thermodynamics, optics and spectroscopy*

UNIT I: MECHANICS

The Basic forces in nature – Central forces – Conservative forces – Non-conservative forces – Limiting friction, Coefficient of friction and Angle of friction – Laws of friction – Work: Introduction – Work done by a varying force – Energy: Introduction – Kinetic energy – Potential energy – Power – Kepler's laws of planetary motion – Newton's law of gravitation – Mass and density of earth – Determination of G (Boy's method) – Compound pendulum – Artificial Satellites.

UNIT II: PROPERTIES OF MATTER

Elasticity: Introduction – Different moduli of elasticity – Poisson's ratio – Bending of beams (Uniform and Non-uniform) – I section girders – Rigidity modulus by Torsion pendulum – Viscosity: Introduction - Derivation of Poiseuille's formula – Bernoulli's theorem – Applications of Bernoulli's theorem: Venturimeter – Pitot tube.

UNIT III: SOUND

Simple Harmonic Motion – Composition of two Simple Harmonic Motions in a straight line – Beats – Progressive waves – Stationary waves – Properties of stationary waves – Melde's experiment – Ultrasonics.

UNIT IV: THERMODYNAMICS.

Zeroth law of thermodynamics – First law of thermodynamics – Specific heats of a gas – Work done during an isothermal process – Work done during an adiabatic process – Heat engines – Carnot's cycle – Second law of thermodynamics – Carnot's theorem.

UNIT V: OPTICS AND SPECTROSCOPY.

Interference: Light waves – Superposition of waves – Young's double slit experiment-wave front division – Conditions for interference – Diffraction: Huygens-Fresnel theory – Distinction between interference and diffraction – Fresnel and Fraunhofer types of diffraction – Polarization: Retarders or wave plates – Laurent's half shade Polarimeter. Introduction – Infrared spectroscopy – Ultraviolet spectroscopy – Rayleigh scattering – Raman effect: Discovery – Experimental study of Raman effect – Quantum theory of Raman effect – Applications.

TEXT BOOKS:

UNIT I, II & III: Mechanics, Properties of Matter and Sound - R. Murugesan Chapters: 1.1 to 1.7, 1.9 to 1.14, 3.1 to 3.5 and 3.9, 4.1 to 4.9 & 4.13, 5.1, 5.2, 5.5, 5.6 & 5.7, 6.1, 6.2, 6.5-6.9 & 6.12

UNIT IV: Heat Thermodynamics and Statistical Physics-Brij Lal, N. Subrahmanyam, & P.S. Hemne (Multicolour edition – 2007) S. Chand & Company Ltd., New Delhi
Chapters: 4.2, 4.7, 4.9, 4.12, 4.13, 4.21, 4.24, 4.28, 4.29

UNIT V: A text Book of Optics - N. Subrahmanyam, Brij Lal, M.N. Avadhanulu S. Chand & Company Ltd., New Delhi (Multicolour Edition – 2006)

Chapters: 14.2, 14.3, 14.5, 15.7, 17.2, 17.6, 17.7, 20.17, 20.26 Optics and Spectroscopy - R. Murugesan & Kiruthiga Sivaprasath (Sixth Revised Edition 2006) S. Chand & Company Ltd., New Delhi Chapters: 5.1 to 5.8

SEMESTER - II

(For those who joined in June 2008 and after) For MATHS & CHEMISTRY MAJOR

PART – III : Allied Subject		
Subject Title : ANCILLARY PHYSICS – II		
Subject Code: 06AT02	Hours per week: 4	Credit: 4
Sessional Marks: 25	Summative Marks: 75	Total Marks: 100

Course Objective

- ❖ *This course aims at study of electricity, magnetism, electronics, theory of relativity and atomic physics*

UNIT I: ELECTRICITY

Coulomb's law – Electric field – Electric Field due to a Point Charge – Electric Dipole – Potential Energy of a Dipole in a Uniform Electric Field – Electric Field due to an Electric Dipole at an axial Point – Electric Field at a Point on the Equatorial line – Electric Field due to an Electric Dipole at any Point – Lines of Force – Gauss's Law – Differential Form of Gauss Law – An Insulated Conductor – Electric Field due to a Uniformly Charged Sphere – Electric Potential : Potential Difference – Electric Potential as line Integral of Electric Field – Potential at a Point due to a Point Charge – Relation between Electric Field and Electric Potential.

UNIT II: MAGNETISM

Magnetic Effect of Electric Current: Introduction – The Biot Savart Law – Magnetic Induction at a Point due to a Straight Conductor Carrying Current – Moving Coil Ballistic Galvanometer – Comparison of Two Capacitances Using B.G – Comparison of Two emf's of Two Cells using B.G.

UNIT III: ELECTRONICS

Zener Diode – Light Emitting Diode (LED) – Photo Diode – Transistor – Naming the Transistor Terminals – Some Facts about the Transistors – Transistor Action – Transistor Symbols – Transistor as an Amplifier – Transistor Connections – Characteristics of Common Emitter Connection – Binary Number System – Decimal to Binary Conversion – Binary to Decimal Conversion – Logic Gates – OR Gate – AND Gate and NOT Gate – Combination of Basic Logic Gates – NAND Gate as a Universal Gate.

UNIT IV: THEORY OF RELATIVITY

Galilean Transformation Equations – Special theory of Relativity – The Lorentz Transformation Equations – Length Contraction – Time Dilation – Variation of Mass with Velocity – Mass Energy Equivalence

UNIT V: ATOMIC PHYSICS

Rutherford's Experiments on Scattering of Alpha Particles – Bohr Atom Model – Production of X- Rays – Bragg's Law – The Bragg X- ray Spectrometer

TEXT BOOKS:

UNIT I & II: Electricity and Magnetism- R. Murugesan (Reprint with correction 2008)
Chapters: 1.2, 1.4, 1.5 to 1.11, 2.2 to 2.5, and 3.1 to 3.4, 10.1 to 10.3, 10.11, 10.15 & 10.16.

UNIT III: Principles of Electronics - V.K.Metha & Rohit Metha (Multicolour Edition – 2006) S. Chand & Company Ltd., New Delhi

Chapters: 10.1, 10.2, 10.7, 11.1 to 11.7, 11.11, 28.3, 28.5 to 28.7, 28.9 to 28.13.

UNIT IV & V: Modern Physics - R. Murugesan & Kiruthiga Sivaprasath (Multicolour Edition – 2007) S. Chand & Company Ltd., New Delhi

Chapters: 1.4, 1.7 to 1.10, 1.13, 1.14, 6.2, 6.4, 7.2, 7.6

SEMESTER - II
(For those who joined in June 2008 and after)

PART – III : Allied Physics Practical		
Subject Title : PRACTICAL		
Subject Code: 06APO3	Hours per week: 2	Credit: 2
Sessional Marks: 40	Summative Marks: 60	Total Marks: 100

List of Experiments

1. Non-Uniform Bending – Pin and Microscope
2. Non-Uniform Bending – Optic lever
3. Uniform Bending – Pin and Microscope
4. Uniform Bending – Optic lever
5. Compound Pendulum
6. Torsion Pendulum
7. Sonometer – Verification of Laws (1st law & 2nd law)
8. Melde's String
9. Calibration of low range Voltmeter – Potentiometer
10. Viscosity by Stoke's method
11. Newton's rings – Determination of Radius of curvature
12. Air wedge – Thickness of a wire
13. Spectrometer – Refractive Index
14. Spectrometer – Grating -Normal incidence
15. Carey Foster Bridge
16. Diode Characteristics
17. Zener Diode Characteristics
18. Logic Gates – AND, OR, NOT
19. Comparison of capacitances – B.G.
20. Thermal conductivity of Cardboard – Lee's method

DEPARTMENT OF PHYSICS
CERTIFICATE COURSE IN HOUSEWIRING

Objectives:

- ❖ *To apply the knowledge of physics concept and ideas in day today life*
- ❖ *To inculcate the knowledge of handling electrical components and their usage*
- ❖ *To help the students for self employment*

UNIT I: POWER SUPPLIES

Alternating Voltage and Alternating current – Phase – Neutral – Earth connection – High Tension Voltage and Low Tension Voltage – Direct Current and Voltage (DC) - Single Phase – Two Phase – Three Phase supply – D.C. supply – Difference between A.C. and D.C.- Stabilized power supply.

UNIT II: ELECTRIC DEVICES –CONNECTING PROCEDURE, WORKING AND USES

Ohms Law-Electric Tester- Multi meter -Measurement of voltages (both AC and DC) – Power Calculation – Horse Power- Energy meter (Watt meter) - Transformers Types – Step up and Step down Transformer - Chokes – Normal and Electronic Choke - A.C. adopter – DC adopter – Fan Regulator – Normal and Electronic regulators (step and non step type) – Main box – MCB (miniature circuit breaker) – Changeover Switch

UNIT-III SWITCHES, PLUGS, TOPS (3 & 5 Amps) & LAMPS - CONNECTING PROCEDURE WORKING AND USES.

One way, two way and three way switches – Plugs with two pin, three pin and five pin – Tops with two pin three pin - Incandescent lamp with different watts – Fluorescent lamp (Tube light) - CFL(Compact Fluorescent Lamp) – LED lamp with different colours - Mercury and Sodium vapor lamps – Halogen lamps with Different colours.

UNIT-IV: SINGLE & THREE PHASE WIRING PROCEDURE WITH BLOCK DIAGRAM

Single phase wiring connection from main line to the house-Distribution connection to different locations of the house- Three phase connection from main line to the house - Distribution connection to different locations of the house by distributing three phase for three different locations – Advantages and disadvantages of Single and Three phase connections.

TEXT BOOK: Materials prepared by Department of Physics

REFERENCE BOOK:

1. Basic Electricity Complete Course Volume 1 to Volume 5 – Van Vakkenburgh, Nooger & Neville.Publisher- Van Nostrand Reinheld Company – London.