

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR – 639 005

B.Sc., PHYSICS COURSE STRUCTURE UNDER CBCS SYSTEM

(For the candidates admitted from the year 2015-2016 onwards)

SEMESTER	COURSE	SUBJECT TITLE	SUBJECT CODE	INSTR. HOURS WEEK	CREDIT	EXAM HOURS	MARKS		TOTAL
							INT	ESE	
I	Tamil - I	Tamil – I	U15L1T1	6	3	3	25	75	100
	English - I	English - I	U15L1E1	6	3	3	25	75	100
	Core Course - I	Properties of Matter and Acoustics.	U15PH1C1	6	5	3	25	75	100
	Core Course - II	Core Practical – I	-	3	-	-	-	-	-
	First Allied Course – I	Allied Mathematics - I	U15MM1A4	5	3	3	25	75	100
	First Allied Course - II	Allied Mathematics - II	-	2	-	-	-	-	-
	Value Education	Value Education	U15VE1	2	2	3	25	75	100
				30	16				500
II	Tamil - II	Tamil – II	U15L2T2	6	3	3	25	75	100
	English – II	English– II	U15L2E2	6	3	3	25	75	100
	Core Course - II	Core Practical – 1	U15PH2C2P	3	4	3	25	75	100
	Core Course – III	Mechanics	U15PH2C3	6	5	3	25	75	100
	First Allied Course – II	Allied Mathematics - II	U15MM2A5	2	4	3	25	75	100
	First Allied Course – III	Allied Mathematics - III	U15MM2A6	5	3	3	25	75	100
	Environmental Studies	Environmental Studies	U15ES2	2	2	3	25	75	100
				30	24				700
III	Tamil - III	Tamil- III	U15L3T3	6	3	3	25	75	100
	English – III	English - III	U15L3E3	6	3	3	25	75	100
	Core Course – IV	Thermodynamics and Statistical physics	U15PH3C4	6	5	3	25	75	100
	Core Course – V	Core Practical - II	-	3	-	-	-	-	-
	Second Allied Course I	Allied Chemistry – I	U15CH3A1	5	3	3	25	75	100
	Second Allied Course II	Allied Chemistry – II	-	2	-	-	-	-	-
	Non Core Elective I	Laboratory Hygiene and Safety.	U15CH3N1	2	2	3	25	75	100
				30	16				500
IV	Tamil – IV	Tamil- IV	U15L4T4	6	3	3	25	75	100
	English – IV	English –IV	U15L4E4	6	3	3	25	75	100
	Core Course – V	Core Practical – II	U15PH4C5P	2	4	3	25	75	100
	Core Course - VI	Optics	U15PH4C6	5	5	3	25	75	100
	Second Allied Course II	Allied Chemistry – II Practical	U15CH4A2P	2	4	3	25	75	100
	Second Allied Course III	Allied Chemistry- III	U15CH4A3	5	3	3	25	75	100
	Skill Based Elective I	Desktop Publishing and Photoshop	U15PH4S1P	2	4	3	25	75	100
Non Core Elective II	Water Pollution and Treatment	U15CH4N2	2	2	3	25	75	100	
				30	28				800
V	Core Course – VII	Electricity and Magnetism	U15PH5C7	5	5	3	25	75	100
	Core Course – VIII	Atomic and Nuclear physics	U15PH5C8	5	4	3	25	75	100
	Core Course – IX	Quantum Mechanics	U15PH5C9	4	3	3	25	75	100
	Core Course - X	Core Practical III(General)	-	3	-	-	-	-	-
	Core Course - XI	Core Practical IV (Electronics)	-	3	-	-	-	-	-
	Elective Course I	Basic Electronics	U15PH5E1	4	4	3	25	75	100
	Skill Based Elective II	Electrical Wiring and Winding Lab	U15PH5S2P	2	4	3	25	75	100
	Skill Based Elective III	Programming in “C”	U15PH5S3P	2	4	3	25	75	100
Soft Skill Development	Soft Skill Development	U15SSD3	2	2	3	25	75	100	
				30	26				700
VI	Core Course - X	Core Practical III (General)	U15PH6C10P	3	4	3	25	75	100
	Core Course – XI	Core Practical IV (Electronics)	U15PH6C11P	3	5	3	25	75	100
	Core Course – XII	Solid State Physics	U15PH6C12	6	5	3	25	75	100
	Core Course – XIII	Spectroscopy and Laser Physics	U15PH6C13	6	5	3	25	75	100
	Elective Course - II	Digital Electronics and Microprocessor	U15PH6E2	5	5	3	25	75	100
	Elective Course - III	Numerical Methods	U15PH6E3	6	4	3	25	75	100
	Extension Activities	Extension Activities			1				
	Gender Studies	U15EA4	1	1	3	25	75	100	
				30	30				700
TOTAL				180	140				3900

Sl. No.:

Subject Code:

U15L1T1

அரசு கலைக் கல்லூரி (தன்னாட்சி) - ஈரூர் - 5
கலையியல் / அறிவியல் / வணிகவியல் / பட்ட வகுப்பு
 (2015 - 2016 ஆம் கல்வியாண்டு முதல் பயிலும் மாணவர்களுக்குரியது)
 பகுதி - 1 பொதுத்தமிழ் -1 - முதல் பருவம்
 மரபுக்கவிதை, புதுக்கவிதை, சிறுகதை, இலக்கணம், இலக்கிய வரலாறு

பொதுத்தமிழ் -1 முதல் பருவம்

(மரபுக்கவிதை, புதுக்கவிதை, சிறுகதை, இலக்கணம், இலக்கிய வரலாறு)

அலகு 1 மரபுக்கவிதைகள்

- | | | |
|--|---|-----------------|
| அ) தமிழ்த்தாய் | - | பாரதியார் |
| ஆ) புத்தகச்சாலை | - | பாரதிதாசன் |
| இ) புத்தரும் ஏழைச்சிறுவனும்
(ஆசியஜோதி) | - | கவிமணி |
| ஈ) நோயற்ற வாழ்வு | - | நாமக்கல் கவிஞர் |
| உ) இரசம் தீர்ந்து விட்டது
(இயேசு காவியம்) | - | கண்ணதாசன் |
| ஊ) அதிவீரராம பாண்டியன் | - | சுரதா |

அலகு 2 புதுக்கவிதைகள்

- | | | |
|---|---|-----------------|
| அ) மீரா கவிதைகள் (நான் மனிதன்) | - | மீரா |
| ஆ) தேசப்பிதாவுக்கு ஒரு தெருப்பாடகனின் அஞ்சலி (கண்ணீர்ப்பூக்கள்) | - | மு.மேத்தா |
| இ) வடலூரும் வார்தாவும்(நேயர் விருப்பம்)- | - | அப்துல் ரகுமான் |
| ஈ) சர்ப்ப யாகம் | - | சிற்பி |
| உ) விசுவாமித்திரர் (அவதார புருஷன்) | - | வாலி |
| ஊ) நிலத்தை ஜெயித்த விதை
(இன்னொரு தேசிய கீதம்) | - | வைரமுத்து |
| எ) ஒரு வண்டி சென்றியூ(10 கவிதைகள்)- | - | ஈரோடு தமிழன்பன் |

அலகு 3 சிறுகதை

- | | | |
|--------------------|---|-------------------------|
| சிறுகதைத் தொகுப்பு | - | நியூ செஞ்சுரி பக் ஹவுஸ் |
|--------------------|---|-------------------------|

அலகு 4 இலக்கணம்

- | | | |
|-------------------------|---|---------------------------|
| வல்லினம் மிகும் இடங்கள் | - | நல்ல தமிழ் எழுத வேண்டுமா? |
| வல்லினம் மிகா இடங்கள் | - | அ.கி.பரந்தாமனார் |

அலகு 5 இலக்கிய வரலாறு

மரபுக்கவிதை, புதுக்கவிதை, சிறுகதை

பரிந்துரை நூல்

- | | | |
|----------------------|---|---|
| முனைவர் கா.வாசுதேவன் | - | பன்முக நோக்கில் தமிழ் இலக்கிய வரலாறு
தேவன் பதிப்பகம், 16/43, திருநகர்,
திருவானைக்கோவில், திருச்சி |
|----------------------|---|---|

ஐந்து அலகுகளிலும் சம அளவில் வினாக்கள் அமைதல் வேண்டும்.

வினாத்தாள் அமைப்பு முறை

பகுதி அ (ஒரு மதிப்பெண் வினா - 20)

- | | |
|--|-------|
| அ) பொருத்தமான விடையைத் தேர்ந்தெடுத்தல் | 5*1=5 |
| ஆ) கோடிட்ட இடங்களை நிரப்பதல் | 5*1=5 |
| இ) பொருத்துதல் | 5*1=5 |
| ஈ) ஓரிரு சொற்களில் விடையளித்தல் | 5*1=5 |

பகுதி ஆ (ஐந்து மதிப்பெண் வினா)

இது அல்லது அது என்ற வகையில் அமைதல் வேண்டும் 5*5=25

பகுதி இ (பத்து மதிப்பெண் வினா)

ஐந்தில் எவையேனும் மூன்றனுக்கு மட்டும் கட்டுரை வடிவில் விடை எழுத வேண்டும்.

3*10=30

மொத்த மதிப்பெண் -75

Sl. No.:

Subject Code:

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR- 05

ALL UG COURSES - I SEMESTER - PART – II - ENGLISH

(For the candidates admitted from the year 2015-16 onwards)

ENGLISH – I

Unit I

- Monday Morning - Mark Twain
My Financial Career - Stephen Leacock

Unit II

- Indian Women - S. Radhakrishnan
Head Ache - R. K. Narayan

Unit III

- Thomas Alva Edison - Egon Larson
Helen Keller - Patrick Pringle

Unit IV

Word Classes

I. Open Classes

1. Nouns
2. Adjectives
3. Verbs
4. Adverbs

II. Closed Classes

1. Pronouns
2. Determiners
3. Prepositions
4. Conjunctions
5. Exclamations / Interjections

Unit V

1. Spelling Rules
2. Words Often Confused or Misused
3. Homophones

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GOVERNMENT ARTS COLLEGE (AUTONOOUMS) KARUR-05

B.Sc., PHYSICS – I SEMESTER – CORE COURSE – I

(For the candidates admitted from the year 2015-16 onwards)

PROPERTIES OF MATTER AND ACOUSTICS**UNIT I: ELASTICITY**

Elastic moduli - Poisson's ratio - Bending of a beam - Expression for bending moment - Depression of the loaded end of a Cantilever - Uniform - Non uniform bending - Theory - Experiment pin and microscope method - Work done in uniform bending – Non-uniform bending - Theory - Expression for couple per unit twist - Determination of rigidity modulus - Static torsion method with scale and telescope - Rigidity modulus by torsion pendulum with mass I shape girders

UNIT II: VISCOSITY

Stream line and Turbulent flow - Critical velocity – Poisseulle's formula - Determination of coefficient of viscosity by capillary flow method - Comparison of viscosities, Oswald's viscometer - Viscosity of a highly viscous liquid - Stoke's method - Variations of viscosity with temperature and pressure - Viscosity of gases - Mayer's formula for the rate of flow of a gas through a capillary tube - Rankine's method for the determination of viscosity of a gas.

UNIT III: SURFACE TENSION

Surface energy - Angle of contact and its determination - Excess of pressure inside curved - Cylindrical and spherical surfaces - Formation of drops - Experimental study of variation of surface tension with temperature - Drop weight method of determining surface tension and interfacial surface tension - Angle of contact of mercury - Quincke's method – Jaegar's method.

UNIT IV: OSMOSIS AND DIFFUSION

Osmosis: Vapour pressure osmosis - Experimental determination of osmotic pressure - Laws of osmotic pressure - Osmotic and vapour pressure of a solution - Determination of boiling point of solution and freezing point of solution - Diffusion:

Fick's law – Experimental determination of diffusivity - Analogy between diffusion and thermal conduction – Applications.

UNIT V: ACOUSTICS

Theory of vibrations: Simple harmonic motion – Lissajous figures – Undamped vibration – Damped vibration – Forced vibration – Resonance and sharpness of resonance - Acoustics of buildings: Requisites of good acoustics – Sabine's reverberation formula - Ultrasonics: Properties – Production of ultrasonic waves: Magnetostriction method - Piezoelectric method – Applications.

BOOKS FOR STUDY

1. Brij Lal and N. Subramaniam, *Properties of Matter* – Eurasia Publishing Housing, 1983
2. R. Murugesan, *Properties of Matter Properties of Matter and Acoustics* - S.Chand & Co, Delhi.
3. Brij Lal and Subramaniam, *Text Book of Sound* – Vikas Publishing House, Delhi.
4. D.S. Mathur, *Elements of Properties of Matter*- S.Chand & Co, Delhi, 11th Edition, 2000.

BOOKS FOR REFERENCES:

1. P.E. Subramanian Iyer, *Properties of Matter*.
2. L.P. Sharma and H.C. Saxena, *Oscillations, waves and sound*.

Sl. No.:

Subject Code:

U15MM1A4/
U15MM3A1

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., – I & III – SEMESTER - FIRST/SECOND ALLIED COURSE - I
(FOR CHEMISTRY AND PHYSICS MAJOR)
(For the candidates admitted from 2015 - 2016 onwards)

ALLIED MATHEMATICS-I

CALCULUS AND FOURIER SERIES

UNIT 1: Successive Differentiation – n^{th} derivative of standard functions (Derivation not needed) Simple problems only - Leibnitz theorem (proof not needed) and its applications. Curvature and radius of curvature in Cartesian Coordinates only (proof not needed) - Jacobians of two & three variables - Simple problem only.

UNIT 2: Integrating by parts – Bernoulli's formula - Evaluation of integrals of types

$$1. \int \frac{dx}{a+b\cos x} \quad 2. \int \frac{dx}{a+b\sin x} \quad 3. \int \frac{(a\cos x + b\sin x + c)}{(p\cos x + q\sin x + r)} dx$$

UNIT 3: General Properties of Definite integrals - Evaluation of Definite integrals of types

$$1. \int_a^b \sqrt{(x-a)(b-x)} dx \quad 2. \int_a^b \frac{dx}{\sqrt{(x-a)(b-x)}} \quad 3. \int_a^b \frac{\sqrt{(x-a)}}{\sqrt{(b-x)}} dx$$

Reduction formula when n is a positive integer for

$$1. \int_a^b e^{ax} x^n dx \quad 2. \int_a^b \sin^n x dx \quad 3. \int_a^b \cos^n x dx \quad 4. \int_a^{\frac{\pi}{2}} \cos^n x dx$$
$$5. \int_0^{\pi/2} \sin^n x dx \quad 6. \int_0^{\pi/2} \sin^m x \cos^n x dx \text{ (proof not needed for 6 only).}$$

UNIT 4: Evaluation of Double and Triple integral in simple cases – Changing the order and Evaluating the Double integration. (Cartesian Coordinates only)

UNIT 5: Definition of Fourier series - Finding Fourier Co-efficients for a given periodic function with period 2π - Use of Odd and Even functions in evaluation of Fourier Co-efficients - Half range sine and cosine series.

TEXT BOOKS:

1. T. K. Manickavasagam Pillai, S. Narayanan, “Calculus Vol. I” S. Viswanathan Private Limited, 2011.
2. S. Arumugam, Issac and Somasundaram, “Trigonometry and Fourier series”, New Gamma Publishers, Hosur, 1999.

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CONTROLLER OF EXAMINATIONS

Sl. No.:

Subject Code:

U15VE1

அரசு கலைக் கல்லூரி (தன்னாட்சி), ஈரூர் - 639005
அனைத்து இளநிலை - முதல் பருவம் - பகுதி - 4
(2015 - 2016 கல்வியாண்டு முதல் பயிலும் மாணவர்களுக்கு உரியது)

மதிப்புக்கல்வி

அலகு 1

வாழ்வியல் கல்வி ஓர் அறிமுகம் - தனிமனித நெறிமுறைகள் - சமுதாய நெறிமுறைகள் - ஆன்மீக நெறிமுறைகள் - வாழ்வியல் நெறிகளின் மூலங்கள் - வாழ்வியல் நெறிகளின் அவசியம் - நன்னடத்தையும் நற்செயல்களும் - நற்பண்புகள் உருவாக்கம்.

அலகு 2

சமூக நற்பணி - சமூக நலப்பணித்திட்டங்கள் - சமுதாயத் தீமைகள் குறித்த விழிப்புணர்வு - போதை மருந்துகளுக்கு அடிமையாதல் - மதுப்பழக்கம் - புகைப்பிடித்தல் - தற்கொலை.

அலகு 3

இந்து சமயத்தின் போதனைகள் - இஸ்லாம் போதிக்கும் நெறிகள் - கிறித்துவம் போதிக்கும் நெறிகள் - சமயச் சார்பின்மை - சமய நல்லிணக்கம்.

அலகு 4

காந்தியடிகளின் அகிம்சை கொள்கை - அன்னை தெரசாவின் தொண்டுகள் - தன்னலமின்மையின் வடிவம் பெருந்தலைவர் காமராசர்.

அலகு 5

சமூகநீதி - மனித உரிமைகளும் - அவற்றின் பாதுகாப்பும் - மகளிர்க்கு எதிரான வன்முறைகள் - நாட்டின் ஒருமைப்பாடு.

Text Book:

1. மதிப்புக் கல்வி - Y.K.55, கூட்டுறவு பண்டகசாலை, அரசு கலைக்கல்லூரி (தன்னாட்சி), ஈரூர் - 5.

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COE

Sl. No.:

Subject Code:

U15L2T2

அரசு கலைக் கல்லூரி (தன்னாட்சி) - ஈரூர் - 5
கலையியல் / அறிவியல் / வணிகவியல் / பட்ட வகுப்பு
 (2015 - 2016 ஆம் கல்வியாண்டு முதல் பயிலும் மாணவர்களுக்குரியது)
 பகுதி - 1 பொதுத்தமிழ் -2 - இரண்டாம் பருவம்
 (பக்தி இலக்கியங்கள், சிற்றிலக்கியங்கள், உரைநடை, இலக்கணம், இலக்கிய வரலாறு)

அலகு 1 பக்தி இலக்கியங்கள்

தேவாரம்

- திருநாவுக்கரசர்
(திருவையாறு- 4ஆம் திருமுறை)

நாலாயிர திவ்விய பிரபந்தம்

- மதுரகவி ஆழ்வார்(கண்ணி நுண் சிறுத்தாம்பு)

தெய்வமணிமாலை

- இராமலிங்க வள்ளலார்

பராபரக்கண்ணி

- குணங்குடி மஸ்தான் சாகிபு

யாக்கை நிலையாமை

- திருமந்திரம்

அலகு 2 சிற்றிலக்கியங்கள்

தமிழ்விடுதூது

- முதல் 16 கண்ணிகள்

திருக்குற்றாலக் குறவஞ்சி

- குறத்தி மலைவளம் கூறல்

நந்திக்கலம்பகம்

- பாடல் எண்கள்: 34,35,36,37,38,39,44,45,46,49

அபிராமி அந்தாதி

- 11-20 பாடல்கள்

கயிலாசநாதர் சதகம்

- அரிதெனல், இறந்தும் இருக்கின்றவர், இருந்தும் இறந்தவர், கோபக்கொடுமை, கல்விச் சிறப்பு

அலகு 3 உரைநடை

இனியவை நாற்பது

- முனைவர் இரா.மோகன்

அலகு 4 இலக்கணம்

வாக்கிய வகைகள்

- நல்ல தமிழ் எழுத வேண்டுமா?
அ.கி.பரந்தாமனார்

அலகு 5 இலக்கிய வரலாறு

பக்தி இலக்கியங்கள், சிற்றிலக்கியங்கள், உரைநடை

பரிந்துரை நூல்

முனைவர் கா.வாசுதேவன்

-பன்முக நோக்கில் தமிழ் இலக்கிய வரலாறு
தேவன் பதிப்பகம்,16/43, திருநகர்,
திருவானைக்கோவில்,திருச்சி

ஐந்து அலகுகளிலும் சம அளவில் வினாக்கள் அமைதல் வேண்டும்.

வினாத்தாள் அமைப்பு முறை

பகுதி அ (ஒரு மதிப்பெண் வினா - 20)

அ) பொருத்தமான விடையைத் தேர்ந்தெடுத்தல் 5*1=5

ஆ) கோடிட்ட இடங்களை நிரப்புதல் 5*1=5

இ) பொருத்துதல் 5*1=5

ஈ) ஒரே சொற்களில் விடையளித்தல் 5*1=5

பகுதி ஆ (ஐந்து மதிப்பெண் வினா)

இது அல்லது அது என்ற வகையில் அமைதல் வேண்டும் 5*5=25

பகுதி இ (பத்து மதிப்பெண் வினா)

ஐந்தில் எவையேனும் மூன்றனுக்கு மட்டும் கட்டுரை வடிவில் விடை எழுத வேண்டும்.

3*10=30

மொத்த மதிப்பெண் -75

Sl. No.:

Subject Code:

U15L2E2

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR- 05
ALL UG COURSES - II SEMESTER - PART – II - ENGLISH
(For the candidates admitted from the year 2015-16 onwards)

ENGLISH – II

Unit I

- The Luncheon - Somerset Maugham
A Cup of Tea - Katherine Mansfield

Unit II

- A Work of Art - Anton Checkov
The Necklace - Guy de Maupassant

Unit III

- My Lord the Baby - Rabindranath Tagore
An Astrologer's Day - R.K Narayan

Unit IV

The Sentence

1. Types of Sentences
2. Simple, Compound and Complex Sentences
3. Sentence Patterns

Unit V

Transformation of Sentences

1. Affirmative into Negative and vice versa
2. Interrogative into Assertive and vice versa
3. Exclamatory into assertive and vice versa
4. Simple, Compound and Complex sentences
5. Voice: Active and Passive
6. Degrees of Comparison

CHAIRMAN – BOS

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Sl. No.:

Subject Code:

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., PHYSICS – II - SEMESTER – CORE COURSE – II

(For the candidates admitted from the year 2015-16 onwards)

CORE PRACTICAL – I

(Any fifteen experiments)

1. Young's Modulus - Non Uniform Bending - Pin and Microscope.
2. Young's Modulus - Uniform Bending - Optic lever method.
3. Young's Modulus - Cantilever Depression - Scale and Telescope Method.
4. Compound Pendulum - g and K .
5. Torsional Pendulum - Rigidity Modulus.
6. Surface tension and Interfacial surface tension of the given liquid - Drop weight method.
7. Sonometer - Verification of laws of transverse vibrations and determination of frequency of a tuning fork.
8. Sonometer – Determination of AC frequency.
9. Melde's Experiment.
10. Specific heat capacity of liquid - Newton's law of cooling.
11. Thermal Conductivity of bad conductor - Lee's disc method.
12. Spectrometer - refractive index of solid prism (A, D and μ).
13. Co-efficient of viscosity of the given liquid - Poiseuille's flow method.
14. Air Wedge - Thickness of wire and thickness of insulation.
15. Meter Bridge - Specific resistance.
16. P.O. Box - Temperature Co efficient of resistance.
17. Potentiometer - Calibration of low range voltmeter.

Sl. No.:

Subject Code:

U15PH2C3

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., PHYSICS – II SEMESTER – CORE COURSE - III

(For the candidates admitted from the year 2015-16 onwards)

MECHANICS

UNIT – I: PROJECTILE

Newton's law of motion - Motion of two particles connected by a string passing over a smooth pulley - Atwood's machine - Motion of Body drawn along a smooth inclined plane - Motion of particle sliding down a rough inclined plane - Principle of conservation of energy - Freely falling body - Particle moving down a smooth inclined plane – laws of projectile - Path of a projectile in a parabola - Range of projectile on an inclined plane.

UNIT – II: DYNAMICS OF RIGID BODY

Moment of Inertia - Radius of gyration - Theorem of M.I - M.I. of circular disc, solid cylinder, hollow cylinder, solid sphere and hollow sphere - Centre of mass - Conservation of linear momentum - Relation between torque and angular momentum.

UNIT – III: CIRCULAR MOTION AND GRAVITATION

Circular motion: Expression for normal acceleration - Conical pendulum - Motion of a cyclist along a circular path - Motion of a railway carriage along a circular path - Motion of a particle in a smooth vertical axis - Motion of a suspended particle in a vertical axis - Gravitation: Newton's law of gravitation - Mass and density of earth - Kepler's law of planetary motion - Variation of 'g' with latitude, altitude and rotation of the earth.

UNIT – IV: STATICS

Friction - Laws of Friction - Co-efficient of friction - Equilibrium on a rough inclined plane - impulse - Collision - Oblique impact of smooth spheres - Direct impact of two smooth spheres - Loss of K.E. due to direct impact and oblique impact of two smooth spheres.

UNIT – V: HYDROSTATICS AND HYDRODYNAMICS

Centre of pressure - Centre of pressure of a rectangular lamina and triangular lamina - Atmospheric pressure - Variation of atmospheric pressure with altitude - Equation of continuity - Energy of liquid - Euler's equation - Forces against a dam – Bernoulli's theorem - Applications: Torricelli's theorem – Venturi meter - Pitot's tube.

BOOKS FOR STUDY:

1. R. Murugesan, *Mechanics and mathematical physics* - S.Chand & Company. (Third Revised Edition 2008).
2. Narayanamoorthy & Vishwanathan, *Text book of dynamics*.

BOOKS FOR REFERENCE:

1. D.S. Mathur "*Mechanics*".
2. R. Murugesan "*Mechanics*" S.Chand & Company.

Sl. No.:

Subject Code:

U15MM2A5

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., – II & IV – SEMESTER – FIRST / SECOND ALLIED COURSE - II
(FOR CHEMISTRY AND PHYSICS MAJOR)
(For the candidates admitted from 2015 -16 onwards)

ALLIED MATHEMATICS – II

ALGEBRA, 3D AND TRIGNOMETRY

- UNIT 1:** Binomial, Exponential and Logarithmic series (Formulae only) - Summation and approximation related problems.
- UNIT 2:** Symmetric, Skew symmetric, Orthogonal, Hermitian, Skew Hermitian and Unitary matrices - Characteristic equation, Eigen values, Eigen vectors - Cayley Hamilton's theorem(proof not needed) - Simple problems only.
- UNIT 3:** Equation of a Sphere -Tangent plane - Plane section of a sphere - Finding the center and radius of the circle of intersection (simple problems only).
- UNIT 4:** Expansion of $\sin n\theta$, $\cos n\theta$, $\tan n\theta$ (n being a positive integer) - Expansion of $\sin^n \theta$, $\cos^n \theta$, $\sin^n \theta \cos^n \theta$ in a series of sines and cosines of multiples of θ (θ - gives in radians) - Expansion of $\sin \theta$, $\cos \theta$ and $\tan \theta$ in terms of powers (only problems in all the above)
- UNIT 5:** Euler's formula for $e^{i\theta}$ - Definition of Hyperbolic functions – Formulae involving Hyperbolic functions - Relation between Hyperbolic and circular functions - Expansion of $\sinh x$, $\cosh x$, $\tanh x$ in powers of x – Separation of real and imaginary part of $\sin(x+iy)$, $\cos(x+iy)$, $\tan(x+iy)$, $\sinh(x+iy)$, $\cosh(x+iy)$, $\tanh(x+iy)$, $\sinh^{-1}(x+iy)$, $\cosh^{-1}(x+iy)$, $\tanh^{-1}(x+iy)$.

TEXT BOOKS:

1. T. K. Manickavasagam Pillai, T. Natarajan, K. S. Ganapathy, "**Algebra Vol. I**" S. Viswanathan Private Limited, Chennai-2010.
2. S. Narayanan, T. K. Manickavasagam Pillai, "**Trigonometry**" S. Viswanathan Private Limited and Vijay Nicole Imprints Pvt. Ltd.2010.
3. T. K. Manickavasagam Pillai, "**Analytical Geometry of 3D and Vector Calculus**", New Gamma Publishing House, 2010.

REFERENCE BOOKS:

1. Arumugam & Isaac, "**Analytical geometry of 3D and Integral calculus**", New Gamma Publications, 2011.
2. Arumugam & Isaac, "**Trigonometry and Fourier series**", New Gamma Publications.

CHAIRMAN
BOARD OF STUDIES

CONTROLLER OF EXAMINATIONS

Sl. No.:

Subject Code:

U15MM2A6

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B. Sc.,-II & IV SEMESTER – FIRST/SECOND ALLIED COURSE - III
(FOR CHEMISTRY & PHYSICS MAJOR)
(For the candidates admitted from 2015-2016 onwards)

ALLIED MATHEMATICS – III

DIFFERENTIAL EQUATIONS, LAPLACE TRANSFORMS AND VECTOR CALCULUS

- UNIT 1:** Ordinary Differential Equations of first Order but of Higher Degree – Equation solvable for x, solvable for y, solvable for dy/dx, Clairaut's form (Simple case Only) – Linear Equations with constant coefficients – Finding Particular Integral in the case of $e^{kx} \sin(kx)$, $\cos(kx)$ (Where k is constant), X^k Where k is a positive integer, and $e^{kx} f(x)$ Where f(x) is any function of x (only problems in all the above – no proof needed for any formula)
- UNIT 2:** Formation of Partial Differential Equations by Eliminating arbitrary constants and by Elimination of arbitrary functions – Definition of general, particular and complete solutions – singular integrals (geometrical meaning not required) – Solution of First Order Equations in standard forms: $f(p, q) = 0$, $f(y, p, q) = 0$, $f(z, p, q) = 0$, $f_1(x, p) = f_2(y, q)$, $z = xp + yq + f(p, q)$ – (only problems in all the above – Proof not needed for any formula)
- UNIT 3:** Laplace Transforms: Definition – $L f(t)$, $L (\cos at)$, $L (\sin at)$, $L (\sin t^n)$ Where n is a positive integer, Basic theorems in Laplace Transforms (Formula only) – $[e^{at} f(t)]$, $L[e^{at} \cos bt]$, $L[e^{at} \sin bt]$ – Inverse Laplace Transforms related to the above standard forms solving second order ODE with constant co-efficient using Laplace transforms.
- UNIT 4:** Vector Differentiation – Velocity and Acceleration vectors- Gradient of the vectors – Directional derivatives – Unit normal Vector – Tangent plane – Divergence – Curl – Solenoidal and irrotational vectors – Double operators – Properties connecting grad., div and curl of a vector.
- UNIT 5:** Vector Integration – Line Integral – Conservative force field - Scalar potential field – Work done by a force – Surface integral – (Statement, Application and verification only) - Gauss Divergence theorem, Stoke's theorem, Green's theorem.

TEXT BOOKS:

1. S. Narayanan, “**Differential Equation**”, S. Viswanathan Publishers, 1996.
2. S. Narayanan, T. K. Manickavasagam Pillai, “**Calculus Vol. II**”, S. Viswanathan Pvt. Limited, 2003.
3. M. L. Khanna, “**Differential Calculus**”, Jaiprakashnath and Co., Meerut -2004.

REFERENCE BOOK:

1. Kandasamy, Thilagavathy, Gunavathy, “**Allied Mathematics Vol. II**”, S. Chand & Company Limited, New Delhi 2010.

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Subject Code:

U15ES2

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-05
ALL UG COURSES - II SEMESTER – PART – IV
(For the candidates admitted from the year 2015-16 onwards)

ENVIRONMENTAL STUDIES

Unit 1

Environment – Introduction – Nature – Scope – Content – Need for study: Natural resources – Forest and Energy resources – use and over exploitation –deforestation – Energy resources – reviewable and non reviewable energy resources.

Unit 2

Eco System: Concept – Structure and function – Procedures – consumers and decomposers – Food Chains – Food Webs and Ecological Pyramids – Biodiversity and its conservation : Introduction – definition – genetic – species and eco system diversity – conservation of biodiversity.

Unit 3

Environmental Pollution – Definition – causes – effects and control Measures – Types – Air – Water – Soil – Thermal and Nuclear hazards – solid waste and Management – Disaster Management – Role of an individuals in controlling pollution – Earth Quake – Earth Quake and Cyclone – Flood.

Unit 4

Social issues and the environment: urbanization – urban problems related to energy – Water Shed Management – Environmental ethics: issues and possible solutions – Wasteland reclamation – Climate Change – Global Warming - Acid rain – Ozone layer depletion – Public awareness.

Unit 5

Human Population and the environment: Population growth, Variation among nations – Population explosion – Family Welfare Programme – Human rights – HIV/AIDS – Women and Child Welfare – Role of information technology in environment and human health.

Text Book:

1. சுற்றுச்சூழல் கல்வி - முனைவர். ஆ. சசிலா அப்பாத்துரை -
நியூ செஞ்சுரி புக் ஹவுஸ் (பி) லிட், சென்னை.

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Sl. No.:

Subject Code:

U15L3T3

அரசு கலைக் கல்லூரி (தன்னாட்சி) - ஈரூர் - 5
கலையியல் / அறிவியல் / வணிகவியல் / பட்ட வகுப்பு
 (2015 - 2016 ஆம் கல்வியாண்டு முதல் பயிலும் மாணவர்களுக்குரியது)
 பகுதி - 1 பொதுத்தமிழ் - 3 - மூன்றாம் பருவம்
 (காப்பியங்கள், நாடகம், இலக்கணம், இலக்கிய வரலாறு)

அலகு 1 காப்பியங்கள்

சிலப்பதிகாரம் (புறஞ்சேரியிறுத்த காதை)
 மணிமேகலை (சிறைக்கோட்டம் அறக்கோட்டம் ஆக்கிய காதை)
 கம்பராமாயணம் (இரணிய வதைப்படலம்)

அலகு 2 காப்பியங்கள்

பெரியபுராணம் (இளையான்குடி மாற நாயனார் புராணம்)
 தேம்பாவணி (நாட்டுப்படலம்)
 சீறாப்புராணம் (பாந்தள் வசனித்த படலம்)

அலகு 3 நாடகம்

சேர தாண்டவம் - பாரதிதாசன்

அலகு 4 இலக்கணம்

நிறுத்தக் குறிகள்

அலகு 5 இலக்கிய வரலாறு

காப்பியங்கள், நாடகம்

பரிந்துரை நூல்

முனைவர் கா.வாசுதேவன் - பன்முக நோக்கில் தமிழ் இலக்கிய வரலாறு
 தேவன் பதிப்பகம், 16/43, திருநகர்,
 திருவானைக்கோவில், திருச்சி

ஐந்து அலகுகளிலும் சம அளவில் வினாக்கள் அமைதல் வேண்டும்.

வினாத்தாள் அமைப்பு முறை

பகுதி அ (ஒரு மதிப்பெண் வினா - 20)

அ) பொருத்தமான விடையைத் தேர்ந்தெடுத்தல் 5*1=5
 ஆ) கோடிட்ட இடங்களை நிரப்புதல் 5*1=5
 இ) பொருத்துதல் 5*1=5
 ஈ) ஒரே சொற்களில் விடையளித்தல் 5*1=5

பகுதி ஆ (ஐந்து மதிப்பெண் வினா)

இது அல்லது அது என்ற வகையில் அமைதல் வேண்டும் 5*5=25

பகுதி இ (பத்து மதிப்பெண் வினா)

ஐந்தில் எவையேனும் மூன்றனுக்கு மட்டும் கட்டுரை வடிவில் விடை எழுத வேண்டும். 3*10=30

மொத்த மதிப்பெண் -75

Sl. No.:

Subject Code:

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR- 05

ALL UG COURSES - III SEMESTER - PART – II - ENGLISH

(For the candidates admitted from the year 2015-16 onwards)

ENGLISH – III

Unit I

- A Prayer for My Daughter - W.B Yeats
A Poison Tree - William Blake

Unit II

- Stopping by Woods on a Snowy Evening - Robert Frost
Because I Could Not Stop For Death - Emily Dickinson

Unit III

- My Grand Mother's House - Kamala Das
Small Scale Reflections on a Great House - A.K Ramanujan

Unit IV

1. Error Correction
2. One word Substitution
3. Idioms and Phrases

Unit V

1. Comprehension
2. Note Making and Summarizing
3. Précis Writing

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Sl. No.:

Subject Code:

U15PH3C4

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., PHYSICS - III SEMSTER – CORE COURSE - IV

(For the candidates admitted from the year 2015-16 onwards)

THERMODYNAMICS AND STATISTICAL PHYSICS

UNIT – I: HEAT

Specific heat of solids - Dulong and Petit's law - Specific heat capacities of gases - Determination of C_v by Joly's differential steam calorimeter - Determination of C_p by Regnault's method - Isothermal and adiabatic processes - Reversible and irreversible processes - Carnot's theorem - Proof - Internal combustion engines (Otto and diesel engines) - Cycle of operation - Indicator diagram – Efficiency.

UNIT – II: THERMODYNAMICS

Entropy - Change of entropy in adiabatic process - Change of entropy in reversible and irreversible process - T-S diagram - Entropy of perfect gas - Kelvin's thermodynamic scale of temperature - Maxwell's thermo dynamical relations - Applications: Clausius-Clapeyron's equations – T-dS equations.

UNIT –III: CONDUCTION AND RADIATION

Conduction: Coefficient of thermal conductivity - Thermal conductivity of a good and bad conductor: Forbe's method - Lee's disc method - Radiation: Stefan's law - Determination of Stefan's constant (laboratory method) - Disappearing filament Optical Pyrometer - Solar constant - Temperature of the Sun - Water flow pyroheliometer - Water Stir Pyroheliometer.

UNIT – IV: LOW TEMPERATURE PHYSICS

Joule - Kelvin effect - Temperature of inversion - Porous plug experiment - Liquefaction of gases (principle of regenerative cooling) - Adiabatic expansion process - Adiabatic demagnetization - Refrigerating mechanism - Liquefaction of air - Linde's process - Liquefaction of Helium.

UNIT – V: STATISTICAL PHYSICS

Phase space - Statistical equilibrium - Micro and Macro states - Ensembles - Statistics of Particles - M.B - B.E - F.D statistics - Application of B.E statistics to photon gases - F.D statistics - Application of F.D. statistics to electron gas - Comparison of three statistics.

BOOKS FOR STUDY:

1. Brij Lal, Dr. N. Subrahmaniyam and P.S. Hemine, *Heat, Thermodynamics and Statistical Physics* - S.Chand & Co., New Delhi., 2010.
2. J.B. Rajam and C.L.Arora, *Heat and thermodynamics* - S.Chand &Co., New Delhi.
3. R. Murugesan, *Thermal Physics* - 1st Edition 2002.

BOOKS FOR REFERENCE:

1. D.S. Mathur, *Heat and thermodynamics* - S.Chand & Co., 2002.
2. Agarwal, Singhal, Sathyaprakash, *Heat and thermodynamics*.
3. H.C. Saxena and Agarwal *Thermal physics*.

Sl. No.:

Subject Code:

U15PH3C4

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05
B.SC., - I & III - SEMESTER – FIRST / SECOND ALLIED COURSE - I
(For the candidates admitted from the year 2015-16 onwards)
(FOR BOTANY, MATHEMATICS, PHYSICS & ZOOLOGY MAJOR)

ALLIED CHEMISTRY – I

- UNIT-I
(15 hours) 1.1 Volumetric Analysis : Standard Solution – Primary and Secondary Standards – Types of titrimetric reactions – reactions – redox- precipitation – EDTA titrations.
1.2 Laboratory Hygiene and Safety: Storage and handling of corrosive, flammable, explosive, toxic, carcinogenic and poisonous Chemicals.
1.3 Simple first aid procedure for Accidents: Acid in eye, alkali in eye, acid burns, alkali burns, poisoning, inhalation of gases, cut by glasses and heat burns.
2.1 Water: Soft water – Temporary and permanent hardness of water - Treatment of water for municipal purpose – Softening of water - Definition – Softening by Zeolite Process.
- UNIT –II
(15 hours) 2.2 Atomic Structure: Rutherford’s Nuclear Atom –Bohr’s Model of the atom- Bohr Sommerfeld theory - Distribution of electrons –Paulis Exclusion Principle- Hund’s Rule of maximum Multiplicity – Aufbau Principle.

UNIT-III (15 hours)

- 3.1 Radioactivity – Definition – types of radioactive rays – Nuclear energy – mass defect – binding energy – magic Numbers – Nuclear fission – Nuclear fusion – difference between Nuclear fission and fusion – Nuclear power plant
3.2 Isotopes, Isobars and Isotones.

UNIT – IV (15 hours)

- 4.1 Classification and Nomenclature of organic of Compounds classification of organic compounds – functional groups – homologous series.
4.2 IUPAC System of nomenclature of simple and complex aliphatic compounds.

UNIT- V (15 hours)

- 5.1 Polymerisation – Introduction –Preparation of Polymers – addition polymers (Polyethylene, PVC and Teflon) – Condensation polymers (nylon – 6,6 and terylene)
5.2 Synthetic rubbers(BUNA, Butyl rubber and SBR) Thermoplastic and thermosetting plastics.

Books Recommended:

1. R.Gopalan, P.S.Subramanian, K.Rengarajan – Elements of Analytical Chemistry Sultan chand & Sons New Delhi -2
2. B.K.Sharma “Industrial Chemistry” GOEL Publishing House Meerut.
3. P.L.Soni and Mohan Katyal “Text Book of inorganic Chemistry 20th Received Edition, Sultan Chand 1992.
4. U.N.Dash-Nuclear Chemistry Sultan Chand & Sons New Delhi-2.
5. I.L.Finar-Organic Chemistry. The fundamental Principles ELBS English Lan.
6. P.L.Soni H.M.Chawla “Text Book of organic chemistry sultan chand and sons New Delhi-2.
7. B.S.Bahl and Arun Bahl ‘Advanced Organice chemistry S.Chand and Co New Delhi.

Sl. No.:

Subject Code:

U15CH3N1

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05
B.Sc., PHYSICS - III SEMESTER – NON-CORE ELECTIVE - I
(For the candidates admitted from the year 2015-16 onwards)

LABORATORY HYGIENE AND SAFETY

UNIT- I (6 hours)	1.1 Laboratory safety measures: Lab discipline – Cleanliness and watchfulness. Maintenance of worktable, washing sink, fume hoods, fuel gas systems, instruments and equipments – Requirements for a safe laboratory. Use of apron overcoats, goggles gloves, etc., 2.1 Storage and handling of chemicals – carcinogenic chemicals – Handling of ethers – toxic and poisonous chemicals.
UNIT –II (6 hours)	3.1 Safe limits of vapour concentrations – Waste disposal and fume disposal –
UNIT-III (6 hours)	Precautions for avoiding accidents – cleansing agents – cleaning the apparatus and Instruments.
UNIT – IV (6 hours)	4.1 First – Aid techniques: Burns and Damages due to organic substances, acids, alkalis, burns in the eye- Inhalation of toxic vapours, hazardous chemicals, bromine, phenol and hot objects.
UNIT- V (6 hours)	5.1 Poisons and antidotes – Rules to avoid poisoning – emetics- universal antidote – treatments for specific poisons. Harmful effects of X-rays and lasers.

Books Recommended:

1. V.Gopalan, P.S.Subramaniam and K.Rengarajan, Elements of Analytical Chemistry.
2. Jayashree Ghosh, A Text Book of Pharmaceutuical Chemistry.

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Sl. No.:

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U15L4T4

அரசு கலைக் கல்லூரி (தன்னாட்சி) - ஈரூர் - 5
கலையியல் / அறிவியல் / வணிகவியல் / பட்ட வகுப்பு
(2015 - 2016 ஆம் கல்வியாண்டு முதல் பயிலும் மாணவர்களுக்குரியது)
பகுதி - 1 பொதுத்தமிழ் - 4 - நான்காம் பருவம்
(சங்க இலக்கியம், புதினம், இலக்கணம், இலக்கிய வரலாறு)

அலகு 1

நற்றிணை - 5,21,27,80,92
குறுந்தொகை -10 பாடல்கள் (2,16,20,40,62,67,202,244,263,286)
ஐங்குறுநூறு (அன்னாய் வாழிப்பத்து)
அகநானூறு - 2 பாடல்கள் (10,23)
புறநானூறு - 5 பாடல்கள் (74,192,204,206,312)
கலித்தொகை- 2 பாடல்கள் (11,88)

அலகு 2

சிறுபாணாற்றுப்படை (முழுவதும்)

அலகு 3

பூர்வீக பூமி - சூரியகாந்தன்

அலகு 4

கட்டுரை
பொதுக்கட்டுரை, விண்ணப்பம், மடல், அலுவலகக் கடிதங்கள் எழுதப் பழகாதல்

அலகு 5

இலக்கிய வரலாறு - சங்க இலக்கியம், புதினம்

பரிந்துரை நூல்

முனைவர் கா.வாசுதேவன் -பன்முக நோக்கில் தமிழ் இலக்கிய வரலாறு
தேவன் பதிப்பகம்,16/43, திருநகர்,
திருவானைக்கோவில்,திருச்சி
ஐந்து அலகுகளிலும் சம அளவில் வினாக்கள் அமைதல் வேண்டும்.

வினாத்தாள் அமைப்பு முறை

பகுதி அ (ஒரு மதிப்பெண் வினா - 20)

- | | |
|--|-------|
| அ) பொருத்தமான விடையைத் தேர்ந்தெடுத்தல் | 5*1=5 |
| ஆ) கோடிட்ட இடங்களை நிரப்புதல் | 5*1=5 |
| இ) பொருத்துதல் | 5*1=5 |
| ஈ) ஒரே சொற்களில் விடையளித்தல் | 5*1=5 |

பகுதி ஆ (ஐந்து மதிப்பெண் வினா)

இது அல்லது அது என்ற வகையில் அமைதல் வேண்டும் 5*5=25

பகுதி இ (பத்து மதிப்பெண் வினா)

ஐந்தில் எவையேனும் மூன்றனுக்கு மட்டும் கட்டுரை வடிவில் விடை தருக. 3*10=30
மொத்த மதிப்பெண் -75

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR- 05

ALL UG COURSES - IV SEMESTER - PART – II - ENGLISH

(For the candidates admitted from the year 2015-16 onwards)

ENGLISH – IV

Unit I

- Grand Mother's Gold - Ella Adkins
Medieval Magic - Geoffrey Chaucer

Unit II

- The little Man - John Galsworthy
The Pot of Broth - W.B Yeats

Unit III

- The Proposal - Anton Checkov
The Bishop's Candle Sticks - Norman Mc Kinnell

Unit IV

1. Letter Writing
2. Developing Hints
3. Complete the Dialogue

Unit V

1. Essay
2. Group Discussion
3. Interview Techniques

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR -05
B.Sc., PHYSICS – IV - SEMSTER – CORE COURSE –V
(For the candidates admitted from the year 2015-16 onwards)

CORE PRACTICAL – II
(Any fifteen experiments)

1. Co-efficient of viscosity of the given liquid - Poiseuille's flow method.
2. Temperature of coefficient of resistance - Potentiometer.
3. Specific heat capacity of a liquid - Joule's calorimeter.
4. Emissive power of a surface - spherical calorimeter.
5. Convex Lens - f , R and μ .
6. Potentiometer - calibration of ammeter.
7. Figure of merit [current sensitivity and voltage sensitivity] - mirror galvanometer.
8. Refractive index of liquid prism - spectrometer.
9. Zener controlled voltage regulator.
10. Rigidity modulus - Static Torsion.
11. Surface Tension – Capillary rise method.
12. Resistance and specific resistance - Carey foster bridge.
13. Verification of Logic Gates - AND, OR, NOT, NAND and NOR using Ic's.
14. Transistor characteristics - CE Configuration.
15. Rigidity modulus of the given wire - Torsion pendulum with equal masses.
16. Spectrometer - i - d curve.
17. Spectrometer - Grating - Minimum Deviation method.
18. Determination of rigidity modulus of the given rod - Static torsion.
19. Kundt's tube - Young's modulus of the material of the rod.
20. Stoke's method - Viscosity of highly viscous liquid.
21. CRO study of wave forms - Lissajou's figures - frequency determination.
22. Newton's rings - Radius of curvature of a convex lens.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05
B.Sc., PHYSICS - IV SEMSTER – CORE COURSE VI
(For the candidates admitted from the year 2015-16 onwards)

OPTICS

UNIT – I: GEOMETRICAL OPTICS

Aberrations - Spherical aberration in lens - Methods of reducing spherical aberration - Coma - Astigmatism - Curvature of the field - Distortion - Chromatic aberration in a lens - Achromatic lenses - Dispersive power: Achromatism in prism - Deviation without dispersion - Dispersion without deviation.

UNIT – II: INTERFERENCE

Introduction - Coherence - Conditions for interference - Interference in thin films - Interference due to reflected light - Conditions for Maxima and Minima - Air wedge - Testing the planeness of a surface – Michelson’s interferometer - Principle - Construction - Working - Types of fringes - Applications – Determination of λ and $d\lambda$ - Thickness of a thin transparent sheet - Fabry perot interferometer.

UNIT – III: DIFFRACTION AND OPTICAL INSTRUMENT

Fresnel’s diffraction - Diffraction at a Circular aperture and Straight edge - Fraunhofer diffraction - Diffraction at a single slit - Double slit - N slits (diffraction grating) - Normal incident - Absent and overlapping spectra of diffraction grating - Huygens eye piece - Rayleigh’s criterion - Resolving power of a telescope, microscope and grating.

UNIT – IV: POLARISATION

Huygen’s explanation of double refraction in uniaxial crystals - Quarter wave plate and half wave plate - Babinet’s compensator - Production and detection of plane elliptically and circularly polarised light – Nicol prism - Optical activity - Laurent’s half shade polarimeter.

UNIT – V: QUANTUM OPTICS

Fibre optic system - Advantages over copper cable communication - Principle - Acceptance angle and Numerical aperture - Types of Optical fibre: Based on materials, refractive index and modes of propagation - Fibre optic communication system - Introduction to Non-linear optics - Linear medium - Nonlinear polarisation - Second harmonic generation.

BOOKS FOR STUDY:

1. N. Subramaniyam and Brij Lal, *A Text book of optics*, Revised by M.N. Avadhanullah, - S.Chand & Co., 2004.
2. R. Murugesan and Kiruthiga Sivaprasath, *Optics and spectroscopy* - S.Chand & Co., NewDelhi 2006.

BOOKS FOR REFERENCE:

1. P.K. Chakrabarthy, *Geometrical and Physical Optics* - New Central Book Agency, Kolkata., 2005.
2. D.R. Khanna and H.R. Gulati, *Optics* - R.Chand & Co., New Delhi. 1979.
3. Ajoy chatak, *Optics* – TMH, Delhi.

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U15CH2A2P/
U15CH4A2P

**GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05
B.SC., - II & IV - SEMESTER – FIRST ALLIED COURSE - I
(FOR BOTANY, MATHEMATICS, PHYSICS & ZOOLOGY MAJOR)
(For the candidates admitted from the year 2015-16 onwards)**

ALLIED CHEMISTRY – II PRACTICAL

1. Acidimetry and alkalimetry

- a) Strong acid Versus Strong Base b) Weak acid Versus Strong base.
- c) Determination of hardness of water

2. Permangnometry

- a) Estimation of ferrous sulphate using KMnO_4
- b) Estimation of oxalic acid using KMnO_4

3. Iodometry

- a) Estimation of copper using thiosulphate b) Estimation of $\text{K}_2\text{Cr}_2\text{O}_7$
- c) Estimation of KMnO_4 using thiosulphate

II ORGANIC ANALYSIS

A study of reactions of the following organic compounds:

1. Carbohydrate
2. Amide
3. Aldehyde
4. Acid
5. Amine
6. Phenol

The students may be trained to perform the specific reactions like

Test for element (nitrogen only) Aliphatic or aromatic,
Saturated or unsaturated and functional group present and record their observation.

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Subject Code:

U15CH2A3/
U15CH4A3

**GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05
B.SC., - II & IV - SEMESTER – FIRST / SECOND ALLIED COURSE – III
(FOR BOTANY, MATHEMATICS, PHYSICS & ZOOLOGY MAJOR)
(For the candidates admitted from the year 2015-16 onwards)**

ALLIED CHEMISTRY – III

- UNIT- I (15 Hours) 1.1 Molecular Orbital theory: Basic concepts of M.O. theory – Bonding and antibonding orbitals – Bond order – Application of M.O. theory to H_2, He_2, N_2, O_2 and F_2 molecules.
1.2 Compounds of Sulphur: Preparation, Properties, uses and structures of per acids of sulphur and sodium thio sulphate.
- UNIT –II (15 hours) Co-Ordination Chemistry:
Nomenclature of Mononuclear complexes – Werner, Sidgwick theories
Chelation – Application and structure of EDTA – Biological role of haemoglobin and chlorophyll (Elementary idea)
- UNIT-III (15 hours) 3.1 Electron displacement Effect: Inductive Effect – Definition – Relative strengths of aliphatic mono carboxylic acids and aliphatic amines
3.2 Stereoisomerism: Optical isomerism – Optical activity – Chirality – Lactic and tartaric acids-racemic mixture- resolution. Geometrical isomerism – Maleic and fumaric acids.
- UNIT – IV (15 hours) 4.1 Aromatic Hydrocarbons: Structure, Stability, Resonance and aromaticity of benzene. Electrophilic substitution reactions in benzene with mechanism – nitration, sulphonation, halogenation. Naphthalene – isolation, synthesis and properties
4.2 Organic halogen Compounds: Chemistry of Chloroform, Carbon tetra chloride, DDT, BHC and Freon -1,2
- 5.1 Surface Chemistry: Emulsions, Gels – Definition, Preparation, Properties and applications.
5.2 Chromatography – Column, paper and thin layer chromatography.
- UNIT- V (15 hours) 5.3 Catalysis-types, Mechanisms and industrial applications.

Books Recommended:

1. P.L. Soni and Mohan katyal “Text Book of Inorganic Chemistry” 20th Revised Edition, Sultan Chand 1992.
2. R.B. Puri and L.R. Sharma “Principles of Inorganic Chemistry” Sultan Chand 1989.
3. R.D. Madan “Modern inorganic Chemistry” S. Chand and Co.Pvt. Ltd., 1987 New Delhi.
4. P.L. Soni “Text Book of Inorganic Chemistry” ,Sultan Chand and Co., New Delhi.
5. B.S. Bahl and Arun Bahl ‘Advanced Organic Chemistry’ S.Chand and New Delhi.
6. B.R. Puri, L.R.Sharma amd madan S.Pathania ‘Principles of Physical Chemistry’ Shoban Lal Nagin Chand and Co., Delhi.
7. P.L Soni “Text Book of Physical Chemistry” Sultan Chand and Co., new Delhi.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05
B.Sc., PHYSICS - IV SEMESTER – NON- CORE ELECTIVE - II
(For the candidates admitted from the year 2015-16 onwards)

WATER POLLUTION AND TREATMENT

- UNIT-I (6 hours) Water Pollution – Definition types of water pollution – Sources of water pollution – sewage and domestic wastes – their harmful effects – brief idea about sewage treatment – ISO parametas for drinking water.
- UNIT –II (6 hours) Hardness of water and its types – disadvantages of hard water – softening – Zeolite process – ion exchange process – Water borne diseases like cholera, typhoid, Stone formation – Causes and remedies.
- UNIT-III (6 hours) Chemical analysis of water – hardness (Ca&Mg) using EDTA method. Total Solids, dissolved oxygen, BOD, COD and TDS.
- UNIT – IV (6 hours) Origin, Characteristics. Effects and treatment of effluents from Tannery and distillery industries.
- UNIT- V (6 hours) Characteristics of Effluents from textile processing industry. Primary – treatment – Secondary treatment – Oxidation ponds and anaerobe digestion, Tertiary treatment – Evaporation, Reverse osmosis.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR – 5

B.Sc., PHYSICS-IV- SEMESTER-SKILL BASED ELECTIVE-I

(For the candidates admitted from the year 2015-2016 onwards)

DESKTOP PUBLISHING AND PHOTOSHOP - LAB

UNIT – I: MS OFFICE

MS Word:

Document formatting options – Tables, Bullets and Numbering – Font - Alignment Paragraph Formatting – Insert Picture, Clipart, Shapes and WordArt – Header and Footer - Text Box – Page Layout - Mail Merge – Spelling and Grammar.

MS Excel:

Cell Formatting Options – Formulae and Functions – Charts – Sort - Filter - Grouping.

MS Power Point:

Creating Slide show by using Animation Technique – Slide Master – Clip Art - Picture Editing.

UNIT – II: PAGE MAKER

Creating new Filets – Entering text – Defining Style – Saving files – Creating Frame – Inserting and removing pages – Adding shapes – Creating frame – Creating header and footer – Using story Editor – Developing long documents – Using color – Printing – Practice on Multilingual software like INDIC .

UNIT – III: COREL DRAW

Drawing-lines, Shapes – Inserting Pictures, Objects, Tables, Templates – Use of Pick tools, Zoom tools, Free hand tool, Square tool, Rectangle tool, Text tool, Fill tool - Fonts used in designing of monograms, Logos, Posters, Stickers, Greeting cards, Wedding cards, Visiting cards - Adding special effects - Exporting drawings - Outlining and filling objects – Inserting symbols and Clip arts – Exporting file – Use features of Corel draw to create artistic characters and shapes.

UNIT – IV: PHOTOSHOP

The File menu - The Tools menu - Drawing lines and shapes – Formats - Photo Editing / Inserting setting up - Introduction of layers – The interface managing Palettes - Working with layers – WEB and WEB GALLERY using internet explorer – Image ready - Creating Animations and presentations - Different color scheme Palettes Digital Imaging - Working with different Palettes – Image adjustment options – Labels - Auto labels, Auto contrasts – Curves - Color balance – Posterize - Variations – Preparing the file and work area - Creating three Dimensional effects using Layers – Working with different tools – Editing Selections – Creating images and giving special effects using Filters – Using layer styles – Produce an image by mixing two or more different images using layer - Tips and tricks in Photoshop.

UNIT – V: PRINT PUBLISHING USING PAGEMAKER

Designing layouts for print - Integrating media elements on print layouts and saving files for print compatibility – Understanding how images are formed - Image file formats and their properties - Creating illustrations for visual media with good understanding of colors and formats – Designing for different visual medium and create professional images for print Advertising media.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05
B.Sc., PHYSICS – V SEMESTER – CORE COURSE – VII
(For the candidates admitted from the year 2015-16 onwards)

ELECTRICITY AND MAGNETISM

UNIT – I: ELECTROSTATIC

Coulomb's law - Electric field due to a point charge - Electric potential - Relation between electric field and electric potential - Electric potential energy – Poisson's and Laplace equations - Flux of the electric field - Gauss's theorem - Electric field due to a uniformly charged solid sphere and a uniform infinite solid Cylindrical charge - Energy stored per unit volume in the medium surrounding the Charged conductor - Electrometer: Quadrant Electrometer - Measurement of ionization current - Attractive disc electrometer.

UNIT – II: MAGNETO STATICS

Definitions: Magnetic Induction - Magnetization - Magnetic susceptibility - Magnetic permeability - Relation between B, H and M - Properties of diamagnetic, paramagnetic and ferromagnetic materials - Soft and Hard Magnetic Materials – B-H curve for a magnetic material by magnetometer method – Ballistic Galvanometer method - Hysteresis curve - Retentivity and Coercivity – Calculation of energy loss in a hysteresis cycle.

UNIT – III: MAGNETIC EFFECT OF CURRENT:

Ampere's Circuital Law - Biot-Savart's law - Magnetic induction at a point due to a straight conductor carrying current - Force between two parallel current carrying conductors - Fleming's left hand rule – Moving coil Galvanometer - Theory and working of moving coil ballistic galvanometer - Damping correction - Comparison of two capacitors using B.G.

UNIT – IV: CURRENT ELECTRICITY AND THERMO ELECTRICITY:

Current and Current Density - Expression for Current Density - Ohm's Law and Electrical Conductivity - Kirchhoff's Laws - Carey Foster's Bridge – Potentiometer - Calibration of Ammeter - Low range and High range voltmeter - Laws of Thermo e.m.f - Definition and Determination of Peltier and Thomson coefficients - Application of thermodynamics to a thermocouple - Measurement of thermo e.m.f of a thermo couple using potentiometer - Thermo-electric Diagrams - Uses.

UNIT – V: ELECTROMAGNETIC INDUCTION:

Faraday's Laws of electromagnetic Induction - Self Inductance of a long solenoid - Determination of Self Inductance by Rayleigh's Method - Mutual Inductance - Mutual Inductance between two Coaxial Solenoids - Experimental determination of Mutual Inductance by direct method - Coefficient of Coupling - Eddy Current - Uses - Earth Inductor - flux meter - Grassot Flux meter.

BOOKS FOR STUDY:

1. R. Murugesan, *Electricity and Magnetism* - S. Chand & Company Ltd, New Delhi, 2008.

BOOKS FOR REFERENCES:

1. Brij Lal and Subramaniyan, *Electricity and Magnetism* - Ratan Pragashan Publishing Ltd, Agra, 2000.
2. Shegal Chopra and Shegal, *Electricity and Magnetism* - S. Chand & Sons, New Delhi, 1987.

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-05**B.Sc., PHYSICS- V SEMESTER- CORE COURSE –VIII**

(For the candidates admitted from the year 2015 -16 onwards)

ATOMIC AND NUCLEAR PHYSICS**UNIT – I: POSITIVE RAY AND X-RAY ANALYSIS**

Positive Rays: Positive ray properties - e/m of positive rays by Thomson's parabola method - Determination of critical potential – Frank-Hertz's Experiment - X-rays: Introduction – Properties - Production of X-rays - Continuous and Characteristic X-rays - Scattering of X-rays - Compton Scattering.

UNIT – II: VECTOR ATOM MODEL

Various quantum numbers - Coupling Schemes - Pauli's exclusion principle - Electronic configuration of elements - Periodic classification of elements - Magnetic dipole moment of electron due to orbital and spin motion - Bohr Magneton - Stern and Gerlach Experiment.

UNIT - III: FINE STRUCTURE OF SPECTRAL LINES

Special terms and notations - Selection rules - Intensity rule and interval rule - Fine structure of sodium D lines - Alkali spectra - spectrum of helium - Zeeman effect - Larmor's theorem - Debye's quantum mechanical explanation of the normal Zeeman effect - Anomalous Zeeman effect - Theoretical explanation Lande's g -factor - Explanation of splitting of D_1 and D_2 lines of sodium - Paschen back effect and Stark effect.

UNIT - IV: BASIC NUCLEAR PROPERTIES

Nuclear size, charge, mass, spin, isotopes, isomers - Nuclear Magnetic dipole moment - Electric quadrupole moment - Mass defect - Binding energy - Packing fraction - Nuclear forces - Nuclear models: Shell model - Liquid drop model – Particle accelerators: Cyclotron - Betatron – Detectors: Wilson's cloud chamber - Bubble chamber.

UNIT - V: NUCLEAR REACTIONS AND ELEMENTARY PARTICLES

Q -value of nuclear reaction – Chain reaction - Nuclear reaction cross section - Nuclear Fission - Energy released in fission - Nuclear fusion – Nuclear breeder reactor - Source of Solar energy - Plasma - Magnetic bottle - Plasma confinement - Elementary particles: Baryons - Leptons - Mesons - Strange particles.

BOOKS FOR STUDY:

1. S. Murugesan, *Modern Physics* - S.Chand & Co.
2. J.B Rajam, *Modern Physics* - S. Chand & Co.

BOOKS FOR REFERENCES:

1. G. Jose Robin and A. Ubald Raj, *Modern Physics* - Indira Publications.
2. N. Subramaniam and Brij Lal, *Atomic And Nuclear Physics*.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., PHYSICS – V SEMESTER – CORE COURSE – IX

(For the candidates admitted from the year 2015-16 onwards)

QUANTUM MECHANICS AND RELATIVITY

UNIT – I: FOUNDATIONS OF QUANTUM MECHANICS

Inadequacy of classical mechanics - Black body radiation - Characteristics of black body radiation - Kirchoff's law - Wien's law - Stefan's law - Rayleigh Jean's law - Energy distribution in black body - Planck's hypothesis and Radiation law - Planck's quantum theory - Properties of photons – Laws of photo electric effect - Experiment - Einstein's photo electric equation.

UNIT – II: MATTER WAVES

de-Broglie's waves - de-Broglie wavelength - de-Broglie concept of stationary orbits - de-Broglie wave length associated with electron accelerated through a potential difference - Velocity of de-Broglie waves - Properties of matter waves - Experimental verification of matter waves: G.P. Thomson experiment - Davisson and Germer's experiment.

UNIT – III: DEVELOPMENT OF QUANTUM MECHANICS

Concept of wave function and its physical significance - Wave velocity and group velocity - Relation between phase velocity and group velocity for a Non-Relativistic free particle - Normalized and orthogonal wave functions - Expansion theorem - Conditions satisfied by wave function - Heisenberg's uncertainty principle – Experiment: Heisenberg's Gamma ray microscope – Applications: Minimum energy of a harmonic oscillator – Energy of a particle in one dimensional box.

UNIT – IV: OPERATOR FORMALISM & SCHROEDINGER'S WAVE EQUATION

Operators associated with different observables - Expectation values of dynamical quantities - Eigen values and Eigen functions - Orbital angular momentum operator and their commutation rules – Time- Independent wave equation – Time-dependent wave equation – Application: Particle in one dimensional box.

UNIT – V: RELATIVITY

Frame of reference - Galilean transformation equations - Michelson - Morley experiment - Postulates of special theory of relativity - Lorentz transformation equations - Length contraction - Time dilation - Addition of velocities - Variation of mass with velocity - Mass-Energy equivalence - Relation between relativistic momentum and energy.

BOOKS FOR STUDY:

1. Satya Prakash, *Quantum Mechanics*, Pragati Prakashan, Meerut, 2008.
2. A.K. Saxena, *Principles of Modern Physics*, Narosa publishing house, New Delhi, 2005.
3. R. Murugesan & Kiruthiga Sivaprasath, *Modern physics*, S.chand publishing, New Delhi.

BOOKS FOR REFERENCE:

1. H.S. Mani and G.K. Metha, *Introduction to Modern physics*, EWP, New Delhi, LCSE, 1988.
2. B.L. Theraja, *Modern physics*, S. Chand publishing, New Delhi.
3. V. Rajendran and A. Marikani, *Applied Physics for Engineers*, TMH, New Delhi, 2001.

Sl. No:

Subject Code:

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.SC., PHYSICS -V SEMESTER – ELECTIVE COURSE-I

(For the candidates admitted from the year 2015-16 onwards)

BASIC ELECTRONICS

UNIT-I SEMICONDUCTOR AND PN JUNCTION DIODE

Types of semiconductors - Intrinsic semiconductors - Extrinsic semiconductors - Forward and reverse biased PN junction – V-I characteristics - Half wave and full wave rectifiers – Ripple factor – Efficiency - Zener diode – Reverse characteristic of Zener diode – Zener diode shunt regulator – Clipping circuits – Positive clipper – Negative clipper – Clamping circuits – Voltage doubler.

UNIT-II SPECIAL PURPOSE DIODES AND OPTOELECTRONIC DEVICES

Tunnel diode – V-I Characteristics – Parameters – Varactor diode – PIN diode – Light Emitting diode – Multicolour LEDs - Seven segment display - Liquid crystal display – Advantages and disadvantages of LCDs – Photo diode – Photoconductive cell – Photovoltaic cell – Laser diode.

UNIT –III BIJUNCTION TRANSISTOR AND FIELD EFFECT TRANSISTOR

BJT symbols – BJT biasing - Operation of npn and pnp transistors – Transistor configurations – Characteristics of a transistor in CB and CE configurations - Current gain in CB and CE configurations – Operating point – Load line – Voltage divider bias – h-parameters of a transistor – Hybrid equivalent circuit for CE transistor – FET and its types – JFET – Operation – Characteristics – Parameters – Types of MOSFET (qualitative analysis only)

UNIT-IV AMPLIFIERS AND OSCILLATORS

Classification of amplifiers: RC coupled amplifier – Frequency response of RC coupled amplifier – Power amplifiers – Class-A amplifier – Class-B amplifier - Class-B push-pull amplifier – Efficiency – Feedback amplifiers – Principle of feedback amplifier – Advantages and disadvantages of negative feedback.

Classification of oscillators: Barkhausen criterion - Hartley oscillator – Colpitt's oscillator – Phase shift oscillator – Wien bridge oscillator.

UNIT-V OPERATIONAL AMPLIFIER

Ideal OP-AMP – Inverting amplifier – Non-inverting amplifier – Differential amplifier – CMRR – d.c characteristics: Input bias current – Input offset current – Input offset voltage – a.c characteristics – Frequency response – Slew rate - Applications: Adder – Subtractor – Differentiator - Integrator – Comparators – Schmitt trigger – Weighted resistor DAC - R- 2R ladder DAC – Counter type ADC.

BOOKS FOR STUDY:

1. Dr. R.S. Sedha, *A text book of applied electronics* - Revised edition 2013 - S.CHAND Publishing, New Delhi (**For Unit-I to Unit-IV**).
2. D. Roy Choudhury, *Linear Integrated circuits* - Fourth edition, New age international (P) Limited, New Delhi (**For Unit-V**).

BOOKS FOR REFERENCE:

1. Bhargava Kulshreshta and Gupta, *Basic Electronics and linear circuits* - DTMH 1989.
2. Beboo and Burrows, *Integrated circuit and Semiconductor devices* - TMHG 1989.
3. Mill Man Halkias, *Integrated Electronics* - TMH.

CHAIRMAN-BOS

COE

Sl. No:

Subject Code:

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR – 5
B.Sc., PHYSICS-V- SEMESTER - SKILL BASED ELECTIVE - II
(For the candidates admitted from the year 2015-2016 onwards)

ELECTRIC WIRING AND WINDING LAB

1. Control of a lamp through 2-way switch.
2. Two lamps dimmer
3. Series control of 2-lamps.
4. Parallel control of 2-lamps.
5. Control of 2-lamps with two switches and a 3-pin wall socket.
6. Service connections.
7. Estimations for a small pump house.
8. Estimation for a small house PVC WIRING.
9. Street lighting.
10. Estimation for SAW mill.
11. Designing of winding of a Transformer(230V, 12V-0-12V with 5 Amps)
12. Winding of a no volt coil for a direct OV line starter.
13. Winding of a fluorescent lamp choke.
14. End connections of a 3-phase induction motor.
15. Winding of a Rotor and stator of a single phase induction motor.

CHAIRMAN-BOS

COE

Sl. No:

Subject Code:

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR – 5

B.Sc., PHYSICS-V- SEMESTER - SKILL BASED ELECTIVE - III

(For the candidates admitted from the year 2015-2016 onwards)

PROGRAMMING IN C LANGUAGE (LAB)

UNIT – I: BASIC STRUCTURE OF C PROGRAMMING

Programs - Constants - Variables - Data type – Declaration of variables - Defining symbolic constants, operators and expression - Reading a character - Writing a character - Formatted input and output statements.

UNIT – II: CONTROL STATEMENTS

Simple if, If-Else, Else-if ladder - Switching statements - Goes to statement - Break and continue looping - While-do - For statements.

UNIT – III: ARRAYS

User defined functions - String functions - Strcat, strcpy, strlen, strcmp - Elementary idea.

UNIT-IV: DEVELOPMENT OF ALGORITHM, FLOW CHART AND PROGRAM FOR THE FOLLOWING.

1. Average of a set of numbers.
2. Area of a triangle.
3. Sorting a set of numbers in ascending and descending order.
4. Summing the series of numbers.
5. Solving the series of numbers.

UNIT –V: DEVELOPMENT OF ALGORITHM, FLOW CHART AND PROGRAM FOR THE FOLLOWING

1. Solving quadratic equation.
2. Finding factorial using recursion.
3. Calculating mean and variance.
4. Adding, subtracting and multiplication of matrices.
5. Determination of roots by Newton – Raphson method.
6. Numerical integration by Trapezoidal rule /Simpson's rule.

BOOKS FOR STUDY:

1. E. Balagurusamy, *Programming in ANSI "C"*.

BOOKS FOR REFERENCE:

1. Yashavant P. Kanitkar, *Let Us C* - Fifth Edition.

Sl. No.:

Subject Code:

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05
ALL UG COURSES – V SEMESTER – PART - IV
(For the candidates admitted from the year 2015 - 2016 onwards)

SOFT SKILLS DEVELOPMENT

Learning Objective

Today's world is all about relationship, communication and presenting oneself, one's ideas and the company in the most positive and impactful way. This course intends to enable students to achieve excellence in both personal and professional life.

- UNIT-I Know Thyself/Understanding Self**
Introduction to Soft Skills-Self discovery-Developing positive attitude-Improving perceptions-Forming values.
- UNIT- II Interpersonal Skills/Understanding Others**
Developing interpersonal relationship-Team building-group dynamics-Net working-Improved work relationship.
- UNIT-III Communication Skills / Communication with others**
Art of listening-Art of reading-Art of speaking-Art of writing-Art of writing e-mails-e mail etiquette.
- UNIT-IV Corporate Skills / Working with Others**
Developing body language-Practicing etiquette and mannerism-Time management-Stress management.
- UNIT-V Selling Self / Job Hunting**
Writing resume/cv-interview skills-Group discussion-Mock interview-Mock GD-Goal setting-Career planning.

Text Book:

Meena.K and V.Ayothi (2013) A Book on Development of Soft Skills (Soft Skills : A Road Map to Success), P.R.Publishers & Distributors, No, B-20 & 21, V.M.M. Complex, Chatiram Bus Stand, Thiruchirappalli - 620 002.
(Phone No:0431 - 2702824: Mobile No: 94433 70597, 98430 74472)

Alex. K (2012) Soft Skills - Know Yourself & Know the World, S.Chand & Company LTD, Ram Nagar, New Delhi - 110 055.
Mobile No: 94425 14814 (Dr.K. Alex)

Reference Books

- (i) Developing the leader within you John c Maxwell
- (ii) Good to Great by Jim Collins
- (iii) The seven habits of highly effective people Stephen Covey
- (iv) Emotional Intelligence Daniel Goleman
- (v) You can win Shive Khera
- (vi) Principle centred leadership Stephen Covey.

CHAIRMAN - BOS

COE

Sl. No:

Subject Code:

U15PH6C10P

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05
B.Sc., PHYSICS – VI - SEMESTER – CORE COURSE – X
(For the candidates admitted from the year 2015-2016 onwards)

CORE PRACTICAL-III
(Any fifteen Experiments)

1. Koenig's Method - Uniform Bending-Young's Modulus.
2. Spectrometer - $i-i'$ Curve.
3. Spectrometer - Small angle Prism.
4. Spectrometer - Grating Normal Incidence Method - dispersive power.
5. Spectrometer - dispersive power of a given prism.
6. Spectrometer - Cauchy's Constant.
7. Spectrometer - Fraunhofer lines.
8. Spectrometer - Hartmann's Formula.
9. Earth Inductor using B.G - Determination of B and H.
10. Field along the axis of a coil - Determination of M.
11. M and H absolute determination using deflection and vibration magnetometer.
12. Potentiometer - EMF of a thermocouple.
13. Potentiometer - Temperature Coefficient of thermistor.
14. Potentiometer - High range voltmeter calibration.
15. Band gap energy of Thermistor.
16. Ballistic Galvanometer - Figure of merit.
17. B.G. Absolute capacity of condenser.
18. B.G. - Absolute Self Inductance.
19. B.G - Absolute Mutual Inductance.
20. B.G – Comparison of Mutual Inductance.
21. Anderson's bridge - Self Inductance of a coil.
22. He – Ne Laser experiments.

Sl. No:

Subject Code:

U15PH6C11P

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05
B.Sc., PHYSICS – VI - SEMESTER-CORE COURSE - XI
(For the candidates admitted from the year 2015-2016 onwards)

CORE PRACTICAL - IV

SECTION-A
ELECTRONICS

(Any twelve experiments)

1. Series and Parallel resonance circuits.
2. Single Stage - RC coupled amplifier - Transistor.
3. Emitter follower - Frequency response.
4. IC regulated power supply.
5. Hartley oscillator using transistor.
6. Colpitt's Oscillator using transistor.
7. Phase Shift Oscillator using IC 741.
8. Astable Multivibrator using IC 741.
9. FET Characteristics.
10. FET amplifier.
11. RS and JK Flip Flops using gates.
12. Universal Gates NAND/NOR and basic gates from universal gates.
13. Adder and Subtractor – Op-Amp.
14. Verification of De Morgan's theorems and Boolean Algebra.
15. OP-Amp: Integrator and Differentiator.

SECTION-B

MICROPROCESSOR 8085

(Any three experiments)

16. 8-bit Addition and Subtraction.
17. 8-bit Multiplication and Division.
18. Ascending and Descending Order.
19. Largest and Smallest number in an Array.
20. Conversion from decimal to hexadecimal system.
21. Conversion from hexadecimal to decimal system.
22. Sum of N numbers.

Sl. No:

Subject Code:

U15PH6C12

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., PHYSICS – VI SEMESTER – CORE COURSE - XII

(For the candidates admitted from the year 2015-16 onwards)

SOLID STATE PHYSICS

UNIT - I CRYSTAL STRUCTURE AND CHEMICAL BONDING

Elementary concepts of crystals: Distinction between crystalline and amorphous solids – isotropic and anisotropic crystals with examples - Space lattice - Primitive and Unit cell – Bravais lattices – Crystal directions - Miller indices – Separation between lattice planes in a cubic crystal - Crystal structure: SC, BCC, FCC and HCP - Bonding in solids-primary bonds – Ionic, covalent and metallic bonds – secondary bonds – Van-der Waals' bond and hydrogen bond.

UNIT II - CRYSTALLOGRAPHY

X ray Spectrum - Moseley's law - diffraction of X-rays by crystals - Bragg's law – Bragg's Diffractometer - Determination of Crystal structure: Debye Scherrer method – evaluation of lattice parameter 'a' for a simple cubic structure - Laue's method, rotating crystal method - Reciprocal lattice.

UNIT III – ELECTRONS IN SOLIDS

Free electron theory : Drude Lorentz theory – Expression for current density - Ohm's law – Electrical conductivity – Temperature dependence of electrical conductivity in metals - Thermal conductivity – Wide-Mann and Franz Law – Hall effect – Hall voltage and Hall coefficient – Mobility and Hall angle – Importance of Hall effect – Experimental determination of Hall coefficient.

UNIT IV MAGNETIC AND SUPERCONDUCTING MATERIALS

Magnetism – Langevin's theory of dia and paramagnetism – Wien's theory of ferromagnetism – Quantum theory of ferromagnetism (Heisenberg's model) – Domain theory of ferromagnetism- ferromagnetic hysteresis - Ferrites - Antiferromagnetic materials. Superconductors: Properties – Critical temperature – Isotopic effect – Meissner effect – Type I and Type II superconductors.

UNIT V - DIELECTRICS AND FERROELECTRICS

Basic definitions of dielectrics – Types of polarization – Effect of frequency and temperature on polarization – Local field (internal field) – Clausius–Mosotti relation - Dielectric loss and breakdown – Determination of Dielectric constant - Ferroelectric crystals - Ferroelectric domains - Hysteresis effect in a ferroelectric material.

BOOKS FOR STUDY:

1. C. Kittel, *Introduction to Solid State Physics* - John Wiley (2004).
2. M. Arumugam, *Material Science* - Anuradha Agencies, (2004).
3. G. Vijayakumari, *Engineering Physics* –Vikas Publications.

BOOKS FOR REFERENCE:

1. Raghavan, *Materials Science and Engineering* - (2004).
2. Azaroff, *Introduction to Solids* - (2004).
3. A.J. Deckker, *Solid State Physics* - (2004).

Sl. No:

Subject Code:

U15PH6C13

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., PHYSICS–VI SEMESTER- CORE COURSE-XIII

(For the candidates admitted from the year 2015-2016 onwards)

SPECTROSCOPY AND LASER PHYSICS

UNIT-I: MICROWAVE SPECTROSCOPY

Introduction to EM radiation-The rotation of molecules, its spectra, Diatomic Molecules-Rigid diatomic molecule - Intensities of spectral lines-Effect of isotopic substitution - Non rigid, rotator its spectrum - Techniques and Instrumentation of Microwave Spectroscopy.

UNIT-II : VIBRATIONAL SPECTROSCOPY

Vibrating diatomic molecule - Energy of diatomic molecule - Harmonic Oscillator - Vibrating rotator -Vibration - Rotation Spectrum of CO - Vibrations of poly atomic molecules Fundamental vibrations and their symmetry - Overtones and combinations of frequencies - Sample preparation – Techniques and instrumentation.

UNIT-III: RAMAN SPECTROSCOPY

Classical theory of Raman Effect - Pure rotational Raman Spectra - Linear, Symmetric top molecules - Pure Vibrational Raman spectra - Raman activity of vibration - Rule of mutual exclusion Principle - Polarization of light and the Raman Effect -Techniques and instrumentation.

UNIT-IV: LASER PHYSICS

Introduction to Lasers - Laser principle – characteristics of laser – Einstein's co-efficient derivation - Population Inversion - Pumping action - Optical resonator-Types of lasers - Nd-YAG, CO₂, Dye laser and semiconductor laser - Homo - Junction and Hetro junction.

UNIT-V: APPLICATIONS OF LASER

Material processing: welding, drilling, cutting and heat treatment – Holography - construction and Reconstruction - Applications- Difference between Holography and Photography – LIDAR - Medical Application: Endoscope

BOOKS FOR STUDY:

1. C.N. Banwell, *Fundamental of molecular spectroscopy*, - Tata Mcgraw Hill Publishing Co.Ltd., 3rd Edition (1972).
2. G. Aruldas *Molecular, Structure and spectroscop* – Prentice Hall of India.

REFERENCE BOOKS:

1. B.B.Laud, *Lasers and non linear optics* - Wiley Eastern Ltd., (1985)
2. K.Thiyagarajan and A.K.Ghatak, *LASERS : Theory and applications-* Macmillan India Ltd.

Sl. No:

Subject Code: U15PH6E2

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., PHYSICS – VI SEMESTER – ELECTIVE COURSE-II

(For the candidates admitted from the year 2015-16 onwards)

DIGITAL ELECTRONICS AND MICROPROCESSOR

UNIT -I: NUMBER SYSTEMS, LOGIC GATES & BOOOLEAN ALGEBRA AND K - MAPS

Different Number Systems - Binary, Octal and Hexa-decimal Conversion between the number systems. Different Digital codes – ASCII, BCD, Gray codes. AND, OR and NOT Gates - Universality of NAND & NOR gates, Special Gates - Ex-OR, Ex-NOR - Boolean Laws, De-Morgan's Theorems. Simplification of Logical expression using Boolean algebra, Karnaugh Maps - 4 Variables.

UNIT - II: COMBINATIONAL AND MEMORY CIRCUITS

Half and full adder - Half and full Subtractor - Basic study of TTL, CMOS - Multiplexers and De-multiplexers - Encoders and Decoders - Read-only memories (ROM), PROM, EPROM and RAM.

UNIT - III: SEQUENTIAL CIRCUITS

Sequential Circuits: RS, D, JK and T Flip-Flops - Edge Triggered Flip-Flops – Master-Slave JK Flip-Flop – Shift Register: Serial-in-Serial-out, Serial-in-Parallel-out, Parallel-in-Serial-out and Parallel-in - Parallel-out - Counters: Asynchronous and Synchronous Counters, Decade Counter, UP- DOWN Counters, Ring Counter.

UNIT - IV: MICROPROCESSOR (8085)

Architecture of 8085 - Block diagram - Pin-out Diagram, Instruction Cycle - Interrupts - Addressing modes - Instruction Set - Data Transfer, Arithmetic, Logical, Branching and Machine Control Operations RIM and SIM - Memory Organisation and Addressing, Memory Interfacing and Memory Mapping.

UNIT - V: 8085 PROGRAMMING

Algorithm and Flowcharts - Simple programs - Addition and subtraction of two 8-bit data - Sum of a string of data - 8 bit Multiplication and Division - Masking of a data - Block transfer - Smallest and largest number in an array - Ascending and Descending order of array of numbers.

BOOK FOR STUDY:

1. Digital Principles and Applications by Donald P. Leach & Albert Paul Malvino. (Glenoe, 1995)
2. Microprocessor Architecture, Programming and Application with the 8085 by Ramesh S. Goankar (Prentice hall, 2002).

BOOK FOR REFERENCE:

1. Digital Fundamentals, 3rd Edition by Thomas L. Floyd (Universal Book Stall, India 1998).
2. Microprocessor Architecture, Programming and systems featuring the 8085 by William A. Rout. (Thomson Delmar Learning, 2006).

Sl. No:

Subject Code: U15PH6E3

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., PHYSICS – VI SEMESTER – ELECTIVE COURSE – III

(For the candidates admitted from the year 2015-16 onwards)

NUMERICAL METHODS

UNIT – I: Curve Fitting

Principle of Least Squares – Method of Group Averages – Fitting a straight line linear regression – fitting a Parabola - Fitting an exponential curve.

UNIT – II: Solution Of Numerical algebraic, Transcendental And Differential Equation

Bisection Method – Methods of successive Approximations – Regula falsi Method – Newton Raphson method – Horner's Method – Euler's Method – modified Euler's Method – Runge Kutta Method .

UNIT – III: SIMULTANEOUS LINEAR ALGEBRAIC EQUATION:

Gauss Elimination Method – Gauss Jordon Method – Computation of Inverse of a Matrix Using Gauss – Elimination Method – Method of Triangularisation.

UNIT – IV: NUMERICAL DIFFERENTIATION:

Linear Interpolation: Newton Forward Interpolation Formula and Backward Interpolation formula. Interpolation with unequal intervals: Lagrange's interpolation Formula (No Derivation) Hermit's – Bessel's Interpolating Polynomials.

UNIT – V: NUMERICAL INTEGRATION:

Trapezoidal – Simpson's 1/3 Rule And 3/8 Rule – Practical Applications – Weddle's Rule – Gaussian Quadrature Formula.

BOOKS FOR STUDY:

1. Venkatraman, M.K. *Numerical Methods in Science and Engineering*, National Publishing Company – Chennai (1977).
2. Shastri, S.S. *Introductory Methods Of Numerical Methods* – Prentice – Hall Ltd.
3. Jain, Iyenger, S.R.K. And Jain R.K. *Numerical Methods For Scientific And Engineering Computation* – New Age Publishers.
4. V. Rajaraman, *Numerical Methods By*, Prentice – Hall India Pvt Ltd (2003).

Books for References:

1. B.D. Gupta, *Numerical Analysis* - Konark Pub .Ltd., Delhi (2001).
2. S.Arulmurugam, *Numerical Methods* - New Gamma Publishing , Palamkottai. (2003)
3. A.Singaravelu, *Numerical Methods* - Meenakshi Agency, Chennai (2004).
4. P.Kandasamy, K. Thilagavathy, *Calculus Of Finite Difference & Numerical Analysis* - S.Chand & Company LTD ., New Delhi-55. (2003).

Sl. No.:

Subject Code:

U15EA4

அரசு கலைக் கல்லூரி (தன்னாட்சி), ஈரூர் - 639005
அனைத்து இளநிலை - ஆறாம் பருவம் - பகுதி - 5
(2015 - 2016 கல்வியாண்டு முதல் பயிலும் மாணவர்களுக்கு
உரியது)

பாலின சமத்துவம்

அலகு 1

பாலினம்தொடர்பான கோட்பாடுகள் : பாலியல் - பாலினம் - உடற்கூறு ரீதியில்
நிருணயித்தல் - ஆணாதிக்கம் - பெண்ணியம் - பாலின பாகுபாடு - பாலின வேலைப்
பாகுபாடு - பாலின ஒருபடித்தானவர்கள் - பாலின உணர்வூட்டல் -பாலின சமவாய்ப்பு
- பாலின சமத்துவம் - பாலின மையநீரோட்டமாக்கல் - அதிகாரப்படுத்துதல்.

அலகு 2

மகளிரியல் : பாலினசமத்துவக்கல்வி - பல்கலைக்கழக மானியக்குழுவின்
வழிகாட்டுதல்கள் - ஏழாவது ஐந்தாண்டு திட்டம் முதல் பதினோராவது
ஐந்தாண்டுத்திட்டம் வரை - பெய்ஜிங் மாநாடு - பெண்களுக்கு எதிரான
அனைத்தவகையான பாகுபாடுகளையும் நீக்கும் ஒப்பந்தம் - 1979 (CEDAW) -
சட்டத்தில் பெண்களுக்கு ஆதரவானவற்றை இணைத்தல் அல்லது உட்படுத்துதல்
-பெண்களுக்கு எதிரானவற்றை ஒதுக்குதல்.

அலகு 3

பாலியல் பாகுபாட்டிற்கான தளங்கள் : குடும்பம் - பாலின விகிதாச்சாரம் -
கல்வி - ஆரோக்கியம் - ஆளுமை - மதம் - வேலைவாய்ப்பு - ஊடகங்கள் - அரசியல் -
சட்டம் - பாலியல் துன்புறுத்தல்கள்.

அலகு 4

பெண்கள் மேம்பாடு மற்றும் பாலின சமத்துவ மேம்பாடு : பெண்களுக்கான
சமத்துவ முயற்சிகள் - சர்வதேச பெண்களுக்கான சகாப்தம் - சர்வதேச பெண்களுக்கான
ஆண்டு - பெண்களின் மேம்பாட்டிற்கான தேசியக் கொள்கைகள் - பெண்கள் அதிகார
ஆண்டு 2001 - சர்வதேசக் கொள்கைகளை மையநீரோட்டமாக்கல்.

அலகு 5

பெண்கள் இயக்கங்கள் மற்றும் பாதுகாப்பு நிறுவன ஏற்பாடுகள் : தேசிய மகளிர்
ஆணையம் - மாநில மகளிர் ஆணையம் - அனைத்து மகளிர் காவல் நிலையங்கள் -
குடும்ப நீதிமன்றங்கள் - குடும்ப வன்முறையிலிருந்து பெண்களைப் பாதுகாக்கும் சட்டம்
2005 - பணியிடங்களில் பெண்கள் மீதான பாலியல் துன்புறுத்தல்களைத் தடுப்பதற்கான
உச்சநீதிமன்ற வழிகாட்டுதல்கள் - விசாகா தீர்ப்பு - தாய் சேய் சேம நலச்சட்டம் - பெண்
சிசுவை கருவில் கண்டறிவதைத் தடை செய்யும் சட்டம் 1994 - ஈவ்டிசிங் - பெண்களைத்
தொல்லை செய்தல் தடுப்புச் சட்டம் - மகளிர் சுயஉதவிக்குழுக்கள் - பஞ்சாயத்து
அமைப்புகளுக்கான 73வது மற்றும் 74வது சட்டத்திருத்தம்.

Text Book:

1. பாலின சமத்துவம் - முனைவர். ஆ. ஜெகதீசன் - ராஜா பதிப்பகம், திருச்சி.