
JAYARAJ ANNAPACKIAM COLLEGE FOR WOMEN (AUTONOMOUS)

A Unit of the Sisters of St. Anne of Tiruchirappalli

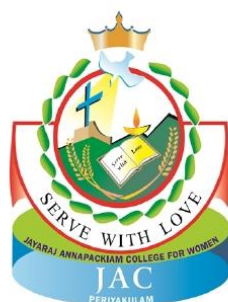
Accredited with 'A' Grade (3rd Cycle) by NAAC

DST - FIST Supported College Since 2015

(Affiliated to Mother Teresa Women's University, Kodaikanal)

PERIYAKULAM – 625 601, THENI DT.

TAMIL NADU.



B.SC. PHYSICS

2017 - 2020

**DEPARTMENT OF PHYSICS
PROGRAMME OUTCOMES - U.G.**

PO. NO.	UPON COMPLETION OF THIS PROGRAMME THE STUDENTS WILL BE ABLE TO
1.	Think critically, evaluate analytically and apply the acquired knowledge of their discipline in related scenario.
2.	Formulate hypothesis, design experiments, use appropriate tools and interpret the results.
3.	Demonstrate the precise understanding of the principles and theories of their discipline through experiments.
4.	Enhance the communicative skills and gain confidence to disseminate knowledge through oral/verbal communications effectively at various situations.
5.	Identify the different roles in an organizational structure of the work place and carry out multiple roles in social responsibilities.
6.	Increase self-awareness, set and pursue meaningful goals, and develop positive personal qualities such as self-esteem, positive attitude, self-discipline, and self-motivation.

PROGRAMME SPECIFIC OUTCOMES - U.G.

PSO. NO.	UPON COMPLETION OF THIS PROGRAM THE STUDENTS WILL BE ABLE TO	PO MAPPED
1.	Assimilate basic knowledge in general Physics and apply the same in real time situation and Identify the principles of Physics behind the working of modern equipments	PO-1
2.	Apply the underlying concepts and laws of Physics to the physical systems of the universe and its constituents and Formulate, solve and interpret Physics related problems in a systematic way	PO-1
3.	Demonstrate the precise understanding of the theories and principles of Physics through experiments and Lay a foundation to interdisciplinary sciences for higher learning.	PO-1, PO-3
4.	Utilize the acquired knowledge to undertake independent project.	PO-1, PO-2
5.	Imbibe computational and Entrepreneur skills.	PO-1, PO-2

U.G. COURSE PATTERN (2017 - 2020)

Sem.	Part	Code	Title of the Paper	Hours	Credits
I	I	17GT1GS01/ 17GH1GS01	Tamil – I/ Hindi	5	3
	II	17GE1GSA1/ 17GE1GSB1	English - I	5	3
	III	17PH1MC01	Mechanics and Properties of Matter	5	4
		17PH1MC02	Sound and Energy	3	2
		17PH1CP01	Major Practical - I	3	-
	IV	17MA1AC01	Allied Mathematics - I	5	4
		17VE1GS01	Value Education	2	2
			17AE1SK01	SBE - I Communication Skills	2
			Total	30	20
II	I	17GT2GS02/ 17GH2GS02	Tamil-II/ Hindi	5	3
	II	17GE2GSA2/ 17GE2GSB2	English - II	6	3
	III	17PH2MC03	Electricity	5	4
		17PH2MC04	Astrophysics	4	3
		17PH2CP01	Major Practical - I	3	3
		17MA2AC02	Allied Mathematics - II	5	4
	IV	17PH2SK02	SBE - II Digital Photography	2	2
			Total	30	22
III	I	17GT3GS03/ 17GH3GS03	Tamil-III/ Hindi	5	3
	II	17GE3GSA3/ 17GE3GSB3	English - III	6	3
	III	17PH3MC05	Optics and Spectroscopy	4	4
		17PH3MC06	Laser and Fibre Optics	3	2
		17PH3CP02	Major Practical - II	3	2
		17CH3AC01	Allied Chemistry Theory - I	3	3
		17CH3AP01	Allied Chemistry Practical - I	2	1
	IV	17ES3GS01	Environmental Studies	2	2
17AE3SK03		SBE - III Office Automation	2	2	
			Total	30	22
IV	I	17GT4GS04/ 17GH4GS04	Tamil-IV/ Hindi	5	4
	II	17GE4GSA4/ 17GE4GSB4	English - IV	6	4
	III	17PH4MC07	Electromagnetism	5	4
		17PH4CP03	Major Practical - III	3	2
		17PH4CE1A/ 17PH4CE1B	Heat and Thermodynamics / How Things Work	4	3
		17CH4AC02	Allied Chemistry Theory - II	3	3
		17CH4AP02	Allied Chemistry Practical - II	2	1
IV	17PH4SK04	SBE - IV Mobile Technology	2	2	
			Total	30	23

Sem.	Part	Code	Title of the Paper	Hours	Credits
V	III	17PH5MC08	Atomic and Nuclear Physics	6	6
		17PH5MC09	Mathematical Physics	5	5
		17PH5MC10	Basic Electronics and Communication	5	5
		17PH5CE2A/ 17PH5CE2B/ 17PH5CE2C/ 17PH5CE2D	Materials Science / Biophysics/ Non Conventional Energy System/ Geometrical Optics	4	3
		17PH5CP04	Major Practical - IV	3	2
		17PH5CP05	Major Practical - V	3	2
		17PH5PR01	Project	2	-
	IV	17AE5NE01/ 17NC5NE01	NME - I Aptitude Building - I/ Organization and Health Programme in NCC	2	2
			Total	30	25
VI	III	17PH6MC11	Theoretical Physics	5	5
		17PH6MC12	Microprocessor	5	5
		17PH6MC13	Digital Electronics	5	4
		17PH6CE3A/ 17PH6CE3B/ 17PH6CE3C/ 17PH6CE3D	Nanoscience / Solid State Physics/ Geophysics/ Atmosphere, weather and Climate	4	3
		17PH6CP06	Major Practical -VI	3	2
		17PH6CP07	Major Practical - VII	3	2
		17PH6PR01	Project	3	2
	IV	17AE6NE02/ 17NC6NE02	NME - II Aptitude Building - II/ National Integration and Personality Development	2	2
	17PH6SS01	Self Study: Medical Physics and Instrumentation	-	2*	
			Total	30	25
I-IV	V	17NP4GS01	NSS, NCC, P. Ed.		1
IV-V		17EX5GS01	Extension		2
			Total for all semesters	180	140+ 2*

* Extra Credit

ALLIED COURSE OFFERED BY DEPARTMENT OF PHYSICS

Sem.	Code	Title of the Paper	Hours	Credits
I	17PH1AC01	Allied Physics Theory - I Mechanics, Properties of Matter and Thermal Physics	3	3
	17PH1AP01	Allied Physics Practical - I	2	1
II	17PH2AC02	Allied Physics Theory - II, Electricity, Electronics And Optics	3	3
	17PH2AP02	Allied Physics Practical - II	2	1
III	17PH3AC01	Allied Physics Theory - I Mechanics, Properties of Matter and Thermal Physics	3	3
	17PH3AP01	Allied Physics Practical - I	2	1
IV	17PH4AC02	Allied Physics Theory - II, Electricity and Electronics	3	3
	17PH4AP02	Allied Physics Practical - II	2	1

CERTIFICATE COURSE OFFERED BY DEPARTMENT OF PHYSICS

Code	Title of the Paper	Hours	Credits
CCPHMT01	Mobile Technology	30	2

UG - INTERNAL QUESTION PATTERN

Time: 2 Hours **Marks: 60**

Objective Questions (10x1=10)

Fill in the blanks (5)

Choose the correct answer (5)

SECTION - A

Answer any 4 questions out of 5 (4x4=16)

SECTION - B

Answer any 2 questions (either-or type) (2x7=14)

SECTION - C

Answer any 2 questions out of 3 (2x10=20)

(Marks obtained will be converted to 30)

UG - EXTERNAL QUESTION PATTERN

Time: 3 Hours **Marks: 60**

SECTION - A

Answer 6 questions out of 10 (2 questions from each unit) (6x3=18)

SECTION - B

Answer 3 questions out of 5 (1 question from each unit) (3x6=18)

SECTION - C

Answer 3 questions out of 5 (Problems to be included)

(1 question from each unit) (3x8=24)

**COMPONENTS OF CIA FOR SBE - II (DIGITAL PHOTOGRAPHY) AND
SBE - IV (MOBILE TECHNOLOGY)**

Component	Marks
Test-1	30
Test - 2	30
Component - 1 (Assignment)	10
Component - 2 (Quiz)	10
Component - 3 (Lab -1)	10
Component - 4 (Lab - 2)	10
Total	100

QUESTION PATTERN FOR SKILL BASED ELECTIVE COURSES

(SBE - II and SBE - IV)

Time: 1 Hour

Marks: 30

SECTION - A

Answer any 5 questions out of 8

(5x2=10)

SECTION - B

Answer any 4 questions out of 7

(4x5=20)

CERTIFICATE COURSE - EXTERNAL QUESTION PATTERN

Time: 3 Hours

Marks: 60

SECTION - A

Answer 6 questions out of 10 (2 questions from each unit)

(6x3=18)

SECTION - B

Answer 3 questions out of 5 (1 question from each unit)

(3x6=18)

SECTION - C

Answer 3 questions out of 5 (1 question from each unit)

(3x8=24)

PART - I Tamil - தற்கால இலக்கியம்

பருவம்: ஒன்று

நேரம்: 5

குறியீடு: 17GT1GS01

புள்ளி: 3

நோக்கம்:

- ❖ தற்கால இலக்கியக் கவிஞர்களைப் பற்றி அறிந்து கொள்வர்.
- ❖ இலக்கிய வரலாற்றை அறிந்து கொள்வர்
- ❖ வாழ்க்கையில் ஏற்படும் துன்பங்களை அகற்றி, வெற்றி பெறும் வழிமுறைகளைத் தெரிந்து கொள்வர்.
- ❖ கட்டுரைகள் வழி பன்முகத் தகவல்களை அறிந்து கொள்வர்.
- ❖ எழுத்து இலக்கணங்களை அறிந்து கொள்வர்.

அலகு 1: மரபுக் கவிதை

1. பாரதியார் - செந்தமிழ் நாடு
2. பாரதிதாசன் - வாழ்வில் உயர்வு கொள்!
3. குவிமணி - ஒற்றுமையே உயிர் நிலை
4. நாமக்கல் கவிஞர் - தேறிய தெளிவு

அலகு 2: புதுக்கவிதை

1. நா.காமராசன் - கடல்
2. வைரமுத்து - நம்பிக்கை ஊன்றி நட
3. சிற்பி - மூல ஒலி
4. கோவை பழநிசாமி - பெண்மையே...

அலகு 3: உரைநடை

1. டாக்டர்.எம்.எஸ். உதயமூர்த்தி - வெற்றிக்கு முதல்படி

அலகு 4: கட்டுரைகள்

1. கண்டேன் கொள்ளிப் பிசாசை-பிலோ இருதயநாத்
2. சுய முன்னேற்றக் கட்டுரை-துளைகளில்லாப் புல்லாங்குழல்-வெ.இறையன்பு
3. அறிவியல் கட்டுரை-மருந்துகளிடம் எச்சரிக்கைமுனைவர் க. பூரணச்சந்திரன் (தொகுப்பாசிரியர்)
4. வரலாற்றுக் கட்டுரை-உழுதொழில் (ந.மு.வேங்கடசாமி நாட்டார்)
5. இலக்கியக் கட்டுரை-பாரதியார் போற்றும் புதுமைப் பெண் (நிர்மலா மோகன்)

அலகு 5: இலக்கணம், இலக்கிய வரலாறு

1. இலக்கணம்: - எழுத்தும், சொல்லும்
எழுத்து - முதலெழுத்து, சார்பெழுத்து
சொல் - பெயர்ச்சொல், வினைச்சொல், இடைச்சொல், உரிச்சொல்
2. எம். ஆர். அடைக்கலச்சாமி - இலக்கிய வரலாறு:

(தற்கால இலக்கியம், மரபுக்கவிதை, புதுக்கவிதை, உரைநடை தொடர்பான இலக்கிய வரலாறு)

பாடநூல்கள்:

1. தொகுப்பாசிரியர் கவிஞர் பத்மதேவன் - 'பாரதியார் கவிதைகள் '
காளீஸ்வரி பதிப்பகம் சென்னை - 17
இரண்டாம் பதிப்பு 2009.
2. தொகுப்பு: கீர்த்தி - 'பாரதிதாசன் கவிதைகள்'
அருணா பப்ளிகேஷன்ஸ் சென்னை
முதல் பதிப்பு -2008.
3. கவிமணி - மலரும் மாலையும்
பூம்புகார் பதிப்பகம்,சென்னை.முதல்
பதிப்பு, 2002.
4. நாமக்கல் கவிஞர் - தமிழன் இதயம் கவிதைகள்'
முல்லை நிலையம்
சென்னை முதல் பதிப்பு - 2000
5. நா.காமராசன் - கருப்பு மலர்கள்,திருமகள் நிலையம்,
வெங்கட நாராயணா சாலை
தி.நகர்,சென்னை - 600 017
முதல் பதிப்பு - ஏப்ரல் - 1971
6. வைரமுத்து கவிதைகள் - 'திருமகள் நிலையம்',
16, வெங்கடநாராயணா சாலை,
சென்னை - 17.
பத்தாம் பதிப்பு - 2009.
7. சிற்பி - சிற்பி கவிதைகள்
நியூ செஞ்சுரி புக் ஹவுஸ்
சென்னை. முதல் பதிப்பு - 2011.
8. கோவை பழநிசாமி - விளக்குகள் எரியாத வீதி
மனோன்மணி பதிப்பகம்,கோவை.
முதல் பதிப்பு - 2006
9. டாக்டர்.எம்.எஸ்.உதயமூர்த்தி - வெற்றிக்கு முதல்படி
கங்கை புத்தக நிலையம்
சென்னை - 600041
முதல் பதிப்பு - 1993

10. வெ. இறையன்பு - 'உள்ளொளிப் பயணம்'
நியூசெஞ்சுரி புக் ஹவுஸ்
சென்னை - 98
மூன்றாம் பதிப்பு - 2007
11. பூரணச்சந்திரன் - அறிவியல் கட்டுரைகள்
அறிவுப் பதிப்பகம், சென்னை-600014
முதல் பதிப்பு - 2006
12. ந.மு.வேங்கடசாமிநாட்டார் - நாவலர் நாட்டார் தமிழ் உரைகள்
தமிழ் மண் பரிப்பகம், சென்னை-600017
முதல் பதிப்பு - 2007
13. முனைவர். நிர்மலா மோகன் - 'இலக்கிய மலர்கள்'
மீனாட்சி புத்தக நிலையம், மதுரை - 1
முதல் பதிப்பு - 2004.
14. எம். ஆர். அடைக்கலச்சாமி - 'இலக்கிய வரலாறு'
ராசி பதிப்பகம், சென்னை - 73.
41ஆம் பதிப்பு - 2011.

LANGUAGE THROUGH LITERATURE- I

STREAM -A

Semester: I

Hours: 5

Code : 17GE1GSA1

Credits: 3

COURSE OUTCOMES:

- ❖ Develop and integrate the use of four language skills i.e. Reading, Listening, Speaking and Writing
- ❖ Analyze and interpret texts written in English, evaluating and assessing the results in written or oral arguments using appropriate support.
- ❖ Develop critical thinking capabilities.
- ❖ Become proficient in English for global competency.
- ❖ Improve and extend the communication strategies in the language.

UNIT I: PROSE

2hours

How to be a Doctor - Stephen Leacock

Fifteen Years - R.K.Narayan

UNIT II: POETRY

1 hour

The Lotus - Toru Dutt

Solitude - Alexander Pope

Mending Wall - Robert Frost

UNIT III: SHORT STORY

1 hour

The Model Millionaire - Oscar Wilde

Mrs. Packletide's Tiger - Saki

UNIT IV: ONE ACT PLAYS

Monkey's Paws - W.W.Jacobs

UNIT V: COMPOSITION AND GRAMMAR

1 hour

One Word Substitutes

Foreign Words and Phrases

Jumbled Sentences

Reading Comprehension

Tenses, Articles.

COURSE BOOK:

- 'Limelight-1', SSK Publishers and Distributors, Chennai, 2016
- Savarimuttu, J.S Rohan, and Petricia Alphine Nirmala. *English Grammar and usage –An ideal Companion For Advanced Learners* . Chennai: New Century Book House (P) Ltd, 2016.Print.

LANGUAGE THROUGH LITERATURE - I - 17GE1GSA1

QUESTION PATTERN

STREAM – A

Time: 3 hours

Marks: 60

- | | | |
|------|--|---------|
| I. | Choose the best answer
(from units I & II) | 10x1=10 |
| II. | Answer any two of the following in a paragraph of 100 words each
(two out of 4 from units I & II) | 2x5=10 |
| III. | Answer any two of the following in an essay of 300 words each
(two out of 4 from units I, II, III & IV) | 2x10=20 |
| IV. | Rearrange the jumbled sentences
(from Unit V) | 5 |
| V. | Give one word substitutes / foreign words for the following
(from Unit V from the prescribed book) | 5 |
| VI. | Read the passage and answer the following questions.
(from Unit V) | 5 |
| VII. | Fill in the blanks with suitable tenses and articles
(from Unit V) | 5 |

LANGUAGE THROUGH LITERATURE-I

STREAM – B

Semester: I

Hours: 5

Code : 17GE1GSB1

Credits: 3

COURSE OUTCOMES

- ❖ Get exposed to a range of contexts where the language is used to meet a variety of real life communication needs.
- ❖ Learn good English to prosper in professional and personal lives
- ❖ Become proficient in English for global competency
- ❖ Enhance language through a task- based and learner- centric syllabus
- ❖ Carry out all the LSRW skills

UNIT I: PROSE

1 hour

Stephen Leacock	-	With the Photographer
Catherine Lim	-	Eggs
M.K.Gandhi	-	Voluntary Poverty

UNIT II: POETRY

1 hour

Alfred Noyes	-	The Highway Man
William Wordsworth	-	The Solitary Reaper
W.B.Yeats	-	The Ballad of Father Gilligan

UNIT III: SHORT STORY

1 hour

Guy de Maupassant	-	Simon's Papa
Lafcadio Hearn	-	The Living God

UNIT IV: COMMUNICATIVE EXPRESSIONS

1 hour

Greeting
Introducing
Seeking Permission
Expressing Gratitude

UNIT V: GRAMMAR & COMPOSITION

1 hour

Parts of speech (P.No. 1to6)
Articles (P.No. 67-71)
Letter Writing (Leave Application & Letter of Complaints)

BOOKS FOR REFERENCE:

- Savarimuttu, J.S Rohan, and Petricia Alphine Nirmala. *English Grammar and usage – An ideal Companion For Advanced Learners* . Chennai: New Century Book House (P) Ltd, 2016. Print.
- G.Radhakrishna Pillai, and K.Rajeevan. *Spoken English for You*. Chennai: Emerald Publishers, 2012. Print.

LANGUAGE THROUGH LITERATURE – I – 17GE1GSB1

QUESTION PATTERN

Stream – B

Time: 3 hours

Marks : 60

- | | | |
|------|--|---------|
| I. | Choose the best Answer
(from units I & II) | 10x1=10 |
| II. | Answer any two of the following in a paragraph of 100 words each
(two out of four from units I, II & III) | 2x5=10 |
| III. | Answer any two of the following in an essay of 300 words each
(two out of four from units I, II, & III) | 2x10=20 |
| IV. | Matching the expressions.
(from unit IV) | 5 |
| V. | 1. Fill in the blanks.
(from unit V -5 marks for identification of Parts of Speech and 5- marks for Articles) | 10x1=10 |
| | 2. Letter writing
(from unit V) | 5 |

MECHANICS AND PROPERTIES OF MATTER

Semester: I

Hours: 5

Code : 17PH1MC01

Credit: 4

COURSE OUTCOMES:

- ❖ Explain the basic principles of force and energy
- ❖ Analyze the mechanics of rigid bodies and compute the moment of inertia
- ❖ Experiment the different elastic properties of materials.
- ❖ Illustrate the phenomena of viscosity and surface tension of fluids.
- ❖ Express the laws of gravitation and its effects.

UNIT I: IMPACT OF ELASTIC BODIES

Impact of a force - Fundamental principles of impact - Oblique impact of a smooth sphere on a fixed smooth plane - Direct impact of two spheres - Loss of kinetic energy due to direct impact of two smooth spheres - Oblique impact of two smooth spheres - Loss of kinetic energy due to oblique impact - Kinetic energy of a rotating body - Torque - Angular momentum - Angular momentum of a system of particles.

(15 Hours)

UNIT II: MOMENT OF INERTIA AND MECHANICS OF A RIGID BODY

Perpendicular axes theorem - Parallel axes theorem - Moment of inertia of a thin circular ring - M.I of a circular disc about an axis through its centre and perpendicular to its plane - M.I of a cylinder about an axis perpendicular to its length and passing through its centre of mass - M.I of a hollow cylinder - M. I of a solid sphere - M.I of a hollow sphere about its diameter - M.I of a uniform rod - M.I of a rectangular lamina - M.I of a spherical shell.

(15 Hours)

UNIT III: ELASTICITY

Stress - Strain - Hooke's law - Different moduli of elasticity - Work done in a strain - Relation between the elastic moduli - Torsion - Rigidity modulus - Static torsion method - Torsional oscillations of a body - Bending of beams - Measurement of Young modulus - Non uniform bending - Uniform bending - Searle's method - Konig's method.

(15 Hours)

UNIT IV: VISCOSITY AND SURFACE TENSION

Streamline flow and turbulent flow - Poiseuille's formula for the flow of a liquid through a capillary tube - Poiseuille's method - Corrections to Poiseuille's formula - Ostwald's viscometer - Motion in a viscous medium - Stoke's method - Variation of viscosity with temperature and pressure - Friction and lubrication - Searle's viscometer - Viscosity of gases - Rankine's method - Explanation of surface tension on K.E - Work done in blowing a bubble - Forms of liquid drops - Spreading of one liquid over another - Excess pressure inside a curved liquid surface - Jaegar's method.

(15 Hours)

UNIT V: GRAVITATION

Newton's law of gravitation - Kepler's law of planetary motion - G- Boy's Experiment - Gravitational field and gravitational potential - Gravitational potential and field due to a spherical shell, Solid sphere - Variation of g with latitude or Rotation of the earth - Variation of g with Altitude - Variation of g with depth - Compound pendulum. **(15 Hours)**

BOOK FOR STUDY:

1. Properties of Matter - R. Murugeshan, S.Chand & Company Pvt.Ltd - Reprint 2015.

DETAILED REFERENCE:

UNIT I: Chapter 8: 8.1 to 8.7

UNIT II: Chapter 7: 7.1 to 7.10, Chapter 10: 10.1 to 10.10

UNIT III: Chapter 1: 1 to 1.23

UNIT IV: Chapter 2: 2.1 to 2.14, Chapter 3: 3.1 to 3.11

UNIT V: Chapter 6: 6.1 to 6.10

BOOKS FOR REFERENCE:

1. Mechanics, D.S.Mathur, S.Chand, New Delhi, IX, 2008.
2. Fundamentals of Physics, Haliday and Resnick, Wiley V, 1998.

SOUND AND ENERGY

Semester: I

Hours: 3

Code : 17PH1MC02

Credits: 2

COURSE OUTCOMES:

- ❖ Explain types of vibrations and acoustic properties
- ❖ Describe the production, detection and applications of ultrasonic waves
- ❖ Discuss the solar radiation and various types of solar collectors.
- ❖ Demonstrate various applications of solar energy.

UNIT I: SOUND

Free Vibrations - Undamped Vibrations - Damped Vibrations - Forced Vibrations - Resonance and Sharpness of Resonance - Phase of Resonance - Quality Factor - Fourier Theorem - Fourier Series - Evaluation of Fourier Coefficients - Square wave - Saw- Tooth Wave - Wave Velocity and Group Velocity **(9 Hours)**

UNIT II: ULTRASONICS

Doppler Effect - Observer at Rest and Source in Motion - Source at rest and Observer in Motion - Ultrasonics - Production of Ultrasonic Waves - Detection of Ultrasonic Waves - Acoustic Grating - Acoustic of Ultrasonic Waves. **(9 Hours)**

UNIT III: ACOUSTICS

Acoustics - Reverberation - Sabine's Reverberation Formula - Determination of Absorption Coefficient - Acoustic Intensity - Acoustic Measurements - factors affecting the Acoustics of Buildings - Sound Distribution in an Auditorium - Requisites for good Acoustics **(9 Hours)**

UNIT IV: SOLAR ENERGY

Solar constant - Solar Radiation at the earth's surface - Solar radiation Measurements - Flat - Plate collectors - Thermal Analysis of Flat - Plate collectors and useful heat Gained by the Fluid. **(9 Hours)**

UNIT V: APPLICATIONS OF SOLAR ENERGY

Solar water heating - space heating (or solar heating of buildings) - Solar electric Power generation : solar photovoltaics - Solar distillation - Solar Pumping - Solar Furnace - Solar cooking. **(9 Hours)**

BOOK FOR STUDY:

Study material prepared by Dr. A. Clara Dhanemozhi, Associate Professor of Physics, J. A. College for Women, Periyakulam

BOOKS FOR REFERENCE

1. A Text Book of Sound - N Subramaniam Brij Lal, S.Chand & Co, New Delhi Second Reprint, 2013.
2. Non conventional energy sources, G.D.Rai - Khanna Publishers - Fifth Edition, 2011.

MAJOR PRACTICAL I

Semester: I & II

Hours: 3 + 3

Code : 17PH1CP01 & 17PH2CP01

Credits: 3

COURSE OUTCOMES:

- ❖ Compute the parameters of mechanics and properties of matter through experiential learning
- ❖ Construct simple electric circuits through different experiments
- ❖ Verify the fundamental laws of sound.

LIST OF PRACTICALS (Any 14)

1. Young's Modulus- Uniform Bending - Pin and Microscope.
2. Young's Modulus- Uniform Bending - optic lever- Telescope and Scale method.
3. Young's Modulus- Non Uniform Bending - optic lever- Telescope and Scale method.
4. Young's Modulus- Non Uniform Bending - Pin and Microscope.
5. Torsion Pendulum- Rigidity modulus.
6. Compound Pendulum - Determination of g .
7. BG - Comparison of Capacitances.
8. BG - Comparison of emfs.
9. Low Range Voltmeter Calibration using Potentiometer.
10. Spectrometer- Refractive Index and Dispersive power of the Prism
11. Spectrometer - Normal Incidence and Dispersive power of the grating
12. Melde's String
13. Ammeter Calibration using Potentiometer.
14. Owen's Bridge
15. Stoke's Method
16. AC frequency - Sonometer
17. Searle's Method
18. DeSauty's bridge
19. Viscosity - Capillary rise method

ALLIED MATHEMATICS - I

Semester: I

Hours: 5

Code : 17MA1AC01

Credits: 4

COURSE OUTCOMES:

- ❖ Solve the problems in differentiation.
- ❖ Evaluate the double integrals by changing the order of integration.
- ❖ Acquire the knowledge about fourier series.
- ❖ Identify the relation between roots and coefficients of equations.
- ❖ Analyze the concepts of transformation of equations.

UNIT I

Successive differentiation - n^{th} derivative - standard results - Leibnitz formula for n^{th} derivative - Jacobians. **(15 Hours)**

UNIT II

Multiple integrals - double integrals - changing the order of integration in double integrals - double integral in polar coordinates. **(15 Hours)**

UNIT III

Fourier series - Fourier coefficients - the cosine and sine series. **(15 Hours)**

UNIT IV

Theory of equations: Relation between roots and coefficients - Reciprocal equations. **(15 Hours)**

UNIT V

Transformation of equations - approximate solutions of numerical equations: Newton's method - Horner's method. **(15 Hours)**

COURSE BOOK:

Course material compiled by the Department.

BOOKS FOR REFERENCE:

1. S. Arumugam and A. Thangapandi Isaac, Ancillary Mathematics Paper I, New Gamma Publishing House, 1996.
2. S. Arumugam and A. Thangapandi Isaac, Ancillary Mathematics Paper III, New Gamma Publishing House, 2002.

VALUE EDUCATION

Semester: I

Hours: 2

Code : 17VE1GS01

Credit: 2

COURSE OUTCOMES:

- ❖ Develop positive attitude towards life
- ❖ Internalize human values and sense one's personal identity and growth
- ❖ Face challenges in life positively with a knowledge on life coping skills
- ❖ Uphold the dignity of women
- ❖ Contribute more for women development and women empowerment

UNIT I

Values in Life- Personal, Social, Values in love and marriage, Spiritual and Professional - Life values - societal concerns and challenges. **(6 Hours)**

UNIT II

Life oriented skills - Self identity - self - esteem, self - concept, self - acceptance - Positive thinking - Positive attitude - Time management **(6 Hours)**

UNIT III

Motivation - Goal setting - Goal, its focus and importance - Success - obstacles to success - overcoming obstacles - Problem solving - Decision making - decision making process. **(6 Hours)**

UNIT IV

Women in society - Sex differences and sexual discrimination in society traditional bases of sexual identity - Actual Difference between the sexes - Social consequences of women's employment in modern society. **(6 Hours)**

UNIT V

Women in the Indian society - Status of women in independent India - problems of women in modern India - Rights and protection given to women by the constitution of India - Strategies for the Protection of women's rights and Rehabilitation of Women - Future Prospects **(6 Hours)**

COURSE BOOK:

- ❖ Value Education: Course Material Prepared by the Department of Foundation Courses. JAC

BOOKS FOR REFERENCE:

1. Dr. Xavier Alpphonse S.J., *"We Shall Overcome" - A Text book on Life Coping Skills*, ICRDCE Publication, Chennai, 2011
2. அருள்நிதி ஆ.மு. தாமோதரன் முதுநிலை பேராசிரியர் - இயேசு காட்டும் யோகம். அன்பு நெறி வெளியீடு திண்டுக்கல்.
3. Dennis K. Kelly, *"Achieving Unlimited Success"*, Indra Publishing House, Bhopal, 2009
4. Felix Koikara, SDB., *"Live Your Values"-Teacher's Guide*, Don Bosco Youth Animation Centre, Ennore, Madras, 1990
5. Elizabeth B. Hurlock, *'Personality Development*, TMH Publications, New Delhi, 2004.

CONTINUOUS INTERNAL ASSESSMENT

Components	Marks
Mid Semester	30
End Semester	30
Case Study Report	20
Book/Film Review	20
Total	100

QUESTION PATTERN (MID AND END SEMESTER EXAM)

Three essay type questions on any current issues or challenges facing society. [3x10=30]
{Issues and current trends related to women, national importance, societal, environment or value crisis among youth}

PORTIONS FOR INTERNAL TESTS:

I & II Units - Mid Semester

III, IV & V Units - End Semester

COMMUNICATION SKILLS

Semester: I

Hours: 2

Code : 17AE1SK01

Credits: 2

COURSE OUT COMES:

- ❖ Develop the four language skills
- ❖ Prepare, organize and deliver an effective oral presentation.
- ❖ Create suitable situations for role play, debate and group discussion.
- ❖ Practice in writing resume and letters.
- ❖ Utilize the concept, methodology and components of an Interview

UNIT I - PERSONAL COMMUNICATION

Intra-Personal Communication

Inter-Personal Communication

UNIT II - COMMUNICATION IN AN EDUCATIONAL ENVIRONMENT

Letter Writing

Situational Conversations

Group Discussion

UNIT III - COMMUNICATION FOR CAREER

Facing Interviews

Team Work

UNIT IV- COMMUNICATION IN A GATHERING

Presentation Skills

UNIT V - PUBLIC SPEECH

Welcome Speech

Vote of Thanks

Felicitations

Feedback

COMMUNICATION SKILLS -17AE1SK01

QUESTION PATTERN

Time: 1 Hour

Marks: 30

- | | |
|---|--------|
| I. Write short notes on any two of the following
(From Unit - I, III & IV) | 2x5=10 |
| II. Letter Writing. (From Unit-II) | 1x5=5 |
| III. Situational Conversation/Group Discussion.
(From Unit - II) | 1x5=5 |
| IV. Welcome Speech/Vote of Thanks. (From Unit - V) | 1x5=5 |
| V. Felicitations/Feedback. (From Unit - V) | 1x5=5 |

PART - I Tamil

இடைக்கால இலக்கியம்

பருவம்: இரண்டு

நேரம் : 5

குறியீடு: 17GT2GS02

புள்ளி : 3

நோக்கம்:

- ❖ சைவ, வைணவ அடியார்களின் பக்தியைப் பற்றி அறிந்து கொள்வர்.
- ❖ அடியார்களின் வழி இறைவனின் அருள் தன்மையைப் புரிந்து கொள்வர்.
- ❖ செய்யுள் எழுதும் முறையைக் கற்றுக் கொள்வர்.
- ❖ வெற்றிச்சிறப்பைப் போற்றும் முறையைத் தெரிந்து கொள்வர்.
- ❖ செய்யுள் வழி உரைநடையையும், புதின மரபையும் கற்றுக் கொள்வர்.

அலகு 1: சைவம்

1. திருஞானசம்பந்தர் - திருமாகறல்
 1. காலையொடுதுந்துபிகள் ...
 2. துஞ்சுநறு நீலமிருள்...
2. திருநாவுக்கரசர் - திருக்கொண்டீச்சரம்
 1. வரைகிலேன் புலன்கள் ...
 2. தொண்டனேன் பிறந்து ...
3. சுந்தரர் - திருக்காளத்தி
 1. நீறார் மேனியனே...
 2. தளிர் போல் மெல்லடியாள்...
4. மாணிக்கவாசகர் - திருவாசகம்
குயிற் பத்து

அலகு 2: வைணவம்:

1. மதுரகவியாழ்வார்- 'கண்ணினுண் சிறுத்தாம்பு' - 10 பாசுரங்கள்
2. குலசேகர ஆழ்வார் - பெருமாள் திருமொழி
வித்துவக்கோட்டு அம்மாளையே வேண்டி நின்றல் (688 முதல் 697 வரை)

அலகு 3: சிற்றிலக்கியங்கள்

1. கலிங்கத்துப்பரணி - போர் பாடியது
 1. அலைகடல் போல கிளம்பின படைகள். பா.எண். 405 - 407
 2. தம் நிழலைக் கண்டு தாமே பயந்து ஓடினர். பா.எண். 451 - 455
 3. கலிங்கம் வென்றான் கருணாகரன். பா.எண். 469 - 472
2. நந்திக் கலம்பகம்
 1. முரசு அழைக்கிறது. பா.எண்.9
 2. களிறைக் கண்டனர் கண்டபடி எண்ணினர். பா.எண். 18 - 20
 3. புருவமேறினால் புவியே பணியும். பா.எண். 30

அலகு 4: நாவல்

சொப்பன பூமியில் - திலகவதி

அலகு 5:

இலக்கணம்: யாப்பின் உறுப்புக்கள்

இலக்கிய வரலாறு - பக்தி இலக்கியம், சிற்றிலக்கியம் தொடர்பான பகுதிகள்
நாவலின் தோற்றமும் வளர்ச்சியும்.

பாடநூல்கள்:

1. தமிழ்த்துறை வெளியீடு - இடைக்கால இலக்கியம்,
ஜெயராஜ் அன்னபாக்கியம் மகளிர் கல்லூரி, பெரியகுளம்
2. எம்.ஆர்.அடைக்கலசாமி - தமிழ் இலக்கிய வரலாறு, ராசி பதிப்பகம்,
சென்னை - 73, 41 ஆம் பதிப்பு.
3. திலகவதி - சொப்பன பூமியில் , அம்ருதா பதிப்பகம், சக்தி நகர்,
போரூர், சென்னை - 116, மூன்றாம் பதிப்பு - 200

LANGUAGE THROUGH LITERATURE - II

STREAM – A

Semester: II

Hours: 6

Code : 17GE2GSA2

Credits: 3

COURSE OUTCOMES:

- ❖ Impart effective communication skills to the learners.
- ❖ Read and understand language and descriptions of topics from a variety of texts.
- ❖ Discuss and respond to the content of a text orally and in writing.
- ❖ Write effective and coherent paragraphs.
- ❖ Learn how to use the correct use of vocabulary.

UNIT I: PROSE

1 hour

- | | | |
|-------------------|---|---------------------------------|
| A.P.J Abdul Kalam | - | My Visions for India |
| A.J.Cronin | - | The Best Investment I Ever Made |

UNIT II: POETRY

1 hour

- | | | |
|---------------------|---|--------------------------------|
| Rabindranath Tagore | - | Where the Mind is Without Fear |
| George Herbert | - | The Pulley |

UNIT III: SHORT STORY

1 hour

- | | | |
|-------------------|---|-----------------------------|
| Guy de Maupassant | - | The Necklace |
| Leo Tolstoy | - | Little Girls Wiser than Men |
| R.K. Narayan | - | An Astrologer's Day |

UNIT IV: ONE ACT PLAYS

1 hour

- | | | |
|-----------------|---|---------------------------|
| Norman MckInnel | - | The Bishop's Candlesticks |
| G.B. Shaw | - | A Meeting in a Forest |

UNIT V: GRAMMAR & CREATIVE WRITING

2 hours

- Concord
- Active voice and Passive voice
- Question Tag
- Speech Writing
- Advertisement Writing
- Report Writing

COURSE BOOK::

- Limelight-2. SSK Publishers and Distributors, Chennai: 2016.
- Savarimuttu, J.S Rohan, G.Petricia Alphine Nirmala. English Grammar and usage – An ideal Companion For Advanced Learners .New Century Book House (P) Ltd, Chennai, 2016.

LANGUAGE THROUGH LITERATURE- II - 17GE2GSA2

QUESTION PATTERN

STREAM – A

Time: 3 hours

Marks : 60

- | | |
|--|---------|
| I. Choose the best answer
(from units I & II) | 10x1=10 |
| II. Answer any two of the following in a paragraph of 100 words each
(two out of four from units I & II) | 2x5=10 |
| III. Answer any two of the following in an essay of 300 words each
(two out of four from units I, II, III & IV) | 2x10=20 |
| IV. Fill in the blanks
(from Concord) | 2 |
| V. Rewrite the following sentences as directed
(from Voice) | 3 |
| V. Add Question Tags for the following | 5 |
| VI. Speech writing | 5 |
| VII. Advertisement writing (OR) Report writing | 5 |

LANGUAGE THROUGH LITERATURE - II

STREAM - B

Semester: II

Hours: 6

Code : 17GE2GSB2

Credits: 3

COURSE OUTCOMES

- ❖ Select texts, expose to a range of contexts where the language is used to meet a variety of real life and communication needs.
- ❖ equip the students in the relevant English language skills necessary for success in various competitive examination.
- ❖ train the students to use the language potentials in language skills
- ❖ Enhance language through a task- based and learner- centric syllabus
- ❖ Carry out all the LSRW skills

UNIT I: PROSE

2 hours

- Jawaharlal Nehru - The Ganga
- Bernard Shaw - How I became a public Speaker

UNIT II: POETRY

1 hour

- John Masefield - Laugh and be Merry
- Rupert Brooke - Menelaus and Helen

UNIT III: SHORT STORY

1 hour

- Oscar Wilde - The Selfish Giant
- H.H Munro (Saki) - The Story Teller

UNIT IV: COMMUNICATIVE EXPRESSIONS

1 hour

- Offering Help
- Apologizing
- Making Suggestions
- Expressing Likes and Dislikes

UNIT V: COMPOSITION AND GRAMMAR

1 hour

1. Comprehension
2. Tense
3. Concord

BOOKS FOR REFERENCE:

- Savarimuttu, J.S Rohan, G.Petricia Alphine Nirmala. *English Grammar and usage – An ideal Companion for Advanced Learners* .New Century Book House (P) Ltd, Chennai, 2016.

LANGUAGE THROUGH LITERATURE - II - 17GE2GSB2

QUESTION PATTERN

Stream-B

Time: 3 hours

Marks: 60

- I. Choose the best Answer. 10 x1=10
(from Units I & II)
- II. Answer any two of the following in a paragraph of 100 words each 2x5=10
(two out of four from Units I, II & III)
- III. Answer any two of the following in an essay of 300 words each 2x10=20
(two out of four from Units I, II & III)
- IV. Matching the expressions. 5
(from Unit IV)
- V. a) Read the passage and answer the following questions. 5
(from Unit V)
- b) Fill in the blanks with suitable tense. 10
(from Unit V)

ELECTRICITY

Semester: II

Hours: 5

Code : 17PH2MC03

Credits: 4

COURSE OUTCOMES:

- ❖ Explain the fundamental laws of electrostatics and their applications.
- ❖ Analyze the principle and types of capacitors.
- ❖ Apply the laws of electricity for electrical measurements.
- ❖ Compare the behavior of current in series and parallel electrical circuits.
- ❖ Construct and compare the working of a.c bridges.

UNIT I: ELECTROSTATICS

Flux of the electric field- Gauss law- Proof - applications of Gauss law - Electric field due to a uniformly charged sphere-Electric field due to an isolated uniformly charged Conducting sphere- at an external point-at a point inside- Electric field due to an infinite line of Charge- Electric field due to a uniform infinite cylindrical charge- Electric field due to an infinite plane sheet of charge-Field due to two parallel sheets of charge- Coulomb's theorem - Mechanical force on the surface of charged conductor-Energy stored per unit volume in a charged conductor- Coulomb's Inverse square law from Gauss law- Potential difference-Electric Potential as line integral of Electric field-Relation between electric field and electric potential- Potential at a point due to a uniformly charged conducting Sphere. **(15 Hours)**

UNIT II: CAPACITORS AND ELECTROMETERS

Principle of a capacitor- capacitance of a 1)Spherical capacitor 2) Cylindrical capacitor- 3) parallel plate capacitor- Effect of Dielectric - Capacitance of a parallel plate capacitor partly filled with a dielectric Slab- 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, Guard ring capacitor, Mica capacitor, electrolytic capacitor and variable air capacitor - Kelvin's electrometer- The Quadrant electrometer. **(15 Hours)**

UNIT III: ELECTRICAL MEASUREMENTS

Current & current density-Expression for current density - Equation of continuity- Ohm's law & electrical conductivity- Kirchoff's Laws - Applications of Kirchoff's laws to Wheatstone's network- Sensitivity of Wheatstone's Bridge - Carey foster's Bridge- Potentiometer- Principle- Calibration of ammeter, calibration of low range voltmeter and high range voltmeter - Measurement of low resistance: Kelvin double bridge method-Comparison of capacitances of two capacitors- Capacitance of a capacitor (Kelvin -Null method). **(15 Hours)**

UNIT IV: TRANSIENT CURRENT AND ALTERNATING CURRENT

RC Circuit- Measurement of high resistance by the method of leakage- LR circuit- LC circuit- Transient in series LCR circuit- Alternating currents- Complex number method for AC analysis- Impedance, Reactance and Admittance- Alternating Voltage applied across a circuit containing resistance, inductance and capacitance all in series- Sharpness of resonance in series- LCR circuit- Power in AC circuit- Parallel resonance circuit-Comparative study of a series and a parallel resonant circuit- Skin effect **(15 Hours)**

UNIT V: NETWORK THEOREMS, AC BRIDGES AND THERMO - ELECTRICIT

Thevenin's theorem-Norton's theorem-Maxwell's bridge- Anderson's Bridge- Owen's bridge-De Sauty's Bridge- Wein's Bridge- Schering bridge. Seebeck effect - Variation of thermo-emf with temperature - Peltier effect - Peltier coefficient. **(15 Hours)**

BOOKS FOR STUDY:

- 1) Electricity and Magnetism by R.Murugesan, S.Chand company Private Limited, Ram nagar, New Delhi, Reprint 2015.
- 2) Electricity and magnetism by Sathya Prakash, Pragati Prakashan edition, New market, Meerut, Twenty seventh edition , 2012.

DETAILED REFERENCES:

Electricity and Magnetism by R.Murugesan, S.Chand company Private Limited, New Delhi, Reprint 2015.

UNIT I: Chapter:2: 2.1 to 2.14, Chapter:3: 3.1 to 3.5

UNIT - II: Chapter:4: 4.1 to 4.13, Chapter 5: 5.1 and 5.2

UNIT -III: Chapter: 6: 6.1 to 6.6, Chapter: 7: 7.1 to 7.5

Electricity and magnetism by Sathya Prakash, Pragati Prakashan edition, New market, Meerut, Twenty seventh edition , 2012.

UNIT IV: Chapter: 9: 9.1 to 9.6, Chapter: 10 10.1 to 10.3, 10.9-10.14.

UNIT V: Chapter:8: 8.13 and 8.14,; Chapter:16: 16.1 to 16.7; Chapter: 17; 1.1 to 17.6.

BOOK FOR REFERENCE

1. Electricity and Magnetism by Brijlal, Subramaniam, S. Chand & Co
2. Electricity and Magnetism by Dr. K.K. Tewari, S. Chand & Co.

ASTROPHYSICS

Semester: II

Hours: 4

Code : 17PH2MC04

Credits: 3

COURSE OUTCOMES:

- ❖ Describe the solar system and various time determination
- ❖ Classify the planets and celestial bodies.
- ❖ Explain the properties of sun and its associated activities.
- ❖ Illustrate the origin and evolution of stars.
- ❖ Compare different galaxies and discuss the facts of milky way galaxy.

UNIT I: THE EARTH AS A CELESTIAL BODY

The orientation of earth in space - The celestial sphere - Terrestrial sphere - Arc and time units - Sidereal time - Apparent solar time - Mean solar time - Local time - International data line. **(12 Hours)**

UNIT II: SOLAR SYSTEM

Classification of planets - Satellites - Bode's law - Asteroids - Meteoroids - Meteor Shower - Comets - Cometary dust. **(12 Hours)**

UNIT III: SUN

Sun - physical properties - Composition - The photosphere - The Chromosphere - The Corona - Solar vibrations - Sun Spots - Sun Spot Cycle - Solar Prominences - Solar flares. **(12 Hours)**

UNIT IV: STARS

Birth of Star - Main Sequence stars - Origin of red giant stars - Color magnitude diagrams - Neutron Stars - Black holes. **(12 Hours)**

UNIT V: GALAXIES

Galaxies - Milky Way - Stellar populations - Types of galaxies - Elliptical galaxy, Spiral galaxy, Irregular galaxy, Properties - Quasars - Origin of galaxies. **(12 Hours)**

BOOK FOR STUDY:

1. Introductory Astronomy, Nicolas and Thomas, Wesley publishing company II

DETAILED REFERENCES:

UNIT I: Chapter 6: 6.1 to 6.14

UNIT II: Chapter 8: 8.1 to 8.6, Chapter 9: 9.1,9.13,9.18,9.19.

UNIT III: Chapter 10: 10.1 to 10.6,10.8,10.10,10.12,10.13.

UNIT IV: Chapter 13: 13.6 to 13.9,13.11,13.12.

UNIT V: Chapter 15: 15.1,15.3,15.12 - 15.15,15.19,15.20

BOOK FOR REFERENCE:

1. Astrophysics galaxies stars, K.D. Abhyankar, Universities press and Pvt,Ltd - India 2001.
2. S. Kumaravelu and Susheela Kumaravelu - Astrophysics - Shree Vishnu Arts, Sivakasi - 2004

ALLIED MATHEMATICS - II

Semester: II

Hours: 5

Code : 17MA2AC02

Credits: 4

COURSE OUTCOMES:

- ❖ Identify the methods of solving linear differential equations with variable coefficients.
- ❖ Solve ordinary differential equations using Laplace and inverse Laplace transform.
- ❖ Formulate and solve partial differential equations using some standard forms.
- ❖ Compute vector integration and vector differentiation.
- ❖ Apply the concept of line and surface integrals in solving double and triple integrals.

UNIT I

Homogeneous linear equations of second order - linear equations with variable coefficients - variation of parameters. **(15 Hours)**

UNIT II

Laplace transform - Definitions - Theorems on Laplace transforms - Evaluation certain integrals using Laplace Transform - inverse Laplace transform. Solving ordinary differential equations using Laplace transform. **(15 Hours)**

UNIT III

Partial differential equations - formation of PDE - methods of solving first order PDE - some standard forms. **(15 Hours)**

UNIT IV

Vector differentiation - Vector differential operator - gradient - Directional derivative - divergence and curl - Solenoidal and irrotational vectors. **(15 Hours)**

UNIT V

Vector integration - line integrals - surface integrals - theorems of Green, Gauss and Stokes (problems only). **(15 Hours)**

COURSE BOOK:

Course material compiled by the Department

BOOKS FOR REFERENCE :

1. S. Arumugam and A. Thangapandi Issac, Ancillary Mathematics Paper II, New Gamma Publishing House, 1996.
2. S. Arumugam and A. Thangapandi Issac, Ancillary Mathematics Paper III, New Gamma Publishing House, 1997.

DIGITAL PHOTOGRAPHY

Semester: II

Hours: 2

Code : 17PH2SK02

Credits: 2

COURSE OUTCOMES:

- ❖ Classify the types of camera.
- ❖ Explain the principles of Digital Camera and handle it.
- ❖ List the specifications and usages of storage cards and sensors.
- ❖ Utilize the Photoshop skills to improve the quality of the pictures
- ❖ Edit and save images in different file formats.

UNIT I

Camera - Basic parts of the camera - Three important controls of the camera - Types of camera (Box camera, TLR, SLR). **(6 Hours)**

UNIT I

Digital camera - Parts of a diagram - Working - Handling a digicam - Advantages - Disadvantages. **(6 Hours)**

UNIT III

Storage card - Compact flash, smart media secure digital (SD) - Multimedia card (elementary ideas) - Pixels - Sensors (CCD & CMOS) - Difference between digital zooming and optical zooming. **(6 Hours)**

UNIT IV

Photoshop program window (title bar, menu bar, option bar) - Image window (image title bar, status bar, rulers) - Tool box. **(6 Hours)**

UNIT V

Creating new file - Image size - Image resolution - File format (JPEG, PSD), Editing images - rotating - Cropping - Brightness and color correction. **(6 Hours)**

Practicals - 10 Hours (to be assessed at the end of the semester)

BOOK FOR STUDY

Study material prepared by Ms. T. Nithya, Assistant Professor in Physics, Jayaraj Annapackiam College for Women (Autonomous), Periyakulam.

BOOKS FOR REFERENCE:

1. Tom Ang - Fundamentals of Modern Photography - Octopus Publishing Group Ltd. - 2008.
2. Vikas Guptha - Complex DTP Course Kit - Dreamtech Press, New Delhi - 2008.
3. S. Thiagarajan - Practical Photography, VI Edition - Sultan & Chand Publications - 2006.
4. Carla Rose - Teach yourself Digital Photography in 14 days, 1st edition - Hayden Books' Techmedia, New Delhi - 1997.

பொதுத்தமிழ் - காப்பிய இலக்கியம்

பருவம்: மூன்று

நேரம்: 5

குறியீடு: 17GT3GS03

புள்ளி: 3

நோக்கம்:

- ❖ காப்பிய இலக்கியங்களின் சிறப்புக்களை அறிந்து கொள்வர்.
- ❖ ஐம்பெரும் காப்பியங்கள், பிறகாப்பியங்களின் பக்திச்சிறப்புக்களை உணர்ந்து கொள்வர்.
- ❖ அகப்புற இலக்கியச் செய்திகளை அறிந்து கொள்வர்.
- ❖ வணிகச் செய்திகளைத் தெரிந்து கொள்வர்.
- ❖ தமிழிலக்கியத்தில் காணலாகும் அறவியல், அறிவியல் செய்திகளைத் தெரிந்து கொள்வர்.

அலகு 1

- | | | |
|---------------|---|--|
| சிலப்பதிகாரம் | - | ஊர்கூழ் வரி |
| மணிமேகலை | - | உலக அறவி புக்க காதை |
| சீவகசிந்தாமணி | - | முக்தி இலம்பகம் (185 - 189) 11 பாடல்கள் சீலம், தானம் |

அலகு 2

- | | | |
|---------------|---|---|
| கம்பராமாயணம் | - | கிக்கிந்தா காண்டம் - ஆறு செல் படலம் 10 பாடல்கள் |
| தேம்பாவணி | - | மகவருள் படலம் - சூசை கைகளில் குழந்தைநாதன் |
| சீறாப்புராணம் | - | பாந்தள் வதைப் படலம் |

அலகு 3

- | | | |
|----------------|---|-----------------------------------|
| பொருளிலக்கணம் | - | அகத்திணை, புறத்திணை |
| இலக்கிய வரலாறு | - | காப்பியம் தொடர்பான இலக்கிய வரலாறு |

அலகு 4

- | | | |
|--------------------------|---|---|
| வணிகத் தமிழ் | - | சங்க இலக்கியங்கள் உணர்த்தும் வணிகச் செய்திகள் பக்.75-84 |
| வணிகக் கலைச் சொல்லாக்கம் | - | 50 சொற்கள் |

அலகு 5

- | | | |
|----------------|---|---------------------------------|
| அறிவியல் தமிழ் | - | தமிழில் அறிவியல் - பக். 27 - 40 |
|----------------|---|---------------------------------|

பாட நூல்:

தமிழ்த்துறை வெளியீடு, ஜெயராஜ் அன்னபாக்கியம் மகளிர் தன்னாட்சிக் கல்லூரி, பெரியகுளம்.

பார்வை நூல்கள்:

- 1 பா. சரவணன் (தொ.ஆ) - சிலப்பதிகாரம், சந்தியா பதிப்பகம், சென்னை-83, 2-ஆம் பதிப்பு - 1998.
- 2 இராம - லட்சுமணன் (தொ.ஆ) - மணிமேகலை, உமா பதிப்பகம், சென்னை-1, 2-ஆம் பதிப்பு - ஜனவரி - 1997.
- 3 திரு புலவர்.அரசு (உ.ஆ) - சீவகசிந்தாமணி, கழக வெளியீடு. 1967.
- 4 பேரா.அ.ச.ஞானசம்பந்தன் (ப.ஆ) - கம்பராமாயணம், நியூசெஞ்சுரி புக் ஹவுஸ், சென்னை - 98.
- 5 ந.ம.மரியஅருட்பிரகாசம் (உ.ஆ) - தேம்பாவணி, மாவிகா அச்சகம், நொபிலி வளாகம், கோ.புதூர், மதுரை.
- 6 செய்குதம்பி பாவலர் (உ.ஆ) - சீறாப்புராணம், யுனிவர்சல் பிரிண்டர்ஸ், வடக்கு உஸ்மான் சாலை, சென்னை - 1. டிசம்பர் - 2014.
- 7 ச. திருஞானசம்பந்தம் (தொ.ஆ) - யாப்பருங்கலக்காரிகை, கதிர் பதிப்பகம், திருவையாறு, முதற் பதிப்பு. 2007
- 8 எம்.ஆர். அடைக்கலசாமி - இலக்கிய வரலாறு, ராசி பதிப்பகம், முதற்பதிப்பு. 1960. சென்னை- 73.
- 9 மணவை முஸ்தபா - காலம் தேடும் தமிழ், மீரா பதிப்பகம், சென்னை-40. 1993.
- 10 பொ. மா. பழனிச்சாமி - இலக்கியக் கதிர், நியூ செஞ்சுரி புக்ஹவுஸ், சென்னை-40. முதற்பதிப்பு 2010.
- 11 நாராயண வேலுப் பிள்ளை - உரைநடைத் தமிழ் - ஐம்பெருங் காப்பியங்கள், நர்மதா பதிப்பகம், சென்னை - 1, முதற்பதிப்பு 1999.

LANGUAGE THROUGH LITERATURE - III

STREAM - A

Semester: III

Hours: 6

Code : 17GE3GSA3

Credits: 3

COURSE OUTCOMES:

- ❖ Enhance critical thinking and writing.
- ❖ understand and appreciate poetry as a literary art
- ❖ Impart effective communication skills to the learners.
- ❖ Be familiar with various writers of prose, poetry and one-act plays.
- ❖ Strengthen their writing skill.

UNIT I: PROSE

30 Hours

- | | | |
|----------------------------------|---|----------------------|
| Indian Women | - | Dr. S. Radhakrishnan |
| India Through a Traveller's Eyes | - | Pearl S. Buck |

UNIT II: POETRY

30 Hours

- | | | |
|------------------|---|---------------------|
| Lochinvar | - | Sir Walter Scott |
| On His Blindness | - | John Milton |
| Time and Love | - | William Shakespeare |

UNIT III: SHORT STORY

15 Hours

- | | | |
|-------------------------|---|----------------|
| After Twenty Years | - | O'Henry |
| The Tiger in the Tunnel | - | Ruskin Bond |
| Karma | - | Kushwant Singh |

UNIT IV: ONE ACT PLAYS

- | | | |
|--------|---|--------------|
| Hijack | - | Charles Well |
|--------|---|--------------|

UNIT V: COMPOSITION AND GRAMMAR

15 Hours

- Direct and Indirect Speech
- Degrees of Comparison
- Punctuation
- Interviewing
- Resume Writing
- E-mail Writing

COURSE BOOKS:

- 'Limelight-3', SSK Publishers and Distributors, Chennai, 2016.
- Savarimuttu, J.S Rohan, and Petricia Alphine Nirmala. *English Grammar and usage – An ideal Companion For Advanced Learners*. Chennai: New Century Book House (P) Ltd, 2016. Print.

LANGUAGE THROUGH LITERATURE - III - 17GE3GSA3

QUESTION PATTERN

STREAM A

Time: 3 Hours

Marks: 60

- | | |
|--|---------|
| I. Choose the best answer
(From Unit I & II) | 10x1=10 |
| II. Answer any two of the following in a paragraph of 100 words each
(Two out of 4 from Unit I & II) | 2x5=10 |
| III. Answer any two of the following in an essay of 300 words each
(Two out of 4 from Unit I, II, III & IV) | 2x10=20 |
| IV. Rewrite as directed (From Unit V) | |
| a) Direct/ Indirect speech. | 2x1=2 |
| b) Degrees of Comparison | 3x1=3 |
| V. Rewrite with right punctuation
(From Unit V) | 5x1=5 |
| VI. Answer the following (From Unit V) | 2x5=10 |
| 1. Resume writing | |
| 2. Email writing | |

LANGUAGE THROUGH LITERATURE - III

STREAM B

Semester: III

Hours: 6

Code : 17GE3GSB3

Credits: 3

COURSE OUTCOMES:

- ❖ Use language for aesthetic effect.
- ❖ Arrange and apply activities to improve their skills.
- ❖ Develop a positive attitude towards language learning.
- ❖ Bring out oral practice effectively.
- ❖ Interact and facilitate language learning process.

UNIT I: PROSE

30 Hours

My Greatest Olympic Prize	-	Jesse Owens
When You Dread Failure	-	A. J. Cronin

UNIT II: POETRY

15 Hours

Good Bye Party To Miss Pushpa T.S	-	Nissim Ezekiel
A Bird Came Down the Walk	-	Emily Dickson

UNIT III: ONE - ACT PLAY

15 Hours

Bishop's Candle Sticks	-	Norman Mckinnel
Never Never Nest	-	Cedric Mount
The Pie and the Tart	-	Hugh Chesterton

UNIT IV: COMMUNICATION SKILLS

15 Hours

CONVERSATIONS:

1. At a bank
2. In the library
3. Reservation status
4. At the sweet shop
5. At the poly clinic
6. On the bus

UNIT V: COMPOSITION

15 Hours

1. Writing Advertisement
2. Story Completion

GRAMMAR

1. Question with answers 'Yes' or 'No'.
2. Active Voice & Passive Voice

BOOKS FOR REFERENCE:

1. Siva, Anthony, Dr. Gunasekaran. "Six One-Act Plays". Chennai: Pavai Publications, Royapettah, 2009.
2. Kaleem, Nafeesa. "Six One Act-Plays". Chennai: Anu Chitra Publications, West Mambalam, 1985.
3. Effective Communication in English. Board Of Editors, 2013.
4. Savarimuttu, J.S Rohan, and Petricia Alphine Nirmala. *English Grammar and usage – An ideal Companion For Advanced Learners* . Chennai: New Century Book House (P) Ltd, 2016.Print.

LANGUAGE THROUGH LITERATURE - III - 17GE3GSB3

STREAM B

QUESTION PATTERN

Time: 3 Hours

Marks: 60

1. Choose the best answer (from Unit I & II) 10 x 1 = 10
2. Match the following (from Unit I based on vocabulary) 5 x 1 = 5
3. Answer any two of the following in a paragraph of 100 words each. 2 x 5 = 10
(Two out of 4 from unit I, II & III)
4. Answer any two of the following in an essay of 300 words each 2 x 10 = 20
(Two out of 4 from unit I, II & III)
5. Answer any one of the following questions. 5
(One out of 3 from unit IV)
6. Answer any one of the following questions. (unit-V) 5
 - a) Writing Advertisement

Or

 - b) Story Completion
7. Rewrite as directed: (unit-V)
 - a) Questions with answers 'Yes' / 'No'. 3X1=3
 - b) Active Voice and Passive Voice. 2X1=2

OPTICS AND SPECTROSCOPY

Semester: III

Hours: 4

Code : 17PH3MC05

Credits: 4

COURSE OUTCOMES:

- ❖ Deep knowledge in physical and classical optics.
- ❖ Concept of polarization and its applications is introduced.
- ❖ Basic concepts of molecular spectroscopy is known.

UNIT I: INTERFERENCE

Light waves - Superposition of waves - Interference - Conditions for interference - Interference due to reflected light - Conditions for maxima and minima - Interference due to transmitted light - Wedge shaped film - Colours in thin films - Newton's rings - Michelson's interferometer - Applications of Michelson's interferometer. (12 Hours)

UNIT II: FRESNEL DIFFRACTION

Huygen's - Fresnel's theory - Fresnel's assumptions - Rectilinear propagation of light - Zone plate - Action of Zone plate - Differences - Fresnel and Fraunhofer types of diffraction - Diffraction at a circular aperture - Narrow slit. (12 Hours)

UNIT III: FRAUNHOFER DIFFRACTION

Fraunhofer diffraction at a Single slit - Circular aperture - Plane diffraction grating - Theory - Determination of wavelength of light - Dispersive power of grating - Resolving power - Rayleigh's criterion - Criterion for resolution - Resolving power of a prism and grating. (12 Hours)

UNIT IV: POLARIZATION

Natural light - Polarized light - Calcite crystal - Optic axis - Principal section - Double refraction - Huygen's explanation - Positive and negative crystals - Phase difference between o-ray and e-ray - Types of polarized light - Quarter wave plate - Half wave plate - Production and detection of polarized lights - Optical activity - Fresnel's theory - Experimental verification - Specific rotation - Polarimeter - LCD. (12 Hours)

UNIT V: SPECTROSCOPY

Molecular spectra - Pure rotational spectra of a molecule - Vibration-rotation spectra of a molecule - Electronic spectra of a molecule - Rayleigh's scattering - Raman effect - Experimental study of Raman effect - Quantum theory of Raman effect - Applications - Laser Raman spectroscopy - Fluorescence and Phosphorescence. (12 Hours)

COURSE BOOKS:

1. Subramaniam and Brijlal - A Text book of Optics, 23rd edition - S. Chand & Company, New Delhi - 2006.
2. R. Murugesan & Kiruthiga Sivaprasath - Modern Physics, 17th Edition - S. Chand & Company, New Delhi - 2013.

UNIT I : Chapter 14: 14.1-14.4, 14.7

Chapter 15: 15.2.1-15.2.3, 15.3, 15.5-15.6.7-15.7-15.8.5 (Book 1)

UNIT II : Chapter 17: 17.1-17.8.2, 17.11 (Book 1)

UNIT III : Chapter 18: 18.2-18.2.1, 18.3, 18.7-18.7.8

Chapter 19: 19.1-19.2, 19.6, 19.11-19.12 (Book 1)

UNIT IV: Chapter 20: 20.1-20.4, 20.8-20.9.2, 20.13, 20.15, 20.17.1-20.20, 20.24
20.26, 20.30 (Book 1)

UNIT V : Chapter 19: 19.6 -19.15

Chapter 21: 21.2 (Book 2)

BOOKS FOR REFERENCE:

1. R. Murugesan and Kiruthiga Sivaprasath - Optics and spectroscopy - S. Chand Publishing Group, New Delhi - 2010.
2. Ghatak and Thiagarajan - Optical Electronics - Cambridge University Press - 2011.
3. G. Aruldhas - Molecular Structure and Spectroscopy, 12th edition - PHI Learning Pvt. Limited - 2011.

LASER AND FIBRE OPTICS

Semester: III

Hours: 3

Code : 17PH3MC06

Credits: 2

COURSE OUTCOMES:

- ❖ Familiarization of light waves.
- ❖ Clear understanding of Laser and Fibre optics.
- ❖ Vivid knowledge of holography.
- ❖ Deep insight into optical fibre communication.

UNIT I: PROPAGATION OF LIGHT WAVES

Maxwell's equations - Physical Significance of Maxwell's equations - Electromagnetic waves - Constitutive relations - Wave equation for free-space - Velocity of the electromagnetic wave - Relation between the refractive index and relative permittivity of a medium - Energy density, the pointing vector and intensity. **(9 Hours)**

UNIT II: LASERS

Attenuation of light in an optical medium - Thermal equilibrium - Interaction of light with matter - Einstein coefficients and their relations - Light amplification- Meeting the three requirements- Components of laser- Lasing action - Principal pumping schemes- Role of resonant cavity -Modes of the laser beam- Transverse modes - Types of lasers- Semiconductor laser - Laser beam characteristics - Applications. **(9 Hours)**

UNIT III: HOLOGRAPHY

Principle of Holography- Coaxial holography - Off-axis holography - Theory - Holograms - Important properties of hologram - Classification of holograms - Applications - Medical applications of holography. **(9 Hours)**

UNIT IV: FIBRE OPTICS

Optical fibre- Total internal reflection - Propagation of light through an optical fibre- Fractional refractive index change - Numerical aperture - Skip distance and number of total internal reflections - Modes of propagation - Types of rays - Classification of optical fibres - The three types of fibres : Single mode step index fibre, Multimode step index fibre, Graded index (GRIN) fibre- Materials: All glass fibres, All plastic fibres, PCS fibres - Losses in optical fibre: Attenuation - Applications - Fibre optic communication system - Merits of optical fibres - Fibre optic sensors. **(9 Hours)**

UNIT V: NON-LINEAR OPTICS

Wave propagation and momentum conservation - Linear medium - Nonlinear Polarization - Second Harmonic Generation - Phase Matching - Sum and Difference Generation - Parametric oscillation - Self-Focussing of light - Stimulated Raman Scattering. **(9 Hours)**

COURSE BOOK:

Dr. N. Subramaniam, Brij Lal and Dr. M. N. Avadhanulu - A Text Book of Optics - S. Chand & Company Pvt. Ltd. - Reprint 2015.

UNIT I : Chapter 13: 13.1, 13.2, 13.2.1, 3.2.2, 13.3, 13.4, 13.4.1, 13.4.2, 13.7

UNIT II : Chapter 22: All sections

UNIT III : Chapter 23: All sections

UNIT IV : Chapter 24: 24.1-24.12.3, 24.15, 24.15.1, 24.20-24.23.4

UNIT V : Chapter 25: All sections

BOOKS FOR REFERENCE:

1. Dr. N. Subramaniam, Brij Lal and Dr. M. N. Avadhanulu - A Text Book of Optics - S. Chand & Company Pvt. Ltd. - Reprint 2013.
2. A.B.Gupta-Modern optics - Publisher: Arunabha Sen, Books and Allied (P) Ltd, 8/1 Chintamani Das Lane, Kolkata 700009 - Fifth edition 2015.
3. Devaraj Singh - Fundamentals of optics-©2010 by PHI Learning Limited, New Delhi.

MAJOR PRACTICAL - II

Semester: III

Hours: 3

Code : 17PH3CP02

Credits: 2

LIST OF PRACTICALS

1. Spectrometer - Refractive index and Dispersive power of the prism
2. Spectrometer - Normal incidence and Dispersive power of the grating
3. BG - Comparison of Mutual inductances of two coils
4. Anderson's Bridge
5. Field along the axis of a coil
6. Air wedge
7. Melde's String
8. Carey Foster's bridge -Resistance and Resistivity

ALLIED: GENERAL CHEMISTRY-I

Semester: III

Hours: 3

Code : 17CH3AC01

Credits: 3

COURSE OUTCOMES:

- ❖ Acquire knowledge about the development of modern periodic table
- ❖ Explain the classification of elements in periodic table
- ❖ Associate the periodic properties with atomic number
- ❖ Describe the different types of bonding
- ❖ Deduce the molecular formula of organic compounds
- ❖ Recognize the separation techniques using chromatography
- ❖ Gain knowledge about the fundamentals of chemical kinetics

UNIT I: PERIODIC TABLE

Modern periodic table - groups and periods - classification of elements on the basis of electronic configuration - properties of elements: atomic radii, ionic radii, size of atoms and ions, ionization energy and electronegativity. **(9 Hours)**

UNIT II: CHEMICAL BONDING

Definition, general properties of electrovalent and covalent compounds - differences between electrovalent and covalent compounds - structure of NaCl, diamond and graphite - hydrogen bonding: definition, classification and applications of hydrogen bonding

Shapes of atomic orbitals - difference between orbit and orbital -s-s, s-p and p-p overlap - difference between sigma and pi bonds - Valence Bond theory (VB) - postulates of V.B theory - application for the formation of simple molecules such as H₂, HF, Cl₂. **(9 Hours)**

UNIT III: DETECTION OF ELEMENTS

Detection of nitrogen in organic compounds - empirical formula - molecular formula - structural formula - calculation of empirical and molecular formula from percentage composition.

ORGANOMETALLIC COMPOUNDS

Definition - synthetic applications of Grignard reagent. **(9 Hours)**

UNIT IV: CHROMATOGRAPHY

Definition - classification - techniques and applications of column chromatography, paper chromatography and Thin Layer Chromatography (TLC) - applications of chromatography.

THERMAL ANALYSIS

Thermo Gravimetric Analysis (TGA) - introduction - thermogravimetric curve of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ - applications of thermogravimetry - Differential Thermal Analysis (DTA) - elementary idea only. **(9 Hours)**

UNIT V: CHEMICAL KINETICS

Rate of a chemical reaction - rate law- rate constant - order of a reaction - molecularity of a reaction - difference between order and molecularity - derivation of the first order rate constant (k) - characteristics of first order reactions - half life period - enzyme kinetics (elementary idea) - characteristics of enzyme catalyzed reactions. **(9 Hours)**

COURSE BOOK:

Study material prepared by the department: Allied: General Chemistry - I, 2015.

BOOKS FOR REFERENCE:

1. P.L. Soni and H.M Chawla, Text Book of Organic Chemistry, Sultan Chand and Sons, Sultan Chand and Sons Educational Publishers, Reprint, 2014. **(Unit IV)**
2. B.R. Puri, L.R. Sharma and K.C. Kalia, Principles of Inorganic Chemistry, Milestone Publishers 32nd edition, 2015. **(Unit I and II)**
3. P.L. Soni and M. Katyal, Test book of Inorganic chemistry, Sultan Chand and Sons, Reprint, 2013. **(Unit III and V)**

ALLIED PRACTICAL I: ORGANIC ANALYSIS

Semester: III

Hours: 2

Code : 17CH3AP01

Credit: 1

COURSE OUTCOMES:

- ❖ Apply the techniques of micro qualitative analysis to organic substances
- ❖ Detect the presence of special element, nitrogen
- ❖ Identify the functional groups in organic substance
- ❖ Demonstrate all the reactions in organic analysis
- ❖ Apply skills on systematic microscale analysis

Microscale Analysis of the Organic Compounds containing one functional

group: Primary amines, amides (mono and di), carbonyl compounds, carbohydrates, esters, carboxylic acids (mono and di) and phenols. The compound is identified as aliphatic or aromatic, saturated or unsaturated, special elements present /absent and nature of functional group (Preparation of solid derivative is not required).

BOOK FOR REFERENCE:

Practical manual prepared by the Chemistry Department

ENVIRONMENTAL STUDIES

Semester: III

Hours: 2

Code : 17ES3GS01

Credits: 2

COURSE OUTCOMES:

- ❖ Recall the components of our planet earth.
- ❖ Elucidate and understand the importance of Natural resources.
- ❖ Summarise the energy status of the environment.
- ❖ Acquire knowledge on the conservation of our environment.
- ❖ Analyse the significance of water and climate towards sustainable development.

UNIT I: MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Definition, scope and importance - Need for public awareness **(2 Hours)**

UNIT II: NATURAL RESOURCES

Classification of Resources: Renewable and non - renewable resources - Forest resources, water resources, mineral resources, food resources, energy resources, Land resources - associated problems; Role of an individual in conservation of natural resources - Equitable use of sources for sustainable life styles. **(8 Hours)**

UNIT III: ECOSYSTEMS

Concept of an ecosystem - Structure and function of an ecosystem - producers, consumers and decomposers - Energy flow in the ecosystem - Food chains, food webs and ecological pyramids - Introduction, types, characteristic features, structure and function of the following Eco system: Forest, grass land, desert and aquatic. **(6 Hours)**

UNIT IV: ENVIRONMENTAL POLLUTION

Definition, Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards, Solid waste management, Role of an individual in prevention of pollution. **(8 Hours)**

UNIT V: SOCIAL ISSUES AND THE ENVIRONMENTS

From unsustainable to sustainable development - Urban problems related to energy Water conservation, rain water harvesting, water shed management, Resettlement and rehabilitation of people, its problem and concerns, case studies, Environmental ethics, Climate change, global warming, acid rain and ozone layer depletion, nuclear accidents and holocaust, case studies. Waste land reclamation. Environmental protection act, air act, water act, wild life protection act.

(6 Hours)

FIELD WORK

Visit to local area to document environmental assets- river/forest/ grassland/hill/ mountain.

COURSE BOOK:

Murugesan, R., (2007). Environmental science and Engineering, Millenium publication, Madurai.

UNIT I : Section - 1.1 & 1.2

UNIT II : Section - 1.3 to 1.37

UNIT III : Section - 2.1 to 2.7 & 2.10 to 2.27

UNIT IV : Section - 3.1 to 3.37

UNIT V : Section - 4.1 to 4.17

Note: Tamil Version for Tamil Literature and History Tamil Medium Students.

OFFICE AUTOMATION (Stream B)

Semester: III

Hours: 2

Code : 17AE3SK03

Credits: 2

LEARNING OUTCOME:

- ❖ Handle the tools of MS office
- ❖ Create animations, presentations and documents.
- ❖ Prepare spreadsheets using MS Excel for various applications.
- ❖ Develop computational skills
- ❖ Use DTP skills to become an Entrepreneur.

MICROSOFT OFFICE 2017

MS WORD:

1. Formatting
2. Table Creation
3. Mail Merge
4. Preparation of advertisement using drawing tool

MS EXCEL:

5. Excel Function (statistical)
6. Data filtering and sorting
7. Mark sheet, pay bill Preparation
8. Data analysis using chart

MS ACCESS:

9. Database Creation & Mark Sheet Preparation
10. Forms and Reports Creation

MS POWERPOINT:

11. Theme - based presentation with Animation Effects

MS OUTLOOK:

12. Personalized Email and Account creation, sending mails with attachments

COURSE BOOK:

Study Material prepared by Mathematics, Physics and Chemistry.

BOOKS FOR REFERENCE:

1. D. P. Nagpal - Computer Fundamentals - S. Chand & Company Ltd, New Delhi - 1999.
2. V. Rajaraman - Fundamentals of Computers, 3rd edition - Prentice Hall of India Private Limited - 2001.
3. B. Ram - Computer Fundamentals, 3rd edition - New Age International Pvt. Ltd - 2010.

பொதுத்தமிழ் - பழந்தமிழ் இலக்கியம்

பருவம்: நான்கு

குறியீடு: 17GT4GS04

நோக்கம்:

- ❖ பழந்தமிழ் இலக்கிய வளங்களை அறிந்து கொள்வர்.
- ❖ பழந்தமிழ் இலக்கியங்களின் சமூகநிலையைப் புரிந்து கொள்வர்.
- ❖ பழந்தமிழ் இலக்கியத்தின் தனித்தன்மையை அறிந்து கொள்வர்.
- ❖ பழந்தமிழ் இலக்கியத்தில் காணப்படும் நயங்களைத் தெரிந்து கொள்வர்.
- ❖ பழந்தமிழ் இலக்கிய ஆசிரியர்களை அடையாளம் காண்பர்.

அலகு 1: சங்க இலக்கியங்கள் - எட்டுத்தொகை

1. நற்றிணை (2 பாடல்கள்)

“சுரும்புண விரிந்த கருங்கால்...” - குறிஞ்சி

“தொல்கவின் தொலையத்...” - பாலை

2. குறுந்தொகை (4 பாடல்கள்)

“மாசறக் கழீஇய...” - குறிஞ்சி

“ஐயவி யன்ன சிறுவீ...” - மருதம்

“கடும்புனல் தொடுத்த...” - நெய்தல்

“முட்டு வேன்கொல்...” - பாலை

3. கலித்தொகை (1 பாடல்)

“வேங்கை தொலைத்த வெறிபொறி.....”- குறிஞ்சிக்கலி தோழிகூற்று

4. அகநானூறு (2 பாடல்கள்)

“வயங்கு வெள்.....” குறிஞ்சி

“கார்பயம் பொழிந்த.....” முல்லை

5. புறநானூறு (2 பாடல்கள்)

“கழிந்தது பொழிந்தென.....”

“பன்மீன் இமைக்கும்.....”

அலகு 2: பத்துப்பாட்டு

முல்லைப்பாட்டு முழுவதும்

அலகு 3: நீதி நூல்கள்

1. திருக்குறள் : அறத்துப்பால் - பொறையுடைமை, அழுக்காறாமை

2. நாலடியார் : அறத்துப்பால்

துறவு: “விளக்குப்புக.....”

ஈகை: “இல்லா விடத்தும்.....”

அலகு 4: இலக்கணம்

வல்லெழுத்து மிகும் இடம், மிகா இடம்

இலக்கிய வரலாறு

சங்க காலம், சங்கம் மருவிய காலம் தொடர்பான இலக்கிய வரலாறு.

நேரம்: 5

புள்ளி: 4

அலகு 5: வணிகத்தமிழ் -அறிவியல் தமிழ்

கடல் நாகரிகம் - கடல் வாணிபம் - பக்: 233-241

உடல் அறிவியல் - பக்: 75-88

பாடநூல் :

தமிழ்த்துறை வெளியீடு, ஜெயராஜ் அன்னபாக்கியம் மகளிர் கல்லூரி. பெரியகுளம்.

பார்வைநூல்கள்:

1. வ.த. இராமசுப்பிரமணியம் (உ.ஆ) - நற்றிணை, திருமுகள் நிலையம், சென்னை-17.
முதற்பதிப்பு - 2009.
2. புலவர் துரைஇராசாராம் (உ.ஆ) - குறுந்தொகை,
முதற்பதிப்பு 2008.
திருமுகள் நிலையம், சென்னை - 17.
3. முனைவர்.அ.விசுவநாதன் (உ.ஆ) - கலித்தொகை,
நியூசெஞ்சரி புக்ஹவுஸ், சென்னை - 98.
முதற்பதிப்பு 2007.
4. வ.த. இராமசுப்பிரமணியம் (உ.ஆ) - அகநானூறு,
திருமுகள் நிலையம், சென்னை -17.
முதற்பதிப்பு 2009.
5. வ.த. இராமசுப்பிரமணியம் (உ.ஆ) - புறநானூறு,
திருமுகள் நிலையம், சென்னை - 17.
முதற்பதிப்பு 2008.
6. முனைவர்.இரா.மோகன் (உ.ஆ) - பத்துப்பாட்டு,
பாவைபிரிண்டர்ஸ், சென்னை 14,
முதற்பதிப்பு - 2004.
7. எஸ். கௌமாரீஸ்வரி (ப.ஆ) - திருக்குறள் பரிமேலழகர் உரை
சாரதா பதிப்பகம், சென்னை - 600 014,
முதற்பதிப்பு - 2002.
8. எஸ். கௌமாரீஸ்வரி (ப.ஆ) - பதினெண்கீழ்க்கணக்கு நூல்கள்
சாரதா பதிப்பகம், சென்னை - 14,
முதற்பதிப்பு - மார்ச் - 2009.
9. எம்மார். அடைக்கலசாமி - தமிழ் இலக்கிய வரலாறு
ராசிபதிப்பகம்,
சென்னை - 73, பதிப்பு 35. 2002.
10. மாத்தளை சோமு - வியக்கவைக்கும் தமிழர் அறிவியல்,
உதகம், திருச்சி
முதற்பதிப்பு 2005.
11. மணவை முஸ்தபா - காலம் தேடும் தமிழ்,
மீரா பதிப்பகம், சென்னை - 40, 1993.

LANGUAGE THROUGH LITERATURE - IV

STREAM A

Semester: IV

Hours: 6

Code : 17GE4GSA4

Credits: 4

COURSE OUTCOMES:

- ❖ Employ knowledge of literary traditions to produce imaginative writing
- ❖ Analyze and interpret literature
- ❖ Develop their English language skills continuously
- ❖ Develop their appreciation for the purpose and pleasure of poetry and drama
- ❖ Conduct self-evaluation about their own language learning processes

UNIT I: PROSE

30 Hours

1. Character is Destiny - S.Radhakrishnan
2. Why the Sea is Salt - Great Legends

UNIT II: POETRY

30 Hours

1. La Belle Dame Sans Merci - John Keats
2. The Last Ride Together - Robert Browning.
3. Goodbye Party for Miss. Puspha T.S - Nissim Ezekiel

UNIT III: SHORT STORY

15 Hours

1. Valiant Vicky - Flora Annie Steel
2. The Conjuror's Revenge - Stephen Leacock

UNIT IV: ONE ACT PLAYS

1. Mother's Day - J.B. Priestly
2. The Game of Chess - Kenneth Sawyer Goodman

UNIT V: WRITING SKILLS

15 Hours

1. Minutes Writing
2. Book Review
3. Essay Writing
4. Prepositions
5. Conjunction

COURSE BOOKS:

1. Limelight - 4 (An Anthology of Prose, Short Story and One Act Plays)
2. Savarimuttu, J.S Rohan, and Petricia Alphine Nirmala. *English Grammar and usage – An ideal Companion For Advanced Learners*. Chennai: New Century Book House (P) Ltd, 2016.Print.

LANGUAGE THROUGH LITERATURE - IV-17GE4GSA4

STREAM A

QUESTION PATTERN

Time: 3 Hours

Marks: 60

- I. Choose the best answer 10X1=10
(From Unit I and II)
- II. Answer any two of the following in a Paragraph of 100 words each. 2X5=10
(Two out of four from Unit I, & II)
- III. Answer any two of the following in an essay of 300 words each. 2X10=20
(Two out of four from Unit I , II, III & IV)
- IV. Answer any two of the following questions from unit V 2x5=10
1. Minutes Writing
 2. Book Review
 3. Essay Writing
- V. Fill in the blanks.
1. Prepositions 5x1=5
 2. Conjunction 5x1=5

LANGUAGE THROUGH LITERATURE - IV
STREAM B

Semester: IV

Hours: 6

Code : 17GE4GSB4

Credits: 4

COURSE OUTCOMES:

- ❖ Read and understand language and description of topics from a variety of texts.
- ❖ Write describing impressions, feelings and experiences and to write about familiar topics.
- ❖ Understand familiar topics and be able to understand speech on a variety of subjects such as work, school, leisure and the main points when listening to current affairs.
- ❖ Talk about familiar topics and to give explanations and reasons for opinions, past actions and future plans.
- ❖ Understand and apply in everyday contexts, including the use of nouns, adjectives, verbs, prepositions, tenses, sentence structure and phrases.

UNIT I: PROSE

30 Hours

1. C. Rajagopalachari - First Anniversary of Gandhiji's Death
2. J.C. Hill - Good Manners
3. James Thurber - University Days

UNIT II: POETRY

15 Hours

1. Sarojini Naidu - Conquest
2. D.H. Lawrence - Money Madness
3. Robert Frost - Mending Wall

UNIT III: DRAMA

15 Hours

Select Scenes from "The Merchant of Venice" by William Shakespeare.

1. The Opening Scene
2. The Casket Scene
3. The Trial Scene

UNIT IV: GRAMMAR

15 Hours

1. Question Tag
2. Negative Sentences

UNIT V: COMMUNICATION SKILLS

15 Hours

Information Transfer and E Language Communication

COURSE BOOKS:

1. "Variety of English for Effective Communication" - Book IV - Ed. Dr. A. Shanmugakani, Madurai: Manimekala Publishing House, 2012.
2. Savarimuttu, J.S Rohan, and Petricia Alphine Nirmala. *English Grammar and usage – An ideal Companion For Advanced Learners*. Chennai: New Century Book House (P) Ltd, 2016. Print.

LANGUAGE THROUGH LITERATURE - IV - 17GE4GSB4

STREAM B

QUESTION PATTERN

Time: 3 Hours

Marks: 60

- | | |
|---|---------|
| I. Choose the best answer
(From Unit I and II) | 10x1=10 |
| II. Match the Following
(Vocabulary items from Unit I) | 5x1=5 |
| III. Answer any two of the following in a Paragraph of 100 words each.
(Two out of four from Unit I, II & III) | 2x5=10 |
| IV. Answer any two of the following in an essay of 300 words each
(Two out of four from Unit I, II & III) | 2x10=20 |
| V. Rewrite the following as directed. (From Unit IV) | |
| 1. Question Tag | 2X1=2 |
| 2. Negative Sentences | 3X1=3 |
| VI. Answer the following questions
(From unit V) | 2x5=10 |
| a) Interpreting charts and making observations. | |
| b) Reading passage and putting the information in graphic form. | |

ELECTROMAGNETISM

Semester: IV

Hours: 5

Code : 17PH4MC07

Credits: 4

COURSE OUTCOMES:

- ❖ Describe the magnetic effects of electric currents.
- ❖ Relate self induction and mutual induction and determine them.
- ❖ Discuss various a.c circuits and their applications.
- ❖ Classify the magnetic properties of materials and related theories.

UNIT I: MAGNETIC EFFECT OF ELECTRIC CURRENT

Biot-Savart Law - Torque on a current loop in a uniform magnetic field - moving coil Ballistic Galvanometer - Current & Voltage sensitiveness - Measurement of Charge sensitiveness - Absolute capacity of a condenser - Comparison of two capacitances - Comparison of Emf's of two cells. **(15 Hours)**

UNIT II: ELECTROMAGNETIC INDUCTION

Faraday's laws of electromagnetic induction - Vector form - Self-induction - Self inductance of a long solenoid - Determination of self-inductance by Rayleigh's method - Determination of self-inductance by Anderson's bridge method - Maxwell's bridge - Owen's bridge - De-Sauty's Bridge. **(15 Hours)**

UNIT III: MUTUAL INDUCTION

Mutual inductance - Mutual induction between two co-axial solenoids - Experimental determination of mutual inductance - Co-efficient of coupling - Earth inductor - Search-coil method of measuring magnetic field induction - Determination of ballistic constant K using solenoid inductor - To find the constant K of a B.G. using Hibbert's magnetic standard - Ruhmkorff's induction coil - Eddy currents. **(15 Hours)**

UNIT IV: ALTERNATING CURRENT & MAXWELL'S EQUATION

EMF induced in a coil rotating in a magnetic field - AC circuit containing resistance inductance and capacitance in series - LCR circuit - Parallel resonant circuit - Power in ac circuit containing resistance, inductance and capacitance - Wattless current - Choke coil - Transformer - Skin effect - Displacement current - Maxwell's equation in material media - Plane electromagnetic wave in free space - Velocity of light - Poynting vector - Hertz experiment for production and detection of electromagnetic waves. **(15 Hours)**

UNIT V: MAGNETIC PROPERTIES OF MATERIALS

Magnetic induction - Magnetization - Relation between the three magnetic vectors B, H and M - Magnetic susceptibility - Magnetic permeability - Properties of Dia, Para, Ferro materials - Anti-ferro magnetism and ferri magnetism - Electron theory of magnetism - Langevin's theory of diamagnetism - Weiss's theory of Ferro magnetism. **(15 Hours)**

COURSE BOOK:

R. Murugesan - Electricity and Magnetism - S. Chand Company, NewDelhi - 2013.

UNIT I : Chapter 10: 10.1, 10.2, 10.10 - 10.16

UNIT II : Chapter 11: 11.1 - 11.6 & Chapter 19: 19.2 - 19.4

UNIT III : Chapter 11: 11.7 - 11.16

UNIT IV : Chapter 13: 13.1 - 13.8 & Chapter 16: 16.1 - 16.6

UNIT V : Chapter 15: 15.1 - 15.13

BOOKS FOR REFERENCE:

1. Brijlal and Subramanyam - Electricity and Magnetism - S. Chand & Co. - 2005.
2. Basudev Ghosh - Foundations of Electricity and Magnetism - Books and Allied (P) Ltd., Kolkata - 2012.

MAJOR PRACTICAL - III

Semester: IV

Hours: 3

Code : 17PH4CP03

Credits: 2

COURSE OUTCOMES:

- ❖ Determine the dimensions of the material using diffraction pattern.
- ❖ Determine optical constants through experiments based on properties of light.
- ❖ Determine the thermal properties of materials.
- ❖ Make circuits to determine the self inductance of the coil.

LIST OF PRACTICALS

1. Spectrometer - i-d curve
2. Spectrometer - i-i' curve
3. Newton's Rings
4. Potentiometer- High range voltmeter
5. Lee's Disc- Thermal conductivity
6. De Sauty's bridge
7. Copper Voltammeter-Charge of an electron
8. Temperature coefficient of resistance of the given coil.

HEAT AND THERMODYNAMICS

Semester: IV

Hours: 4

Code : 17PH4CE1A

Credits: 3

COURSE OUTCOMES:

- ❖ Identify and analyze the behavior of ideal and real gases
- ❖ Explain the various transport phenomena
- ❖ Apply the laws of thermodynamics to heat engines
- ❖ Explain and evaluate entropy changes for various thermodynamic systems
- ❖ Describe thermo dynamical relations.

UNIT I: IDEAL AND REAL GASES

Ideal gases : Kinetic model - pressure exerted by a gas - RMS speeds of molecules Boyle's law - Energy per unit volume of a gas - Gas equation - Gas laws. Real gases : Critical Constants - Behaviour of gases at high pressure - Boyle's Temperature - Vander Waal's Equation of state - Constants and Limitations - Critical Co-efficient - Joule Thomson Effect - Porous Plug Experiment - Regenerative Cooling - Joule-Kelvin Effect - Relation between Boyle's Temperature, Temperature of Inversion and Critical Temperature.

(12 Hours)

UNIT II: TRANSPORT PHENOMENA

Molecular collisions - Mean free path - Expression, Variation with Temperature and Pressure - Sphere of influence - Collision cross-section - Viscosity - Effect of Temperature and Pressure - Thermal conductivity - Effect of Temperature and Pressure - Relation with viscosity - Largest thermal conductivity of hydrogen - Diffusion - Effect of Temperature and Pressure - Relation with viscosity.

(12 Hours)

UNIT III: THERMODYNAMIC SYSTEM

Zeroth law of thermodynamics - concepts of heat - Thermodynamics Equilibrium - Work: A Path Dependent Function - Internal Energy (U) - First law of Thermodynamics - Internal Energy as a State Function - Specific Heats of a Gas - Applications of first law of thermodynamics - Indicator diagram - Work done during an Isothermal and Adiabatic process - Slopes of Adiabatics and Isothermals - Relation between Adiabatic and Isothermal Elasticities - Reversible and Irreversible Process - Heat engines - Definition of Efficiency - Carnot's Cycle - Carnot's Engine and Refrigerator - Co-efficient Performance - Second law of Thermodynamics - Carnot's theorem. **(12 Hours)**

UNIT IV: ENTROPY

Concept of Entropy - Change in Entropy - Adiabatic Process, Reversible and Irreversible Cycles - Principle of Increase of Entropy - Temperature-Entropy diagram - Physical Significance - Entropy of a Perfect Gas and Steam - Thermodynamic Scale - Identity of Perfect Gas Scale and Absolute Scale - Third law of thermodynamics - Zero point energy - Negative temperature.

(12 Hours)

UNIT V: THERMODYNAMICAL RELATIONSHIPS

Thermodynamical variables - Extensive and Intensive Variables - Maxwell's thermodynamical equations - Applications - Thermodynamic Potentials - Significance - Relation of Thermodynamical Potentials with their variables - Relations between C_p , C_v and μ - Tds Equations - Clapeyron's Latent Heat Equation - Entropy and the Second law of thermodynamics - Joule-Kelvin Coefficient - Equilibrium between Liquid and its Vapour - First and Second Order Phase Transitions - Emf of a reversible cell.

(12 Hours)

COURSE BOOK:

Brijlal, N. Subrahmanyam and P. S. Hemne - Heat, Thermodynamics and Statistical Physics (Reprint 2014) - S. Chand & Company Pvt. Ltd., New Delhi.

UNIT I : Chapter 1: 1.3 to 1.9, Chapter 2: 2.4 to 2.13, 2.20 to 2.25

UNIT II : Chapter 3: 3.1 to 3.18

UNIT III : Chapter 4: 4.1 to 4.15, 4.20 to 4.29

UNIT IV : Chapter 5: 5.1 to 5.17

UNIT V : Chapter 6: 6.1 to 6.11, 6.15 to 6.20

BOOKS FOR REFERENCE:

1. D.S. Mathur - Heat and Thermodynamics - Sultan Chand & Sons, New Delhi - 2008.
2. A. K. Saxena and C. M. Tirwari - Heat and Thermodynamics - Alpha science International Ltd, Oxford, United Kingdom - 2014.
3. Sidharth Sharma - Heat and Thermodynamics - Mohit Books International, Central Delhi - 2012.
4. V. N. Dass - Heat and Thermodynamics - Dominant Publishers & Distributors(P) Ltd., New Delhi - 2013.
5. Francis W. Sears and Gerhard L. Salinger - Thermodynamics, Kinetic theory and Statistical Thermodynamics - Narosa Book Distributors, New Delhi - 1998.

HOW THINGS WORK

Semester: IV

Hours: 4

Code : 17PH4CE1B

Credits: 3

COURSE OUTCOMES:

- ❖ Explain the Physics principles of domestic appliances
- ❖ Compare various types of lamps and musical instruments
- ❖ Describe usage of metallurgy in industries.
- ❖ Recognize the hydraulic power systems and preliminaries of aerodynamics
- ❖ Explain the working principles of camera

UNIT I: DOMESTIC APPLIANCES

Electric bell - Door locks - Fans, Blowers and Centrifugal compressors - Refrigerator - Air conditioning - Vacuum cleaner - Sewing machine - Flat iron - Tape recorder - Washing machine - Fuse. **(12 Hours)**

UNIT II: LIGHT AND MUSIC

Compact Fluorescent lamp - Incandescent lamp - Colour television - Pianoforte - Piano tone and tuning - Accordion - Electric organ - Electronic music. **(12 Hours)**

UNIT III: METALLURGY

Powder metallurgy - Forging - Cutting and machining of metals - Pressure welding - Fusion welding - Soldering - Metal spraying. **(12 Hours)**

UNIT IV: AIRCRAFT

Present day method of aircraft construction - Airfoils and airflow - Wind tunnel - Hydraulic power system - Vertical takeoff and landing aircraft (VTOC). **(12 Hours)**

UNIT V: CAMERA

Cameras: General Introduction - Focal length and size of image - Interchangeable lenses - Diaphragm shutters - Depth of field - Range finder - Video camera - Projectors - Color photography. **(12 Hours)**

COURSE BOOK:

The Universal Encyclopedia of Machines - How Things Work 1 & 2 - Harper Collins Publishers India - Volume I - 1992.

ALLIED: GENERAL CHEMISTRY- II

Semester: IV

Hours: 3

Code : 17CH4AC02

Credits: 3

COURSE OUTCOMES:

- ❖ Acquire knowledge about the role of chemistry in the service of mankind.
- ❖ Recognize the importance of chemistry and its compounds in day to day life.
- ❖ Summarize the aspects of electrochemistry.
- ❖ Apply the principles of photochemistry in various photophysical processes.
- ❖ Recognize the various concepts of surface chemistry and catalysis and outline the importance of polymers.

UNIT I: CHEMISTRY IN THE SERVICE OF MANKIND

Antibiotics: definition - classification based on specificity of their action and gram staining method

Antipyretics: definition - preparation and uses of aspirin and paracetamol

Analgesics: definition, types and examples

Antiseptics and Disinfectants: definition, uses and examples

Insecticides and Pesticides: definition - preparation and uses of DDT and BHC
(9 Hours)

UNIT II: ELECTROCHEMISTRY

Arrhenius theory of electrolytes - strong electrolytes-weak electrolytes - pH of the solutions - buffer solutions - applications of buffer solutions -commercial cells - Leclanche cell - lead storage cell - electroplating - principle and method - factors influencing the nature of deposit - applications - corrosion of metals - disadvantages - methods of preventing corrosion: metallic coatings, electroplating and cathodic protection.
(9 Hours)

UNIT III: PHOTOCHEMISTRY

Definition - difference between photochemical and thermochemical reactions - Jablonski diagram - laws of photochemistry: Beer - Lambert's law, Grotthus Drapper law and Stark - Einstein Law - Photophysical processes - fluorescence and its applications - phosphorescence - photosynthesis - chemiluminescence - bioluminescence - quantum yield (definition).

(9 Hours)

UNIT IV: SURFACE CHEMISTRY

Adsorption - Definition - difference between adsorption and absorption - types of adsorption - difference between physisorption and chemisorption - Freundlich adsorption isotherm - applications of adsorption.

CATALYSIS

General characteristics of a catalyst - types of catalysis: Homogeneous catalysis: Acid-Base catalysis, Enzyme catalysis - Heterogeneous catalysis: Auto catalysis - catalytic poisoning - promoters - industrial applications of catalyst. **(9 Hours)**

UNIT V: POLYMER CHEMISTRY

Definition - classification of polymers - difference between addition and condensation polymerization - rubber: natural rubber - vulcanization - synthetic rubbers: preparation and uses of buna rubbers and neoprene - plastics: thermoplastics and thermosetting plastics - distinction and uses - resins: definition, preparation and uses of Bakelite. **(9 Hours)**

COURSE BOOK:

Study material prepared by the department: Allied: General Chemistry - II, 2015.

BOOKS FOR REFERENCE:

1. P. L. Soni and Mohan Katyal, Textbook of Inorganic chemistry, Sultan Chand and Sons Educational publishers, Reprint, 2014. **(Unit I)**
2. B.R. Puri, L.R. Sharma and Madan S. Pathania, Principles of Physical chemistry, Vishal Publishing Co, 47th edition, 2016. **(Unit II and III)**
3. J. Mendham, R.C. Denney, J. D. Barnes and M.J. K. Thomas, Vogel's Textbook of Quantitative Chemical Analysis, Pearson Education Ltd, Reprint, 2005. **(Unit IV)**

ALLIED PRACTICAL: VOLUMETRIC ANALYSIS

Semester: IV

Hours: 2

Code : 17CH4AP02

Credit: 1

COURSE OUTCOMES:

- ❖ Recognize the techniques of titrimetric analyses
- ❖ Develop the skills to do the volumetric titration in double burette method
- ❖ Estimate the amount of substance present in the solution
- ❖ Demonstrate the different types of titrations such as acidimetry, alkalimetry and Permanganometry
- ❖ Develop problem solving skills

A double titration involving making up of the solution to be estimated. Microscale procedure is adopted using double burette method

I. ACIDIMETRY AND ALKALIMETRY

1. Estimation of NaOH
2. Estimation of Na_2CO_3
3. Estimation of HCl
4. Estimation of oxalic acid

II. PERMANGANIMETRY

1. Estimation of ferrous sulphate
2. Estimation of ferrous ammonium sulphate
3. Estimation of oxalic acid

BOOK FOR REFERENCE:

Practical manual prepared by the Chemistry Department.

MOBILE TECHNOLOGY

Semester: IV

Hours: 2

Code : 17PH4SK04

Credits: 2

COURSE OUTCOMES:

- ❖ Explain the concepts of electronic components.
- ❖ Describe cellular communication systems
- ❖ Perform IC Installation, removal and analyze the jumper system.
- ❖ Recite types of displays and their replacement methods.
- ❖ Explain Flashing techniques of mobile phones.

UNIT I: MOBILE GENERATIONS

How basically Cell Phone Works - Cellular Communication - Power Supply Unit- Current - Voltage - Power - Frequency - Basic of Electronics - Resistor - Capacitor - Inductor - Transistor - Diode - Oscillator - Light Emitting Diode - Fuse - Integrated Chip - Mobile Communication - Transmitting Section - Receiving Section - Virus - Mobile Locks - Security Code - Personal Identification Number. **(4 Hours)**

UNIT II: CELLULAR COMMUNICATION SYSTEM

IC Name and Working System - External Parts Names and Working - Common Mobile PC Board Diagram - Magnetometer and GPS - Gyroscope - Accelerometer - Proximity sensor - Barometer - Thermometer - Air humidity sensor - Pedometer - Biometrics - Augmented & Virtual Reality - Trouble Shooting - Mobile Phone Repairing Equipments - Mobile Phone Open Method - External Parts Check Up. **(4 Hours)**

UNIT III: INTERNAL PARTS PROBLEM IDENTIFICATION METHOD

Warm Up - IC Remove - IC Install - IC Remove Practice- IC Install Practice - External Parts Replacing Method - External Parts Replacing Method Practice - Jumper System - Jumper System Practice. **(4 Hours)**

UNIT IV: TYPES OF DISPLAY

Display replacing method in various mobile phone models - Types of Touch screens used in the mobile phones - Touch Replacing method in various mobile phone models - Combo display replacing method. **(4 Hours)**

UNIT V: MOBILE PHONE SOFTWARE

Mobile Phone Software Introduction- Flashing Method of China Mobiles -Android Versions - Flashing Method of Samsung Mobiles. Flashing method using ODIN - Flashing method using SPF tool. **(4 Hours)**

Practical - 10 Hours (to be assessed at the end of the semester)

COURSE BOOK:

Study material provided by e-CareerPluz Info (India) Private Limited, Madurai
(An ISO 9001:2008 Certified Institution) on “Mobile phone technology”.

BOOKS FOR REFERENCE:

1. S. Salivahanan, N. Suresh kumar, A. Vallavaraj - Electronic Devices & Circuits,
II Edition - Tata McGraw-Hill - 2003.
2. Jochen Schiller - Mobile Communication, II edition - Dorling Kindersley (India)
Pvt. Ltd. - 2009.

ATOMIC AND NUCLEAR PHYSICS

Semester: V

Hours: 6

Code : 17PH5MC08

Credits: 6

COURSE OUTCOMES:

- ❖ Explain different atom models, its merits, demerits and splitting of spectral lines.
- ❖ Apply the principle of X-ray diffraction to study the crystal structure.
- ❖ Discuss the nature of Nuclear forces and nuclear models.
- ❖ Discuss radioactivity and its applications in various fields
- ❖ Distinguish between nuclear fission, fusion and classify elementary particles.

UNIT I: ATOMIC PHYSICS

Atom model and drawbacks - Bohr Atom Model - Critical potentials Frank and Hertz's Method - Davis and Goucher's method - Sommerfield's Relativistic atom model - Fine Structure of H_{α} Line - Vector atom model - Quantum Numbers - Coupling Schemes - Pauli's Exclusion Principle - periodic Classification of Elements - Magnetic dipole moment due to orbital motion of the electron - Magnetic dipole moment due to spin - Stern and Gerlach experiment - Optical spectra - Spectral terms and notation - Selection rules - Fine Structure of Sodium D Line - Zeeman effect-Larmor's theorem - Quantum mechanical explanation of the normal Zeeman effect - Anomalous Zeeman Effect - Paschen Back effect - Stark Effect. **(18 Hours)**

UNIT II: X- RAYS

Production of X-Rays - Spacing between three dimensional Lattice Planes - Bragg's law - Bragg X-ray spectrometer - X-ray spectra - Characteristic X-ray spectrum - Moseley's law - Compton effect - X-ray crystallography - Crystal lattice and crystal structure - Bravais lattices - Miller indices - Classification of crystals - Structure of Diamond - Zinc blende - NaCl crystals. **(18 Hours)**

UNIT III: NUCLEAR PHYSICS

Classification of Nuclei - General properties of Nucleus - Binding energy - Packing fraction - Nuclear Stability - Theories of Nuclear Composition - Nuclear forces - Meson theory of nuclear force - Yukawa potential - Discovery of π meson - Models of Nuclear Structure - Liquid drop model - Semi empirical mass formula - Shell model - Evidences - Collective model. **(18 Hours)**

UNIT IV: RADIO ACTIVITY

Natural Radio activity - α, β, γ rays- Properties , α -rays - Range - Experimental determination -Geiger-Nuttal experiment - Geiger's law - Geiger Nuttal law - α -particle disintegration - Theory of α -decay. B - rays - β -ray spectra - Magnetic spectrograph - Origin of the line and continuous spectrum - Neutrino theory of β -decay - K-electron capture. γ - rays - Determination of the wavelength by Dumond curved crystal spectrometer - Origin of γ rays - Nuclear isomerism - Internal Conversion - Mossbauer effect - Fundamentals of Laws of radioactivity - Laws of radioactive disintegration - Half-life period - Laws of Successive disintegration - Radioactive dating. **(18 Hours)**

UNIT V: ARTIFICIAL TRANSMUTATION OF ELEMENTS

Bohr's theory of Nuclear disintegration - Q value equation - Threshold energy- Nuclear reaction - Conservation laws - Energy balance - Nuclear transmutation by α Particles, protons, deuterons, neutrons and electrons - Scattering cross section-artificial radio activity - applications of radio isotope.

NUCLEAR FISSION AND FUSION

Nuclear Fission - Energy Released in Fission - Explanaion on the basis of Liquid drop model - chain reaction - atom bomb - nuclear reactor - nuclear fusion - source of stellar energy - carbon nitrogen cycle - proton cycle - thermo nuclear reactions - hydrogen bomb.

ELEMENTARY PARTICLES

Classification - Particles and antiparticles - anti matter - fundamental interaction - elementary particle quantum numbers - conservation laws and Symmetry-quark Model. **(18 Hours)**

COURSE BOOK:

R. Murugesan and Kiruthiga Sivaprasath-Modern Physics, 17th Edition-S.Chand & Co New Delhi-2013.

UNIT I	: Chapter 6:6.1, 6.2, 6.4, 6.8-6.28.
UNIT II	: Chapter 7:7.1-7.3, 7.6, 7.7, 7.11-7.15, 7.17-7.19.
UNIT III	: Chapter 27:27.1-27.12
UNIT IV	: Chapter 31:31.1-31.35
UNIT V	: Chapter 34:34.1-34.11. Chapter 35:35.1-35.10 Chapter 38: 38.1-38.7

BOOKS FOR REFERENCE

1. Charles Kittel-Solid State Physics, 7th Edition-Wiley India Pvt. Limited-1996.
2. Irving Kaplan-Nuclear Physics, 2nd Edition-Narosa Publishing House-2002.
3. K.I.Chopra,N.K.Seghal and D.I.Seghal-Modern Physics-Sultan Chand& Sons-2013.
4. D.C.Tayal-Nuclear Physics, 4th Revised Edition-Himalaya Publishing House-2013.

MATHEMATICAL PHYSICS

Semester: V

Hours: 5

Code : 17PH5MC09

Credits: 5

COURSE OUTCOMES:

- ❖ Revise the concepts of vector analysis and matrices.
- ❖ Compute various parameters of matrices.
- ❖ Find the root of infinite series and investigate their convergence.
- ❖ Solve complex analysis problems using the relevant theorems.
- ❖ Apply the knowledge of Fourier series to physical applications

UNIT I: VECTORS

Gradient - Line, Surface and Volume Integrals - Divergence - Curl - Gauss divergence theorem - Stoke's theorem - Green's theorem - Helmholtz theorem - applications - Heat flow & Gravitation. **(15 Hours)**

UNIT II: MATRICES

Types - Transpose - Conjugate - Symmetric and antisymmetric - Hermitian and Skew Hermitian - Determinant - Cofactors - Minors - Singular and nonsingular - Adjoint - Inverse - Orthogonal - Unitary - Trace - Rank - Eigenvalues - Eigenvectors - Cayley-Hamilton theorem. **(15 Hours)**

UNIT III: INFINITE SERIES

Sequence, Series, Finite and Infinite Series - Classification - Geometric, Harmonic - Properties - Convergence Tests - Comparison test, Cauchy (or D'Alembert's) Ratio test, Cauchy's root test, Cauchy's (or Maclaurin) Integral Test - Alternating Series - Absolute convergence - Uniform convergence. **(15 Hours)**

UNIT IV: COMPLEX VARIABLES

Complex conjugates - Modulus and argument - Functions of a complex variable - limit, continuity, differentiability - Analytic function - Necessary and sufficient conditions - Cauchy-Riemann differential equations - Cauchy's integral theorem - Cauchy's integral formula - Derivatives - Liouville's theorem - Taylor's series. **(15 Hours)**

UNIT V: FOURIER SERIES

Fourier Series - Even and odd functions - Dirichlet's theorem and conditions - Half range series - Change of interval from $(-\pi, \pi)$ to $(-1, 1)$ - Complex form - Fourier series in the interval $(0, T)$ - Change of interval from $(0, T)$ to $(0, 2l)$ - Uses - Physical examples: half wave rectifier and full wave rectifier. **(15 Hours)**

COURSE BOOK:

Satya Prakash - Mathematical Physics (with Classical mechanics) - Sultan Chand & Sons, New Delhi - Sixth Revised Edition 2012.

UNIT I : Chapter 1: 1.2 - 1.14, 1.19 (b & c)

UNIT II : Chapter 2: 2.1 - 2.23, 2.31, 2.32

UNIT III : Chapter 5: All sections

UNIT IV : Chapter 6 : 6.1- 6.5, 6.7 - 6.10, 6.14, 6.16 - 6.17, 6.19 - 6.20

UNIT V : Chapter 8 : 8.1 - 8.9 (1 & 2).

BOOKS FOR REFERENCE:

1. G. B. Arfken and H. J. Weber - Mathematical methods for Physicists, VI Edition - Academic Press, USA - 2005.
2. Erwin Kreyszig - Advanced Engineering Mathematics, VIII Edition - John Wiley & Sons Inc., New York - 2005.
3. H. K. Dass - Mathematical Physics - S. Chand & Company Ltd, New Delhi - 2001.
4. B. S. Grewal - Higher Engineering Mathematics, 37th Edition - Khanna Publishers, New Delhi - 2003.
5. R. K. Jain and S. R. K. Iyengar - Advanced Engineering Mathematics - Narosa Publishing House, New Delhi - 2002.

BASIC ELECTRONICS AND COMMUNICATION

Semester: V

Hours: 5

Code : 17PH5MC10

Credits: 5

COURSE OUTCOMES:

- ❖ Apply basic principles of electronics to analyze the types of diodes.
- ❖ Compare the characteristics of transistors in different modes of operations
- ❖ Build and test analog electronic systems such as amplifiers and oscillators.
- ❖ Design and test power electronic systems.
- ❖ Discuss the types of modulation and demodulation and their applications.

UNIT I: SEMICONDUCTOR DIODES

Energy band theory of solids - Classification of solids on the basis of band theory - Intrinsic and extrinsic semiconductors - PN junction - Biasing of PN junction - Zener diode - Tunnel diode - Photo diode. **(15 Hours)**

UNIT II: TRANSISTORS

Naming the transistor terminal - Transistor symbols - Transistor connections - Common Base - Common Emitter connections - Characteristics of CE connection - CC Connection - Measurement of leakage current - Comparison of transistor connection - Transistor as an amplifier in CE arrangement - Transistor load line analysis - Operating point.

Transistor Biasing - Inherent variations of transistor parameters - Stabilization - Essentials of transistor biasing circuit - Stability factor - Methods of transistor biasing - Base resistor method - Voltage divider bias method - Stability factor for potential divider bias. **(15 Hours)**

UNIT III: AMPLIFIERS

Single stage amplifier - How transistor amplifies? - Graphical demonstration - Practical circuit of transistor amplifier - D.C. and A.C. equivalent circuits - Load line analysis - Voltage gain - A.C. emitter resistance - Input impedance of CE amplifier - Classification of amplifiers - RC coupled transistor amplifier - Power amplifier - Small and large signal amplifiers - Difference between voltage and power amplifiers - Classification of power amplifiers.

OSCILLATORS

Positive feedback amplifier - Oscillator - Explanation of Barkhausen criterion - Different types of transistor oscillator - Colpitt oscillator - Hartley oscillator - Phase Shift oscillators - Crystal oscillator. **(15 Hours)**

UNIT IV: POWER ELECTRONICS

Types of field effect transistor - JFET - Principle and working - Symbol - importance - differences - JFET as an amplifier - Characteristics - Salient features - Important terms - Expression for it - Advantages - Parameters - Relation between parameters - Variation of g_m - MOSFET types - Symbols - Characteristics - SCR - working - important terms - Characteristics - SCR normal operation - as a switch - SCR switching - SCR half wave rectifier - UJT - equivalent circuit - characteristics - Advantages - Applications. **(15 Hours)**

UNIT V: MODULATION AND DEMODULATION

Modulation - Transmission and reception - Types of modulation - Amplitude modulation - Modulation factor - Analysis of A.M. wave - Limitations - Side band frequency in A.M. wave - Transistor A.M. modulator - Power in A.M. wave - Frequency modulation - Comparison of F.M. and A.M. - Demodulation - Essentials in demodulation - A.M. radio receiver - FM receiver - differences. **(15 Hours)**

COURSE BOOKS:

1. Vincent Ambrose and Devaraj - Elements of Solid state Electronics - J. K. L Publications - 1992.
2. V. K. Mehta - Principle of Electronics, 11th edition - S. Chand & Company, New Delhi - 2012.

UNIT I : Chapter 3: 3.1-3.5.2 (Book 1)
UNIT II : Chapter 8: 8.1-8.18, Chapter 9: 9.2-9.8, 9.12, 9.13. (Book 2)
UNIT III : Chapter 10: 10.1-10.4, 10.7-10.10, 10.15, 10.18,
Chapter 11: 11.5, Chapter 12: 12.1-12.4, 12.6,
Chapter 14: 14.5-14.13, 14.20. (Book 2)
UNIT IV : Chapter 19: 19.1-19.15, 19.27-19.32, Chapter 20: 20.1-20.9.
Chapter 21: 21.2, 21.3, 21.5, 21.6, 21.11-21.15. (Book 2)
UNIT V : Chapter 16: 16.2-16.17, 16.21, 16.22. (Book 2)

BOOKS FOR REFERENCE:

1. Albert Paul Malvino - Electronic Principles, Sixth edition - Tata McGraw Hill, New Delhi - 2001.
2. Paul B. Zbar, Albert P. Malvino and Michael A. Miller - Basic Electronics - Tata McGraw Hill Publishing Company, New Delhi - 1997.

MATERIALS SCIENCE

Semester: V

Hours: 4

Code : 17PH5CE2A

Credits: 3

COURSE OUTCOMES:

- ❖ Describe the properties of dielectric materials
- ❖ Discuss the types of magnetic materials and their theories
- ❖ Classify the semiconductors and discuss their conduction mechanism
- ❖ Explain Superconductivity and its applications
- ❖ List down the new materials for variety of applications.

UNIT I: DIELECTRIC MATERIALS

Fundamental definitions - Different types of electric polarization - Frequency and temperature effects - Dielectric loss - Local field - Clausius-Mossotti relation - Determination of dielectric constant - Dielectric breakdown - Properties and different types of insulating materials - Ferroelectric materials. **(12 Hours)**

UNIT II: MAGNETIC MATERIALS

Different types of magnetic materials - Classical theory of diamagnetism - Langevin theory of paramagnetism - Weiss theory of paramagnetism - Weiss theory of ferromagnetism - Heisenberg's theory of ferromagnetism - Domain theory of ferromagnetism - Hard and soft materials. **(12 Hours)**

UNIT III: SEMICONDUCTING MATERIALS

Chemical bonds in semiconductors - Carrier concentration in intrinsic semiconductor - Carrier concentration in n-type and p-type semiconductors - Determination of carrier concentration - Variation of carrier concentration with temperature in n-type semiconductors - Conductivity of extrinsic semiconductor - P-N junction theory - Direct and indirect band gap semiconductors. **(12 Hours)**

UNIT IV: SUPERCONDUCTING MATERIALS

Explanations for the occurrence of superconductivity - General properties of superconductors - General observations - Types of superconductors - High temperature superconductors - Applications. **(12 Hours)**

UNIT V: NEW MATERIALS

Metallic glasses - Fibre reinforced plastics and fibre reinforced metals - Metal matrix composites - Biomaterials - Ceramics - cermets - High temperature materials - Thermoelectric materials - Shape memory alloys - SMART materials - Conducting polymers. **(12 Hours)**

COURSE BOOK:

Dr. M. Arumugam - Materials Science, 3rd revised edition - Anuradha Publications
- 2009.

UNIT I : Chapter 6: All sections

UNIT II : Chapter 7: All sections

UNIT III : Chapter 9: All sections

UNIT IV : Chapter 8: All sections

UNIT V : Chapter 11: 11.1-11.10, 11.15 -11.17

BOOKS FOR REFERENCE:

1. R. Murugesan and Kiruthiga Sivaprasath - Modern Physics, 17th revised edition - S. Chand & Co., New Delhi - 2013.
2. Charles Kittel - Solid State Physics, 7th edition - Wiley India Pvt. Limited - 1996.

BIOPHYSICS

Semester: V

Hours: 4

Code : 17PH5CE2B

Credits: 3

COURSE OUTCOMES:

- ❖ Identify the structure and components of cells
- ❖ Explain the physics of bio molecules
- ❖ Discuss the thermodynamics of biomembranes
- ❖ Describe interdisciplinary aspects of Physics and Biology
- ❖ Illustrate bioenergetics and neurobiophysics

UNIT I: CELL - ITS ORGANELLES AND MOLECULES

Prokaryotes and Eukaryotes - Molecular components of cell - Carbohydrates - Monosaccharides, Disaccharides, Polysaccharides - Lipids - Lipid monomers, Fatty acids, Multicomponent Lipids, Complex Lipids - Proteins - Nucleic Acids - Heteromacromolecules. **(15 Hours)**

UNIT II: PHYSICS OF BIOMOLECULES

Molecular forces - Strong force - Intermolecular weak forces - Structural organization of Proteins and Nucleic acids - Molecular mechanism of Genetic Information Transfer Genetic code - Transfer of genetic information - Molecular mechanism of Protein synthesis - Principle of molecular recognition. **(15 Hours)**

UNIT III: THERMODYNAMICS OF BIOMEMBRANES

Equilibrium thermodynamics - Near equilibrium thermodynamics - Isolated and Open systems - Gibbs free energy - Chemical potential - Thermodynamic analysis of membrane transport - Simple and Facilitated Diffusion - Phase Equilibrium - More on irreversible thermodynamics. **(15 Hours)**

UNIT IV: BIOENERGETICS

Bioenergetics and ATP molecules - Redox reactions - Electro-chemical Half cells, Redox couples - Cellular respiration - Mitochondria, Energetics, Respiration and Oxidative Phosphorylation - Chemiosmotic theory - Photosynthesis - Muscle contraction. **(15 Hours)**

UNIT V: NEUROBIOPHYSICS

Anatomy of neurons - Physico-chemical nature of membrane potential - Nernst potential, Hodgkin-Katz-Goldman potential, Donnan Potential - Electric analog of membrane - Nerve excitation - Action potential - Conduction of action potential - Synaptic transmission. **(15 Hours)**

COURSE BOOK:

P. K. Srivastava - Elementary Biophysics - Narosa Publishing House, New Delhi - 2005.

UNIT I : Chapter 6: 6.1 to 6.7

UNIT II : Chapter 7: 7.1 to 7.10

UNIT III : Chapter 9: 9.1 to 9.7

UNIT IV : Chapter 10: 10.1 to 10.6

UNIT V : Chapter 11: 11.1 to 11.7

BOOKS FOR REFERENCE:

1. Vasantha Pattabhi - Biophysics - Prentice Hall of India Private Limited, New Delhi - 2003.
2. G. R. Chatwal - Biophysics - Himalaya Publishing House, Mumbai - 2011.
3. Vatsala Piramal - Biophysics - Dominant Publishers and Distributors Private Limited, New Delhi - 2014.
4. K. Sarn - Biophysics - Rajat Publications, New Delhi - 2005.
5. Ismael Azad - Biophysics - Arise Publishers & Distributors, New Delhi - 2008.

NON- CONVENTIONAL ENERGY SYSTEM

Semester: V

Hours: 4

Code: 17PH5CE2C

Credits: 3

COURSE OUTCOMES:

- ❖ Explain solar radiation and its measurements.
- ❖ Discuss various collection mechanism of solar energy collectors
- ❖ Illustrate the various applications of solar energy
- ❖ Define the principle of wind energy conversion and explain its basic components.
- ❖ Analyze the biomass conversion technologies.

UNIT I: SOLAR RADIATION AND ITS MEASUREMENT

Solar Constant-Solar Radiation at earth surface, Solar Radiation Geometry-Measurements and Data. Estimation of Average Solar Radiation and Solar radiation on tilted Surface. **(15 Hours)**

UNIT II: SOLAR ENERGY COLLECTOR

Physics principle of conservation of solar radiation into heat-Flat Plate Collector (FPC)- Performance analysis of FPC- Concentrating Collector-advantages and disadvantages CC over FPC. **(15 Hours)**

UNIT III: APPLICATION OF SOLAR ENERGY

Solar water heating-Space heating-Space Cooling-Solar electric power generation-Photovoltaics-agricultural and industrial process heat-Solar distillation- Solar pumping- Solar furnace-Solar Cooking. **(15 Hours)**

UNIT IV: WIND ENERGY

Basic principle of wind energy conversion: Nature of Wind- the power in the wind- Forces on the blades and thrust on turbines- Wind Energy Conversion (WEC)- basic components of wind energy conversion. **(15 Hours)**

UNIT V: BIO MASS

Introduction-biomass conversion technologies-photosynthesis-biogas generation-factors affecting biodigestion on generation of gas- classification of bio gas plants-advantages and disadvantages floating drum plant and fixed dome type plant. **(15 Hours)**

COURSE BOOKS:

1. G.D. Rai- Non Conventional Energy Sources. Khanna Publishers, Reprint-2011.

UNIT I:

Chapter 2: 2.1 to 2.8

UNIT II:

Chapter 3: 3.1 to 3.3, 3.6 to 3.8

UNIT III:

Chapter 5: 5.1 to 5.4, 5.6 to 5.11

UNIT IV:

Chapter 6: 6.1, 6.2: 6.2.1 to 6.2.4, 6.5 to 6.7

UNIT V:

Chapter 7: 7.1 to 7.8

BOOKS FOR REFERENCES:

1. S.P. Sukhatme - Solar energy of principles thermal and collection and storage, Tata McGraw Hill publication, 1984.
2. N.K.Bansal, M.Kleemann, and M.Melinn - Renewable energy sources and conversion technology, Tata Mcgrow, Hill Publications, 1982.
3. John F. Kreieder, and F. Kreith - Solar Energy hand book, McGraw Hill, 1982

GEOMETRICAL OPTICS

Semester: V

Hours: 4

Code: 17PH5CE2D

Credits: 3

COURSE OUTCOMES:

- ❖ Discuss the formation of images and related defects by lenses
- ❖ Explain the dispersion, refraction, angular dispersion and dispersive power of light.
- ❖ Identify the departures of real images from the ideal image with respect to size, shape and position.
- ❖ Classify and explain various types of eye pieces.
- ❖ Describe different types of optical instruments.

UNIT I : OPTICAL SYSTEM AND CARDINAL POINTS

Introduction-Cardinal Points- Construction of the Image using cardinal points- Newton's Formula- Relationship between f_1 and f_2 and μ_1 and μ_2 - Gaussian Formula- The Three Magnifications and their Inter Relationships- Nodal Slide- Cardinal Points of a Coaxial System of Two Thin Lenses. (15 Hours)

UNIT II : DISPERSION

Dispersion by a prism-Refraction through a Prism-Angular Dispersions- Achromatic Combination of Prisms- Deviation without Dispersion- Dispersion without Deviation- Direct Vision Spectroscope. (15 Hours)

UNIT III : LENS ABERRATIONS

Introduction-Aberrations-First Order Theory-Third Order Theory-Spherical Aberration-Coma- Astigmatism- Curvature of the field-Distortion-Chromatic Aberration-Chromatic Aberration in a Lenses- Circle of Least Chromatic Aberration- Achromatic Lenses-Oil- immersion Objective of High Power Microscope- Achromatism of Telescope Objective- Achromatism of Camera Lens- Corrector Plates-Conclusion- Gradient-Index Lenses. (15 Hours)

UNIT IV : OPTICAL EYEPIECES

Introduction-The Eye-Camera- Size of an object-The simple Magnifier -Field of View-Stops and Pupils- Objective and Eyepiece-Kellner's Eyepiece-Huygens Eyepiece-Ramsden Eyepiece- Comparison of Ramsden Eyepiece with Huygens Eyepiece-Gauss Eyepiece. (15 Hours)

UNIT V : OPTICAL INSTRUMENTS

Compound Microscope-Telescope- Reflection Telescope-Constant Deviation Spectrometer- Pulfrich Refractometer-Abbe Refractometer- Prism Binoculars.

(15 Hours)

COURSE BOOK:

Dr. N. Subramanyam, Brijlal, Dr.M.N.Avadhanulu - A Text Book of Optics S.Chand & Company Pvt.Ltd- Reprint 2016

UNIT I :

Chapter 5: 5.1 to 5.10

UNIT II :

Chapter 8: 8.1 to 8.8

UNIT III :

Chapter 9: 9.1 to 9.19

UNIT IV :

Chapter 10: 10.1-10.13

UNIT V :

Chapter 10: 10.14-10.20

BOOKS FOR REFERENCES:

1. M. Born and E. Wolf - Principles of optics: electromagnetic theory of propagation, interference and diffraction of light. Elsevier, 2013
2. Greivenkamp, E. John - Field Guide to Geometrical Optics, SPIE Field Guides SPIE 2004.

MAJOR PRACTICAL - IV

Semester: V

Hours: 3

Code : 17PH5CP04

Credits: 2

COURSE OUTCOMES:

- ❖ Realize the characteristics of diodes
- ❖ Compare the characteristics of the transistor in different modes
- ❖ Construct amplifiers, oscillators , filters, clippers, clampers and power supply using diodes and transistors

LIST OF PRACTICALS (any nine)

1. Zener diode - characteristics and power supply
2. Transistor Characteristics - CE mode
3. Transistor Characteristics - CB mode
4. Bridge Rectifier & LC and π filters
5. Low pass, High pass and Band pass filters
6. Hartley Oscillator
7. Colpitt's Oscillator
8. Single Stage Amplifier
9. Two Stage Amplifier with and without feedback
10. Clipper and Clamper circuits

MAJOR PRACTICAL - V

Semester: V

Hours: 3

Code : 17PH5CP05

Credits: 2

COURSE OUTCOMES:

- ❖ Construct logic circuits using discrete components
- ❖ Construct multi vibrators using transistors
- ❖ Study the characteristics of OP Amp and its applications

LIST OF PRACTICALS

1. Logic gates (AND, OR, NOT) - using discrete components
2. Logic Circuits - Using IC 74 Series
3. NAND, NOR - discrete components
4. Universal gates
5. Bistable - discrete components
6. Astable - discrete components
7. Op - Amp characteristics
8. Op - Amp Adder, Subtractor
9. Construction of Dual Power Supply using IC's

PROJECT

Semester: V

Hours: 2

Code : 17PH5PR01

COURSE OUTCOMES:

- ❖ Selection of the Project
- ❖ Literature Survey
- ❖ Initiation of the Project
- ❖ Data Collection / Preliminary work

APTITUDE BUILDING - I

Semester: V

Hours: 2

Code : 17AE5NE01

Credits: 2

COURSE OUTCOMES:

- ❖ Understand the basic concepts of numerical ability.
- ❖ Gain mastery over logical reasoning through concise thinking.
- ❖ Have command over English Language.
- ❖ Acquaint with general knowledge and current affairs.
- ❖ Develop sufficient confidence to face competitive exams and clear it.

UNIT I

Numerical Ability: Numbers - Highest common factor & Least common multiple of numbers - average - Problems on numbers - percentages - Problems on ages - Percentage - Profit and loss - ratio and proportion - Time & work.

UNIT II

Reasoning: Series completion - analogy - coding & decoding - puzzle test - direction sense test - alphabet test - alpha - numeric sequence puzzle - arithmetic reasoning - inserting missing character - logical sequence of words.

UNIT III

English Language: Spotting errors: Articles, Tenses, Nouns, Pronouns, Adjectives, adverbs, Prepositions - Selecting the most suitable word - Synonyms, Antonyms - Spell check - Double blanks in a sentence.

UNIT IV

General knowledge: Computer awareness: Classification, Elements of computing process, Programming languages, Computer memory, Software & Hardware, Operating systems - Banking awareness: Banking Regulation act, Reserve Bank of India, Commercial banks, e-banking, Currency system, Money Market, Banking and Finance, Indian Monetary Policy.

UNIT V

Current affairs: National & International Current Affairs: Economy, Sports, Science & Technology, Polity.

COURSE BOOK:

Course Material prepared by the Staff.

BOOKS FOR REFERENCE:

1. IBPS - VI, Institute of Banking Personnel Selection, Bank Po, Probationary officers/Management trainees Arihant Publications (India) Limited, 2015.
2. A.P. Bhardwaj, General English for Competitive Examinations, Dorling Kindersley (India) Pvt Ltd, New Delhi, 2013.
3. Dr. R.S. Aggarwal, Quantitative Aptitude, S.Chand & Company PVT.LTD, New Delhi, 2013.
4. Dr. R.S. Aggarwal, A Modern Approach to Verbal & Non - Verbal Reasoning, S. Chand & Company PVT.LTD, New Delhi, 2009.

THEORETICAL PHYSICS

Semester: VI

Hours: 5

Code : 17PH6MC11

Credits: 5

COURSE OUTCOMES:

- ❖ Define the concepts of theory of relativity.
- ❖ Relate the principles of classical mechanics to various applications
- ❖ Describe the properties of wave functions and its applications
- ❖ Reason out the breakdown of classical mechanics and the evolution of quantum mechanics
- ❖ Classify the classical and quantum statistics and compute the distribution functions.

UNIT I: RELATIVITY

Newtonian Relativity - Michelson-Morley Experiment - Negative result interpretation - Lorentz Transformation - Time Dilation - Twin Paradox - Length Contraction - Relativity of Mass - Mass Energy Equivalence - Velocity Transformation - General Theory of Relativity. **(15 Hours)**

UNIT II: CLASSICAL MECHANICS

Conservative Forces - Degrees of Freedom - Constraints - Generalised Coordinates - Principle of virtual work - D' Alembert's Principle - Lagrangian Function - Derivation of Lagrangian Equation of Motion - Applications (Atwood's Machine, Simple Pendulum, Compound Pendulum) - Hamiltonian Function - Hamilton's Canonical Equation of motion and its derivation. **(15 Hours)**

UNIT III: WAVE MECHANICS

Expression for Group Velocity - Experimental study of Matter Waves - Heisenberg's Uncertainty Principle - Wave mechanical atom model - Basic Postulates of Wave Mechanics - Schrodinger Equation - Properties of Wave Function - Applications - Particle in a Box - Linear Harmonic Oscillator. **(15 Hours)**

UNIT IV: QUANTUM MECHANICS

Specific Heat Capacity of Solids - Einstein's Theory - Debye's Theory - Failure of Classical Mechanics - Postulates of Quantum Mechanics - Probability Current Density - Free Particle - Rectangular Potential Well - Ehrenfest's theorem.

(15 Hours)

UNIT V: STATISTICAL MECHANICS

Macroscopic and Microscopic definitions - Phase Space - Ensembles - Probability Distribution - Boltzmann Theorem on Entropy and Probability - Postulates - Classical and Quantum Statistics - MB Statistics - Molecular Energies in an ideal gas - Black Body Radiation - Rayleigh-Jeans Formula - Planck Radiation Formula - Wien's Law - Stefan-Boltzmann Law - BE Statistics - Fermi Dirac Statistics - Fermi Energy - Comparison of three Statistics - Electron Gas in metals. **(15 Hours)**

COURSE BOOKS:

1. R. Murugesan and Kiruthiga Sivaprasath - Modern Physics, 17th revised edition - S. Chand & Co., New Delhi - 2013.
2. R. Murugesan - Modern Physics, 11th revised edition - S. Chand & Co., New Delhi - 2003.

UNIT I : Chapter 1: All sections (Book 1)

UNIT III : Chapter 11: 11.1-11.5, 11.7-11.10, 11.13 (Book 1)

UNIT IV : Chapter 41: 41.10-41.12, Chapter 12: 12.1-12.4, 12.6 (Book 1)

UNIT V : Chapter 76: 76.1-76.9, Chapter 75: 75.1-75.12 (Book 1)

UNIT II : Chapter 18: 18.1-18.12 (Book 2)

BOOKS FOR REFERENCE:

1. Arthur Beiser - Perspectives of Modern Physics - McGraw Hill Book Company - 1968.
2. Herbert Goldstein, Charles P. Poole and John Safko - Classical mechanics, 3rd edition - Dorling Kindersley (India) Pvt. Limited - 2011.

MICROPROCESSOR

Semester: VI

Hours: 5

Code : 17PH6MC12

Credits: 5

COURSE OUTCOMES:

- ❖ Explain the architecture of Microprocessor and its operations
- ❖ List the instructions of 8085 μ P with logical operations.
- ❖ Write programs with arithmetic, logic operations and debugging.
- ❖ Discuss the counting, subroutines techniques with time delays.
- ❖ Analyze the interrupt, interfacing and data conversion mechanisms

UNIT I: MICROPROCESSOR ARCHITECTURE AND MICROCOMPUTER SYSTEM

Microprocessor architecture and its operations - Microprocessor initiated operations and 8085 bus organizations - Internal data operations and 8085 registers - Peripheral or externally initiated operations - Memory - Flip Flop as a storage element - Memory map and addresses - Memory address range of a 1k memory chip - Memory address lines- Memory word size - Instruction fetch - Memory classification - Examples of a Microcomputer system - Logic devices for interfacing: Tri-state devices - Buffer - Decoder-Encoder - D flip flops : Latch and Clocked. **(15 Hours)**

UNIT II: 8085 ASSEMBLY LANGUAGE PROGRAMMING

8085 programming model - 8085 hardware model - programming model - Instruction classification - 8085 instruction set - Instruction, data format and storage - Instruction word size - Opcode format - data format - Instruction and data storage - Execute a simple program - Adding two hexadecimal numbers - Overview of the 8085 Instruction set.

INTRODUCTION TO 8085 INSTRUCTIONS

Data transfer operations - Addressing modes - Arithmetic operations - Addition - Illustrative program : Addition and increment - Subtraction - Illustrative program : Subtraction of two unsigned numbers - Logic operations - logic AND-Program - Data masking with logic AND - OR, Exclusive OR and NOT-setting and resetting specific bits - Program: ORing Data from two input ports - Branch operations - Unconditional jump and Conditional jump with programs - Writing assembly language programs - Debugging a program. **(15 Hours)**

UNIT III: PROGRAMMING TECHNIQUES WITH ADDITIONAL INSTRUCTIONS

Programming techniques: Looping, counting and indexing - Continuous loop - conditional loop - Additional data transfer and 16 bit arithmetic instructions - Arithmetic operations related to memory - Instructions - program: Addition with carry - Logic operations: Rotate and Compare - Dynamic debugging- Tools for Dynamic debugging - Common sources of Errors. **(15 Hours)**

UNIT IV: COUNTERS AND TIME DELAYS

Counters and time delays - Time delay using one Register, Time delay using a Register pair, Time delay using a loop within a loop technique - Additional techniques for time delay - Counter design with time delay - Hexadecimal counter - Generating pulse waveforms - Debugging counter and time delay programs - Illustrative program for Debugging.

STACK AND SUBROUTINES

Stack - Subroutines - Restart, Conditional Call and Return Instructions - Advanced Sub Routine Concepts - Nesting - Multiple ending subroutines. **(15 Hours)**

UNIT V: INTERFACING PERIPHERALS

INTERRUPTS: 8085 Interrupt - Restart instructions - Multiple interrupts and priorities - Vectored interrupts - TRAP - RST 7.5, 6.5, 5.5 - Restart as software instructions.

INTERFACING DATA CONVERTERS: Digital to Analog converters - Basic concepts - D/A convert circuits - Microprocessor compatible D/A converters - Interfacing a 10 bit D/A converter - Analog to Digital converters - Basic concepts - Successive approximation A/D converter - Interfacing 8 bit A/D converters with illustration. **(15 Hours)**

COURSE BOOK:

Microprocessor Architecture, Programming and Applications with the 8085, Ramesh S. Gaonkar, Fifth Edition, Penram International publishing (India) Private limited, 2011

- UNIT I : Chapter 3: 3.1, 3.2, 3.4, 3.5
- UNIT II : Chapter 2: 2.1 - 2.5
Chapter 6: 6.1- 6.6
- UNIT III : Chapter 7: 7.1- 7.6
- UNIT IV : Chapter 8: 8.1- 8.2, 8.4 - 8.5
Chapter 9: 9.1- 9.4
- UNIT V : Chapter 12: 12.1- 12.3
Chapter 13: 13.1, 13.2

BOOKS FOR REFERENCE:

1. Introduction to Microprocessor - II - A. P. Mathur (1988) Edn. TMH, Delhi .
2. Microprocessor and Microcontrollers, Architecture, Programming and System Design 8085, 8086, 8051, 8096. Krishna Kant, PHI Learning private limited, New Delhi.
3. Fundamental of Microprocessor and Microcomputers, B.Ram, Sixth Edition, Dhanpat Rai Publications (P) Ltd.

DIGITAL ELECTRONICS

Semester: VI

Hours: 5

Code : 17PH6MC13

Credits: 4

COURSE OUTCOMES:

- ❖ Construct logic circuits with basic gates
- ❖ Construct data processing circuits
- ❖ Illustrate the operations of flip-flops and registers.
- ❖ Compare the synchronous and asynchronous counter and their usage in display units.
- ❖ Describe the characteristics and applications of Op Amps

UNIT I: DIGITAL LOGIC

Basic gates - NOT, OR, AND, Universal logic gates - NOR, NAND, AND-OR Invert gates - Demorgan's theorem - Positive and Negative logic - Boolean laws and theorem - Sum of products method - Product of sums method - Truth table to Karnaugh map - Pairs, Quads and Octets - Karnaugh simplifications - Don't care conditions. **(15 Hours)**

UNIT II: DATA PROCESSING CIRCUITS

Multiplexers, Demultiplexers, 1-of-16 Decoder - BCD to decimal decoders - Seven segment decoder - Encoders - Ex-OR gates - Parity generators - Checkers - Magnitude comparator - ROM and programmable array logic (PAL) - Programmable logic arrays. **(15 Hours)**

UNIT III: FLIP FLOPS AND SHIFT REGISTERS

Flip Flops: RS Flip flop - Edge triggered RS Flip flops - Edge triggered D Flip flops - Edge triggered JK Flip flops - JK Master Slave Flip flops - Schmitt Trigger.
Shift Registers: Types of registers - Serial IN, Serial OUT - Serial IN, Parallel OUT - Parallel IN, Serial OUT - Parallel IN, Parallel OUT, Ring counters. **(15 Hours)**

UNIT IV: COUNTERS

Asynchronous Counters - Decoding gates - Synchronous counters - Changing the counter modulus - Decade counters - Variable resistor networks - Binary ladders - D/A Converters - A/D converter - Simultaneous conversion, counter method. **(15 Hours)**

UNIT V: OPERATIONAL AMPLIFIERS

The Ideal Op - Amp - Equivalent Circuit of an Op - Amp - Ideal Voltage Transfer Curve - Open Loop Op - Amp Configurations - Voltage Series Feedback Amplifiers - Voltage shunt Feedback Amplifiers - Virtual ground - Differential Amplifiers. **(15 Hours)**

COURSE BOOKS:

1. Donald P. Leach, Albert Paul Malvino, Goutam Saha - Digital Principles and Applications, Seventh edition - Tata McGraw Hill Publishing Company Ltd, New Delhi - 2012.
2. Ramakant A. Gayakwad - Op - amps and Linear Integrated Circuits - PHI Learning Private Limited, New Delhi - 2009.

UNIT I : Chapter 2: 2.1-2.7, Chapter 3: 3.1-3.7 (Book 1)

UNIT II : Chapter 4: 4.1-4.12 (Book 1)

UNIT III : Chapter 7: 7.3, Chapter 8: 8.1-8.8, Chapter 9: 9.1-9.6 (Book 1)

UNIT IV : Chapter 10: 10.1-10.5, Chapter 12: 12.1-12.3, 12.5, 12.6 (Book 1)

UNIT V : Chapter 2: 2.3-2.6, Chapter 3: 3.3-3.5 (Book 2)

BOOKS FOR REFERENCE:

1. M. Morris Mano - Digital Logic and Computer design - Prentice Hall of India Pvt. Ltd, New Delhi - 2003.
2. Douglas V. Hall - Digital Circuits and Systems - McGraw Hill Publishing Company - 1989.

NANOSCIENCE

Semester: VI

Hours: 4

Code : 17PH6CE3A

Credits: 3

COURSE OUTCOMES:

- ❖ Describe the synthesis and properties of nanoparticles.
- ❖ Explain the fabrication, properties and applications of carbon nanostructures.
- ❖ Analyze the concepts of bulk nanostructured materials.
- ❖ Predict the effect of reduced dimensionality on material properties.
- ❖ Identify the principles of processing and manufacturing of Nano machines and devices.

UNIT I: PROPERTIES OF INDIVIDUAL NANOPARTICLES

Metal nanoclusters - Semiconducting nanoparticles - Rare gas and molecular clusters - methods of synthesis. **(12 Hours)**

UNIT II: CARBON NANOSTRUCTURE

Carbon molecules - Nature of Carbon bond - New carbon structures, Carbon clusters - Small carbon clusters - C60 discovery, structure, crystal alkali doped, superconductivity - Larger and smaller fullerenes - other bucky balls. Carbon nanotubes - fabrication, structure, properties, applications. **(12 Hours)**

UNIT III: BULK NANOSTRUCTURED MATERIALS

Solid disordered nanostructures - Synthesis - Properties - Multilayers - Metal nanocluster composite glasses - Porous silicon - Nanostructured crystals - Cluster lattices - Zeolites - metal nanoparticles - Colloidal suspensions - Photonic crystals. **(12 Hours)**

UNIT IV: QUANTUM WELLS, WIRES AND DOTS

Preparation - Size and dimensionality effects - Potential wells - Partial confinement - Excitons - Single electron tunneling - Applications - IR detectors - Quantum dot lasers - Superconductivity. **(12 Hours)**

UNIT V: NANOMACHINES AND DEVICES

MEMS - NEMS - Fabrication - Nanodevices - Molecular and supramolecular switches. **(12 Hours)**

COURSE BOOK:

Charles P. Poole and Frank J. Owens - Introduction to Nanotechnology - Wiley India (P) Ltd, New Delhi - 2008.

- UNIT I : Chapter 4
- UNIT II : Chapter 5
- UNIT III : Chapter 6
- UNIT IV : Chapter 9
- UNIT V : Chapter 13

BOOKS FOR REFERENCE:

1. Lynn. E. Foster - Nanotechnology - Science, Innovation & Opportunity - Pearson Education, Inc., New Delhi - 2008.
2. U. Kumar - Nanotechnology - A fundamental approach -- Agrobios (India), Jodhpur - 2008.
3. W. I. Atkinson - Nanotechnology - Jaico Publishing House, Mumbai - 2009.
4. T. Pradeep - Nano: The Essentials - Tata McGraw Hill Education Private Limited, New Delhi - 2010.

SOLID STATE PHYSICS

Semester: VI

Hours: 4

Code : 17PH6CE3B

Credits: 3

COURSE OUTCOMES:

- ❖ Describe the nature of interatomic forces.
- ❖ Explain the various types of bondings in solids
- ❖ Analyze the band theories of semiconductors
- ❖ List out the theories of superconductivity
- ❖ Classify the types of superconductors and their applications

UNIT I: INTERATOMIC FORCES AND BONDINGS IN SOLIDS - I

Forces Between Atoms - Cohesion of Cohesive Energy - Bonding in Solids - Ionic Bonding - Bond Energy of NaCl Molecule - Calculation of Lattice Energy of Ionic Crystals - Calculation of Madelung Constants of Ionic Crystals.

(12 Hours)

UNIT II: INTERATOMIC FORCES AND BONDINGS IN SOLIDS - II

Calculation of Repulsive Exponent From Compressibility Data - The Born - Haber Cycle - Properties of Ionic Solids - Examples of Ionic Solids - Covalent Bond - Saturation In Covalent Bonds - Directional Nature of a Covalent Bond - Hybridization - Properties of Covalent Compounds - Metallic Bond - Properties of Metallic Crystals - Intermolecular Bonds - Dispersion Bonds - Dipole Bonds - Hydrogen Bonds.

(12 Hours)

UNIT III: PHYSICS OF SEMICONDUCTORS

The Band Structure of Semiconductors - Semiconductors - Intrinsic Semiconductors - Conductivity and Temperature - Electrical Conductivity - Impurity Semiconductors or Extrinsic Semiconductors - Hall Effect - Advantages of Semiconductor Devices.

(12 Hours)

UNIT IV: SUPERCONDUCTIVITY - I

Historical Introduction - A survey of Superconductivity - An account of the Mechanism of Superconductors - Effect of Magnetic Field - A . C. Resistivity - Critical Currents - Flux Exclusion: The Meissner Effect - Thermal Properties - The Energy Gap - Isotope Effect - Mechanical Effects - The Penetration Depth.

(12 Hours)

UNIT V: SUPERCONDUCTIVITY - II

Type I and Type II Superconductors - London Equations: Electrodynamics - Superconductors in A.C. Fields - Thermodynamics of Superconductors - A survey of BCS Theory - BCS Theory - Quantum Tunnelling - Josephson's Tunnelling - Theory of D. C. Josephson's Effect - New Superconductors - Applications of Superconductivity in Early Days and their Limitations - Potential Applications of Superconductivity - Power Applications of Superconductors.

(12 Hours)

COURSE BOOK:

S. O. Pillai - Solid State Physics 7th Edition 2015.

UNIT I : Chapter 3: 3 - 3.9

UNIT II : Chapter 3: 3.10 - 3.24

UNIT III : Chapter 10: 10.1 - 10.5, 10.7 - 10.8, 10.14 -10.15

UNIT IV : Chapter 8: 8.1 - 8.12

UNIT V : Chapter 8: 8.13 - 8.25

BOOK FOR REFERENCE:

1. Charles Kittel - Solid State Physics, VII edition - Wiley Eastern Ltd. - 1996.
2. Ajay Kumar Saxena - Solid State Physics - Macmillan India Limited - 2006.

GEOPHYSICS

Semester: VI

Hours: 4

Code: 17PH6CE3C

Credits: 3

COURSE OUTCOMES:

- ❖ Discuss the term Geology, Solar system and Atmosphere
- ❖ Evaluate the Theories of Origin of Earth and Age of the Earth
- ❖ Demonstrate the Geological time scale and Internal structure of the Earth
- ❖ Explain the agents of weathering and its products
- ❖ Discuss the theory of plate tectonics and demonstrate the causes of Earthquakes and volcanoes.

UNIT I: STELLAR SYSTEM

Geology: Earth Sciences, Subdivisions of Geology, Allied Sciences, Scope of Geology. The Stellar System – The Solar System – Grouping of planets – The Inner or Terrestrial Planets, The Outer Planets. Planets: Description and details of inner planets (Mercury, Venus, Earth and Mars), and outer planets (Jupiter, Saturn, Uranus, Neptune and Pluto) – Physical data of planets. Parts of the Earth: The Atmosphere: Troposphere, Stratosphere, Mesosphere, Thermosphere, Lithosphere and Hydrosphere. **(15 Hours)**

UNIT II: ORIGIN OF EARTH

Origin of the Earth: Description of the origin, Fundamental Regularities, Theories of Origin – The Nebular hypothesis – The Tidal Hypothesis – The Gas-Dust cloud hypothesis – Weizascker's Hypothesis – Schimidit's Hypothesis – Hoyle's Magnetic Theory. Age of Earth: Old Methods, New Methods, Disintegration constant, Half Life – Uranium-Lead Method, Rubidium-Strontium Method, Lead- Lead Method, Meteoric Lead Method. **(15 Hours)**

UNIT III INTERNAL STRUCTURE OF EARTH

Geological Time Scale. Internal Structure of the Earth: Description, Seismological Evidence – Basic facts, Interpretation, Final Picture. The Crust: Mountainous Areas, Continental Areas, Oceanic Areas, Continental Crustal Layers - Diagrammatic representation of structure of earth crust. The Mantle, The Core: Inner shell, Outer shell. Internal Structure of the earth (Diagrammatic representation with its composition details). **(15 Hours)**

UNIT IV WEATHERING

Rock Weathering: Description, Mechanical (Physical) Weathering: Frost Action, Thermal Effects (Insolation), Unloading - Chemical weathering: Description, Solution, Hydration and Hydrolysis, Oxidation and Reduction, Carbonation, Colloid Formation, Spheroidal weathering. Role of Plants and Organisms. Factors Affecting Weathering, Resistance to Weathering. Products of Weathering- Regolith, Soil Profile, Mineral and Rock formation. **(15 Hours)**

UNIT V PLATE TECTONICS AND EARTH QUAKE

Plate Tectonics: Theory of Plate Tectonics. The lithosphere Plates. Movement of Plates: Divergent Boundaries, Convergent Boundaries, Transform Boundaries. Global Effects. Earthquakes: Description, Classification, Causes and Effects of Earthquake. Volcanoes: Description, Materials of Volcanoes, Types of Eruption, Distribution and Origin and Volcanic Landscape. **(15 Hours)**

COURSE BOOK:

Study material prepared by Dr. A. Jegatha Christy on “Geophysics”.

BOOKS FOR REFERENCE:

1. A.Holmes and P. L. Duff - Principles of Physical Geology, 4th revised edition, ELBS, London,1996.
2. A.K. Mukherjee- Principles of Geology, EW Press,Kolkata, 1990.
3. B. Parbin Singh - A Textbook of Engineering and General Geology, S. K. Kataria & Sons.Delhi, 2005.
4. 4.S.C. Porter and B.J. Skinner- The Dynamic Earth, ,John Wiley & Sons, NewYork, 1995.
5. D. Leet,S. Judson-Physical Geology, McGraw Hill, New Jersey, 1987.

ATMOSPHERE, WEATHER AND CLIMATE

Semester: VI

Hours: 4

Code: 17PH6CE3D

Credits: 3

COURSE OUTCOMES:

- ❖ Explain the basics of climatology and tropical weather
- ❖ Discuss the composition, Mass and the layering of the atmosphere
- ❖ Explain the Tropical weather of south Asia region
- ❖ Illustrate climate variation in Tropics and predict weather forecasting
- ❖ Describe the climate change over thousand years and the projection of temperature changes through 21st Century.

UNIT I: INTRODUCTION

The atmosphere- solar energy- Global circulation- climatology- Mid Latitude disturbances- The polar regions- Tropical Weather- Paleo climate- The global climate system. (15 Hours)

UNIT II: ATMOSPHERE

Composition of Atmosphere: Primary Gases- Green house gases- Reactive gas species- Aerogels- Variation with height- Variation with latitude and Season- Variation with time

Mass of the Atmosphere: Total Pressure- Vapor pressure

The Layering of Atmosphere: troposphere- Stratosphere- Mesosphere- Thermosphere- Exosphere- and Magnetosphere (15 Hours)

UNIT III: TROPICAL WEATHER AND CLIMATE

The intertropical convergence- Tropical disturbances- water disturbances- Cyclones- Tropical Cloud Clusters- The South Asian Monsoon- Winter- Spring- Early Summer- Summer- Autumn. (15 Hours)

UNIT IV: CLIMATE VARIATION IN TROPICS AND WEATHER FORECASTING

El-Nino southern Oscillation (ENSO) events- The pacific oceans- Teleconnections- Other sources of climate variations in the tropics- Cool Ocean Current- Topographic effects – Diurnal Variation- Forecasting tropical weather- short and external range forecast- Long range forecast. (15 Hours)

UNIT IV: CLIMATE CHANGE

Climate forcing – Climate feed back- Climate response- The importance of framework- The geological record – The last glacial cycle and past glacial conditions- The past 1000 years- understanding recent climate change- Circulation Change- Solar Variability- Volcanic Activity- Anthropogenic factors- Projection of temperature change through the 21st century- Applications of general circulation Models- IPCC simulation. (15 Hours)

COURSE BOOK:

Roger G. Barry, Richard J. Chorley- Atmosphere,weather and Climate, Nineth Edition, 2010, Routledge, Newyork .

UNIT I: Chapter 1: A to I

UNIT II: Chapter 2: A to C

UNIT III: Chapter 11: A to C

UNIT IV: Chapter 11: G to I

UNIT V: Chapter 13: B to E

BOOKS FOR REFERENCE:

1. Roger G. Barry, Elleen A. Hall – . Essential of Earth's Climate System McKim, Cambridge University Press, 2014.
2. Grogery J. Hakim, Jrme patoux- Weather A Concise Introduction, Cambridge University Press, 2017

MAJOR PRACTICAL - VI

Semester: VI

Hours: 3

Code : 17PH6CP06

Credits: 2

COURSE OUTCOMES:

- ❖ Differentiate analog and digital circuits
- ❖ Construct oscillators using transistors and UJT
- ❖ Construct logic circuits using IC's

LIST OF PRACTICALS

1. IC-555 - Astable multivibrator
2. De-Morgan's theorem - Verification
3. X-OR & X-NOR gates using IC's
4. FET characteristics
5. UJT relaxation oscillator
6. Phase shift oscillator
7. Flip flops - RS, D and JK
8. Half adder and Half subtractor
9. IC 555 - Bistable multivibrator

MAJOR PRACTICAL - VII

Semester: VI

Hours: 3

Code : 17PH6CP07

Credits: 2

COURSE OUTCOMES:

- ❖ Construct logic circuits using IC's
- ❖ Construct counters using IC's
- ❖ Execute the basic programs in microprocessor

LIST OF PRACTICALS

1. Boolean laws - Verification
2. Ring counters
3. Shift registers
4. Full adder & Full subtractor
5. Asynchronous counter - mod 4 & mod 16
6. Mod 5 counter & Mod 10 Counter
7. Op-amp - Differentiator & Integrator
8. μP - Addition & Multiplication
9. μP - Subtraction & Division

PROJECT

Semester: VI

Hours: 3

Code : 17PH6PR01

Credits: 2

COURSE OUTCOMES:

- ❖ Draw layouts for the electronic circuits.
- ❖ Perform chemical etching
- ❖ Solder electronic components on PCB
- ❖ Construct electronic circuits and interpret the output.
- ❖ Consolidate and present their work

APTITUDE BUILDING - II

Semester: VI

Hours: 2

Code : 17AE6NE02

Credits: 2

COURSE OUTCOMES:

- ❖ Understand the concepts of numerical ability other than basic.
- ❖ Gain mastery over logical reasoning through concise thinking to advanced level.
- ❖ Have good command over English Language.
- ❖ Acquaint with general knowledge and current affairs with complete framework.
- ❖ Develop sufficient confidence to face advanced level competitive exams and clear it.

UNIT I

Numerical Ability: Time and distance - problems on trains - simple interest - compound interest - area - probability - true discount - bankers' discount - data interpretation - tabulation - bar charts - pie charts.

UNIT II

Reasoning: Logic - statements & arguments, statement & assumptions, statement & course of action - statement & conclusions - deriving conclusions from passage.

UNIT III

English Language: Choosing the appropriate filler - Phrase substitution - Ordering of jumbled sentences - Cloze test / Passages - Comprehension passages.

UNIT IV

General knowledge: Educational institutions - National days & awards - Indian freedom struggle - Books & Authors - Who's Who.

UNIT V

Current affairs: National & International affairs: Economy, Sports, Science & Technology, Polity.

COURSE BOOK:

- ❖ Course Material prepared by the Staff.

BOOKS FOR REFERENCE:

1. IBPS - VI, Institute of Banking Personnel Selection, Bank Po, Probationary officers / Management trainees Arihant Publications (India) Limited, 2015.
2. A.P. Bhardwaj, General English for Competitive Examinations, Dorling Kindersley (India) Pvt. Ltd, New Delhi, 2013.
3. Dr. R.S. Aggarwal, Quantitative Aptitude, S. Chand & Company PVT. LTD, New Delhi, 2013.
4. Dr. R.S. Aggarwal, A Modern Approach to Verbal & Non - Verbal Reasoning, S. Chand & Company PVT. LTD, New Delhi, 2009.

MEDICAL PHYSICS AND INSTRUMENTATION

Semester: VI

Credits: 2

Code : 17PH6SS01

COURSE OUTCOMES:

- ❖ Principles involved in the working of medical instruments are understood.
- ❖ Knowledge of the working of different parts of medical instruments is acquired.
- ❖ Overall view of the usage of medical instruments is provided.

UNIT I: BIOPOTENTIAL ELECTRODES AND TRANSDUCERS

Transport of ions through cell membrane - Bio electric potential - Design of medical instruments - Electrodes - Micro & Surface - Transducers (active transducers only).

UNIT II: BIO SIGNAL AMPLIFIERS AND RECORDERS

Isolation amplifier - Medical pre amplifier design - Chopper amplifier - Bio signal analysis - Characteristics of recording systems - Electrocardiography - Encephalography - Electromyography - Accuracy of recorders.

UNIT III: PHYSIOLOGICAL ASSIST DEVICES

Pace makers - Artificial heart valves - Defibrillators - Nerve and muscle stimulators - Heart lung machine - Kidney machine.

UNIT IV: SPECIALIZED MEDICAL EQUIPMENTS

Blood flow meters - Gas analyzers - Oxymeters - Blood cell counters - Electron microscope - Radiation detectors - Photometers and calorimeters - Digital thermometers - Audio meters - X-ray tube - X-ray Machine.

UNIT V: MODERN IMAGING SYSTEMS

Lasers in medicine - Endoscopes - Cryogenic Surgery - Nuclear imaging Techniques - Computer Tomography - Thermography - Ultrasonic imaging system - Magnetic resonance Imaging - Positron emission tomography - Digital subtraction angiography.

COURSE BOOK:

Dr. M. Arumugam - Bio medical Instrumentation - Anuradha Publication - 2006.

UNIT I	: Chapter 1: 1.4 to 1.6 Chapter 2: 2.2, 2.3, 2.4-2.4.1 to 2.4.5, 2.5
UNIT II	: Chapter 3: 3.3, 3.4, 3.8, 3.9.1 to 3.9.4, Chapter 4: 4.2 to 4.5, 4.7
UNIT III	: Chapter 5: 5.1, 5.2, 5.4 to 5.8
UNIT IV	: Chapter 6: 6.10, 6.13, 6.15, Chapter 7: 7.2 to 7.9
UNIT V	: Chapter 10: 10.3 to 10.12

BOOKS FOR REFERENCE:

1. R. S. Khandpur - Handbook of Biomedical Instrumentation - Tata McGraw-Hill, New Delhi - 1999.
2. Leslie Cromwell, Fred J. Weibell & Erich A. Pfeiffer - Biomedical Instrumentation and Measurements, II edition - Prentice Hall of India Private Limited, New Delhi - 2003.

CERTIFICATE COURSE
MOBILE TECHNOLOGY

Code: CCPHMT01

Hours: 2

Credits: 2

COURSE OUTCOMES:

- ❖ Introduction to the theory of basic electronics.
- ❖ Familiarization of the cellular communication.
- ❖ Practical knowledge of mobile software and its techniques.

UNIT I: MOBILE GENERATIONS

How basically Cell Phone Works - Cellular Communication - Power Supply Unit - Current - Voltage - Power - Frequency - Basic of Electronics - Resistor - Capacitor - Inductor - Transistor - Diode - Oscillator - Light Emitting Diode - Fuse - Integrated Chip - Mobile Communication - Transmitting Section - Receiving Section - Virus - Mobile Locks - Security Code - Personal Identification Number. **(4 Hours)**

UNIT II: CELLULAR COMMUNICATION SYSTEM

IC Name and Working System - External Parts Names and Working - Common Mobile PC Board Diagram - Magnetometer and GPS - Gyroscope - Accelerometer - Proximity sensor - Barometer - Thermometer - Air humidity sensor - Pedometer - Biometrics - Augmented & Virtual Reality - Trouble Shooting - Mobile Phone Repairing Equipments - Mobile Phone Open Method - External Parts Check Up. **(4 Hours)**

UNIT III: INTERNAL PARTS PROBLEM IDENTIFICATION METHOD

Warm Up - IC Remove - IC Install - IC Remove Practice - IC Install Practice - External Parts Replacing Method - External Parts Replacing Method Practice - Jumper System - Jumper System Practice. **(4 Hours)**

UNIT IV: TYPES OF DISPLAY

Display replacing method in various mobile phone models - Types of Touch screens used in the mobile phones - Touch Replacing method in various mobile phone models - Combo display replacing method. **(4 Hours)**

UNIT V: MOBILE PHONE SOFTWARE

Mobile Phone Software Introduction - Flashing Method of China Mobiles - Android Versions - Flashing Method of Samsung Mobiles. Flashing method using ODIN - Flashing method using SPF tool. **(4 Hours)**

Practical - 10 Hours (to be assessed at the end of the semester)

COURSE BOOK:

Study material provided by e-CareerPluz Info (India) Private Limited, Madurai (An ISO 9001:2008 Certified Institution) on “Mobile phone technology”.

BOOKS FOR REFERENCE:

1. S. Salivahanan, N. Suresh Kumar, A. Vallavaraj - Electronic Devices & Circuits, II Edition - Tata McGraw-Hill - 2003.
2. Jochen Schiller - Mobile Communication, II edition - Dorling Kindersley (India) Pvt. Ltd. - 2009.

PART I - HINDI - COURSE PATTERN (2017- 2020)

Part	Sem.	Code	Title of the Paper	Hours	Credits
I	I	17GH1GS01	Paper - I - Prose, Short Story and Grammar- I	5	3
	II	17GH2GS02	Paper - II - Novel, One act Play, and Grammar - II	5	3
	III	17GH3GS03	Paper - III Poetry and History of Hindi Literature, Alankar	5	3
	IV	17GH4GS04	Paper IV - General Essay, Technical Hindi, Translation, and Letter Writing	5	3
Total				20	12

TESTING AND EVALUATION

Course	Continuous Internal Assessment	Semester Examination
Hindi	40%	60%

Continuous Internal Assessment

Continuous Assessment will be carried out by the Course Teachers. The components of CIA are as follows:

Components	Marks
Test -I	30
Test -II	30
Seminar/Quiz	10
Assignment	05
Attendance	05
Total	*80

* The total internal marks obtained for 80 will be converted into marks obtained for 40.

HINDI - EXTERNAL QUESTION PATTERN

Time: 3 Hours

Marls: 60

Section A: (One Word / Sentence)

10 x 1 = 10 Marks

Section B: (Paragraph / Annotation)

4 x 5 = 20 Marks

Section C: (Essay)

3x 10 = 30 Marks

PAPER I - PROSE, SHORT STORY AND GRAMMAR - I

Semester: I

Hours: 5

Code : 17GH1GS01

Credits: 3

COURSE OUTCOMES:

- ❖ Develop the reading and writing skill in Hindi.
- ❖ Learn the concept of “Bhakthi” through Hindi Poems.
- ❖ Inculcate the Value and Morals through short stories in Hindi
- ❖ Improve the grammatical knowledge and enable the students to communicate effectively.
- ❖ Appreciate the literary contribution of various writers through short stories and poems.

- 1. Prose** : Naveen Hindi Patamala Part-3
Published by Dakshina Bharathi Hindi Prachar Sabha,
Thyagaraya Nagar, Chennai - 600 017.
The following Lessons have been prescribed
a) Shiraj Ki Gurubhakthi
b) Shri Krishn
c) Gupth Rupya
d) Karmaveer Kamaraj
- 2. Short Story** : Kahani Manjari
Edited by : Dakshin Bharath Hindi Prachar Sabha,
Thyagaraya Nagar, Chennai - 600 017.
The following short stories have been prescribed
a) Badegar kee beti - Premchand
b) Thayee - Vishwamranava
Shrama Kaushik
c) Paanch minute - Mohanlalji Mahato yogi
d) Usne Kaha tha - Chandra dharshama
Guleri
- 3. Grammar I** : Vyakaran Pradeep Published by Ramdev, Hindi Bhaan,
63, Tagore Nagarm Allahabad -2
The following topics have been prescribed
a) Noun b) Gender and Number
c) Pronoun d) Adjectives

PAPER II - NOVEL, ONE ACT PLAY AND GRAMMAR - II

Semester: II

Hours: 5

Code : 17GH2GS02

Credits: 3

COURSE OUTCOMES:

- ❖ Analyse the impact of social references among women through the novel of 'Nirmala'.
- ❖ Demonstrate the creative skill through one Act play.
- ❖ Inculcate the values of patriotism among students through the one Act play of Doorshra Din.
- ❖ Formulate the approach of Hindi linguistic and grammar
- ❖ Analyse on literary criticism in Hindi literature.

1. Novel : Nirmala (Abridged version)

by Premchand, Hamsa Prakashan Allahabad

2. One Act Play : Aadarsh Ekanki

Published by Dakshina Bharath Hindi Prachar Sabha,

Thyagaraya Nagar, Chennai - 600 017.

The following Ekankies have been prescribed

- a) Doosra din - Kanchanlatha sabbarval
- b) Rajpoothri Ka badla - Divjendralal Rai

3. Grammar : Ramdev, Published by Hindi Bhavan,

63 Tagore Nagar, Allahabad - 2

The following topics have been prescribed

- a) Verb
- b) Tense and Voice
- c) Adverb
- d) Prepositions
- e) Conjunctions
- f) Interjunctions

PAPER III - POETRY AND HISTORY OF HINDI LITERATURE, ALANKAR

Semester: III

Hours: 5

Code : 17GH3GS03

Credits: 3

COURSE OUTCOMES:

- ❖ Understand the spiritual and social values through Dona of Kabir, Tulasi, Rahim and Bihari.
- ❖ Analyse the literary approach of various Hindi Poems.
- ❖ Analyse the history of Hindi Literature.
- ❖ Develop the knowledge regarding Alankkar in Hindi Literature.
- ❖ Apply Alankkar to enhance the beauty of literature.

1. POETRY:

Kavya Saurab Published by Dakshina Bharatha Hindi Prachar Sabha, T. Nagar, Chennai - 600 017.

The following poems have been prescribed

1. Sachche Devtha - Ayodhya Singh Upadhyay Harioudh
2. Murjhaphool
3. Vivshtha
4. Badal - Sumitranandan Panth
5. Vasanth Aayaa
6. Deep Koi jal raha hai
7. Kabir Ke Dohe - 5 numbers
8. Tulasi Ke Dohe - 5 numbers
9. Raheem Ke Dohe - 5 numbers
10. Bihari Ke Dohe - 5 numbers

2. HISTORY OF HINDI LITERATURE:

Hindi Sahitya Ka Ithas by Rajanath Sharma Vinod Pushhak Mandir, Agra - 2

The following topics have been prescribed Salient features of Aadikl Bakthikal (Gyan marg, Premmag, Rambakthi, Krishnabakthi and Reethika.

Short Notes from Adunikkal: Chayavad, Pragathivad, Mythili Sharan, Gupta, Dinkar Premchand Pant Prasad, Ramachandra Shukla

3. ALANKAR:

Ras chand Alankar Chandrika Karnataka Mahila Hindi Seva Samithi, Chamarajpet, Bangalore - 560 008. The following Alankars have been prescribed Anupras, Yamak, Vakrokthi, Upama, Virodabhas.

**PAPER - IV - GENERAL ESSAY, TECHNICAL HINDI, TRANSLATION AND
LETTER WRITING**

Semester: IV

Hours: 5

Code : 17GH4GS04

Credits: 3

COURSE OUTCOMES:

- ❖ Write argumentative essay using appropriate style, structure and voice.
- ❖ Harness the critical thinking abilities by reading essay.
- ❖ Improve the proficiency in Hindi and English translation.
- ❖ Imbibe the knowledge of technical terms in Hindi and its application in daily life.
- ❖ Learn the forms and convention of different types of letter.

1. General Essay:

Nibandh Praveshika, Dakshin Bharath Hindi Prachar Sabha T.Nagar,
Chennai - 600 017

The following Sahityotar (General) essay have been prescribed

- a. Anushashan
- b. Parishram Ka Mahatva
- c. Paropkar
- d. Bharat Ki Kalatmak Ekta
- e. Nari Ka Karthavye Aur Adhikaar

2. Translation:

Anuvad Aabyas - III (1-5 Lessons) English to Hindi, Hindi to
English Published by Dakshina Bharath Hindi Prachar Sabha
T.Nagar, Chennai - 600 017.

3. Technical Hindi:

Karyalaya Sahayika, Kendriya Sachivalaya
Hindi Parishad NewDelhi, Hindi Vathayan
Dr. K. Chandra Mohan, Viswa Vidyalaya Prakashan
Varanashi

Banking Terms	:	50 only
Nemikaryalaya Tippani	:	50 only
Name of the Ministries	:	33 only

4. Letter Writing:

Pramanik Alekan Aur Tippan Prof Viraj M.A. Kashmirgate,
Delhi - 110 006

PaariVarik Patra, Avedan Patra, Sampathak ke naam Patra,
Padhadhikariyon ke naam Patra.

NATIONAL CADET CORPS

NON MAJOR ELECTIVE

Sem.	Part	Code	Title of Paper	Hours	Credits
V	IV	17NC5NE01	Organization and health programme in NCC	2	2
VI	IV	17NC6NE02	National integration and personality development	2	2

INTERNAL COMPONENTS

Internal - I	:	30 marks
Internal - II	:	30 marks
Component - I	:	10 marks
Component - II	:	10 marks
Component - III	:	10 marks
Component - IV	:	10 marks
Total	:	100 marks

ORGANIZATION AND HEALTH PROGRAMME IN NCC

Semester: V

Hours: 2

Code : 17NC5NE01

Credits: 2

UNIT I: INDIAN MILITARY AND NCC ORGANIZATION

History of Indian Military - Paramilitary forces - BSF- CRPF and CISF - NCC Organization and History - Aims and Objectives of NCC - Motto of NCC - DG's Four Cardinal Principles of NCC - NCC Song- Ranks in Army, Air force and Navy - Certificate Examination in NCC- Honours and Awards. **(6 Hours)**

UNIT II: MAP READING

Map and its features - kinds of north - Service protractor and Compass-bearing - Conversion of bearings - Conventional signs - Setting of map - Finding own position - Map to ground - Ground to map - Night March chart. **(6 Hours)**

UNIT III: HYGIENE AND SANITATION

Personal Hygiene - Sanitation - Methods of purification of drinking water -Latrine types - Urinal Types. **(6 Hours)**

UNIT IV: TYPES OF DISEASE AND POLLUTION

Define Health - Types of Health - Communicable and Non communicable Disease - Pollution and its type. **(6 Hours)**

UNIT V: FIRST AID

Aims of First Aid - Principle of First Aid - Motto of First Aid - List of items in First aid Box - Types of Bandages - Types of Fracture - Dislocation - Types of Wounds - Burns and Scalds - Sprain - Strain - Asphyxia - Drowning - Poison - Shock - Snake bite - Sun and Heat Stroke - Insect bite - Dog bite - Hanging - Artificial Respiration - Haemorrhage. **(6 Hours)**

BOOK FOR REFERENCE:

Mishra R.C., **A Handbook of NCC**, Kanti Prakashan, Etawah, 2000.

NATIONAL INTEGRATION AND PERSONALITY DEVELOPMENT

Semester: VI

Hours: 2

Code : 17NC6NE02

Credits: 2

UNIT I: NATIONAL INTEGRATION

Motto of National Integration - Importance of National Integration Culture and heritage of Tamil Nadu. **(6 Hours)**

UNIT II: CIVIL AFFAIRS

Aim of aid to civil authority - Role of NCC Cadets during natural calamities - Types of disaster - Essential services during natural calamities **(6 Hours)**

UNIT III: CIVIL DEFENCE AND SELF DEFENCE

Civil Defence - Organization - Aims and services - Aid to Civil authorities in emergency - Self Defence -Aims of Self Defence - Women and Self Defence **(6 Hours)**

UNI IV: LEADERSHIP AND PERSONALITY DEVELOPMENT

Leadership - Types and traits - Man Management in NCC - Duties of a Good Citizen - Role of Youth in Nation Building - Morale - Factors which affect morale - Factors which develop high morale Personality Development - Factor influencing Personality-Time Management . **(6 Hours)**

UNIT V: SOFT SKILLS

Soft skills - interview skill - influencing skill - social skill - communication skill - self motivation - self esteem - body language. **(6 Hours)**

BOOK FOR REFERENCE:

Mishra R.C., **A Handbook of NCC**, Kanti Prakashan, Etawah, 2000.

INTERNAL QUESTION PATTERN

Time: 2 hours

Marks: 30

PART - A

Answer Any 4 out of five

4 x 2 = 8

PART- B

Two either or questions (one from each)

2 x 4 = 8

PART - C

Two either or questions (one from each)

2 x 7 = 14

PHYSICAL EDUCATION
COURSE PATTERN (2017 - 2020)

(PART V)

Sem.	Code	Title of the Paper	Hours	Credits
I & II	17NP4GS01	Yoga and Rhythmic Activities	120	-
III & IV		Fundamentals of Physical Education	120	1
		Total	240	1

YOGA AND RHYTHMIC ACTIVITIES

Semester: I & II

Hours: 120

Code : 17NP4GS01

COURSE OUTCOMES:

- ❖ Recall the principle of Asnas
- ❖ Classify Pranayama for different needs
- ❖ Appraise the application and effects of Suryanamaskar for human wellness
- ❖ Execute the techniques in Free Hand Exercise
- ❖ Construct Pyramids based on the underlying principles

UNIT I: ASNAS

Sitting Postures - Standing Posture - Prone Posture - Supine Postures.

(24 hours)

UNIT II: PRANAYAMA

Pranayama - Suga Pranayama - Chandra bethana - Nadi Sudhi - Ujjayee - Seethali - Seethakari - Brahmari.

(24 hours)

UNIT III: SURYANAMASKAR

Suryanamaskar: 12 Postures - 12 Postures & Breathe consioius - 12 Postures With manthra - Relaxation Techniques.

(24 hours)

UNIT IV: CALLISTHENICS (FREE HAND EXERCISE)

Standing series - Bending series - Sitting series - Twisting series - Dumb - bells - Indian Clubs - Lezium - Hoops.

(24 hours)

UNIT V: AEROBICS & PYRAMIDS

Aerobics: Aerobic Basics - Aerobic Movements - Aerobic With Rhythm - Aerobic Programme

Pyramids: Basics of Pyramids - Types of Pyramids.

(24 hours)

BOOKS FOR REFERENCE:

1. Wuest Jeborah,A and Charles A. Bucher (1987), 'Foundation of Physical Education, B.I Publication Pvt.Ltd., New Delhi.
2. Elangovan.R, (2002), 'Utarkalvi Oru Arimugam', Ashwin Publication, Triunelveli.
3. Chandrasekaran.K, (1999), 'Sound Health through Yoga, Prem Kalyan Publication, Sedapatti.
4. Iyengar, B.K.S,'Lights on Yoga', Unwin Hyman Company, London

FUNDAMENTALS OF PHYSICAL EDUCATION

Semester: III & IV

Hours: 120

Code : 17NP4GS01

Credits: 1

COURSE OUTCOMES:

- ❖ Familiarize the fundamentals of Physical Education
- ❖ Illustrate different rules for different games and athletic events
- ❖ Examines the need for good nutrition
- ❖ Synthesis the relation between hygiene and health
- ❖ Apply the first aid techniques

UNIT I: PHYSICAL EDUCATION

Definition, need, scope, aims and objectives of physical education. **(24 hours)**

UNIT II: GAMES AND ATHLETEIC EVENTS

History of Games: Basketball, Volley Ball, Kho-Kho, Kabaddi, Badminton and Ball Badminton - Rules and regulation of the Games and Athletic Events. **(24 hours)**

UNIT III: NUTRITION

Balanced Diet, Daily Energy Requirement, Nutrient Balance, Nutrition Intake, Diet and Competition, Nutritional Tips, Your Ideal Weight. **(24 hours)**

UNIT IV: HEALTH EDUCATION

Meaning of health education, Definition of health education, Personal Hygiene, Communicable Diseases **(24 hours)**

UNIT V: FIRST AID

First Aid: Injuries to bones and Muscles, Sprain, Strain, Muscle Cramp and joints Dislocation and Fractures Snake-bite, Dog bite Poisoning, Artificial Respiration, (Drowning) **(24 hours)**

BOOKS FOR REFERENCE:

1. Sathyanesan, R.C., 'Hand Broken Physical Education, 'Gheena Publishers, Madurai.
2. Thirunarayanan,C and Hariharan,s, 'Analytical History of physical Education 'South India Press, Karaikudi.
3. St. John Ambulance Association, 'First Aid to the Injured' New Delhi.
4. Prabhakar Eric, (1995), 'The way to Atheletic Gold', Affiliated East West Pvt. Ltd., New Delhi.

SCHEME OF EVALUATION

1.	Summative Examination (2 hours)	:	40 marks
2.	Continuous Internal Assessment	:	60 marks
	Total	:	100 marks

SCHEME OF EVALUATION FOR CONTINUOUS INTERNAL ASSESSMENT

1.	Attendance (240 hrs)			
	❖ Theory Class	:	120 hrs	: 20 marks
	❖ Games	:	60 hrs	
	❖ Field Work	:	60 hrs	
2.	Performance in any one Game	:		10 marks
3.	Performance in any one of Athletic event	:		10 marks
4.	Performance in Yoga / Rhythmic activities	:		10 marks
5.	Assignment	:		10 marks
	Total	:		60 marks

QUESTION PATTERN FOR SUMMATIVE EXAMINATION

Total marks: 40

Time: 2 hours

SECTION - A

Answer All Questions (5x1=5)
(Choose the best Answer)

SECTION - B

Answer any four questions (4x2=8)
(Four question out of six)

SECTION - C

Answer any Four out of Six questions (4x5=20)
(Four question out of six)

SECTION - D

Answer any one question (1x7=7)
(One question out of two)