

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR – 639 005

B.Sc. MATHEMATICS 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	Differential and Integral Calculus	U15MM1C1	6	5	3	25	75	100
	Core Course - II	Probability and Statistics	-	3	-	-	-	-	-
	First Allied Course – I	Allied Physics - I	U15PH1A1	5	3	3	25	75	100
	First Allied Course - II	Allied Physics – II (Practical)	-	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	Probability and Statistics	U15MM2C2	3	4	3	25	75	100
	Core Course – III	Trigonometry And Analytical Geometry (3D)	U15MM2C3	6	5	3	25	75	100
	First Allied Course – II	Allied Physics II (practical)	U15PH2A2P	2	4	3	25	75	100
	First Allied Course – III	Allied Physics III	U15PH2A3	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	Sequences and Series	U15MM3C4	6	5	3	25	75	100
	Core Course – V	Classical Algebra	-	3	-	-	-	-	-
	Second Allied Course I	Allied Chemistry - I	U15CH3A1	5	3	3	25	75	100
	Second Allied Course II	Allied Chemistry – II Practical	-	2	-	-	-	-	-
	Non Core Elective I	Fundamentals of Information Technology	U15CS3N1	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	Classical Algebra	U15MM4C5	2	4	3	25	75	100
	Core Course – VI	Vector Calculus and Fourier Series	U15MM4C6	5	5	3	25	75	100
	Second Allied Course II	Allied Chemistry 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	Programming in C	U15MM4S1	2	4	3	25	75	100
Non Core Elective II	Office Automation and Html	U15CS4N2	2	2	3	25	75	100	
				30	28				800
V	Core Course – VII	Modern Algebra	U15MM5C7	5	5	3	25	75	100
	Core Course – VIII	Real Analysis	U15MM5C8	5	4	3	25	75	100
	Core Course – IX	Differential Equations and Laplace Transforms	U15MM5C9	4	3	3	25	75	100
	Core Course - X	Statics	U15MM5C10	6	4	3	25	75	100
	Core Elective I	Operations Research	U15MM5E1	4	4	3	25	75	100
	Skill Based Elective II	Programming in C++	U15MM5S2	2	4	3	25	75	100
	Skill Based Elective III	C++ Practical	U15MM5S3P	2	4	3	25	75	100
Soft Skill Development	Soft Skill Development	U15SSD3	2	2	3	25	75	100	
				30	30				800
VI	Core Course – XI	Complex Analysis	U15MM6C11	6	5	3	25	75	100
	Core Course – XII	Dynamics	U15MM6C12	6	5	3	25	75	100
	Core Course – XIII	Methods in Numerical Analysis	U15MM6C13	6	5	3	25	75	100
	Core Elective - II	Graph Theory	U15MM6E2	5	5	3	25	75	100
	Core Elective - III	Discrete Mathematical Structures	U15MM6E3	6	4	3	25	75	100
	Extension Activities	Extension Activities				1			
Gender Education		U15EA4	1	1	3	25	75	100	
				30	26				600
TOTAL				180	140				3900

அரசு கலைக் கல்லூரி (தன்னாட்சி) - சுருர் - 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 புக 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 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:

U15L1E1

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

CHAIRMAN – BOS

COE

Sl. No.:

Subject Code:

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., MATHEMATICS - I SEMESTER – CORE COURSE - I

(For the candidates admitted from 2015 – 2016 onwards)

DIFFERENTIAL AND INTEGRAL CALCULUS

- UNIT 1:** Methods of Successive Differentiation - Leibnitz's Theorem and its Application - Increasing and Decreasing Functions - Maximum and Minimum of a Function of Two Variables
(Ch. 3: § 1.1- 2.2, Ch.4: § 2.1, 2.2 and Ch.8: § 4 and § 4.1[1])
- UNIT 2:** Curvature - Radius of Curvature in Cartesian and Polar coordinates – Centre of Curvature - Evolutes and Involutives.
(Ch.10: §2.1-2.6 [1])
- UNIT 3:** Integration by parts - Definite Integrals and Reduction Formula.
(Ch.1:§ 11-13[2])
- UNIT 4:** Double Integrals - Changing the order of Integration - Triple Integrals.
(Ch.5:§ 2.1, 2.2 & 4[2])
- UNIT 5:** Beta and Gamma functions and Relation between them - Integration using Beta and Gamma functions.
(Ch.7:§ 2.1-2.5[2])

TEXT BOOKS:

1. T. K. Manichavasagam Pillai and Others, “**Differential Calculus**”, S.V. Publications, Chennai - 1985. Revised Edition.
2. T. K. M. Pillai and others, “**Integral calculus**”, S. V. Publications, 2008.

REFERENCE BOOKS:

1. Arumugam & Isaac, “**Calculus Vol I**”, New Gamma Publications, 1991.
2. Arumugam & Isaac, “**Calculus Vol II**”, New Gamma Publications, 1991.

**CHAIRMAN
BOARD OF STUDIES**

COE

Sl. No:

Subject Code:

U15PH1A1

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.SC.,-I SEMESTER – ALLIED COURSE-I

(FOR CHEMISTRY & MATHEMATICS MAJOR)

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

ALLIED PHYSICS – I

UNIT- I: PROPERTIES OF MATTER

Stress – strain - Hooks law - Elastic constants - Young's modulus by non-uniform bending - Static torsion - Rigidity modulus by torsion pendulum - I form of girder - Surface Tension: Surface tension of the liquid by drop weight method - Explanation of molecular theory - Viscosity: Newton's formula - Poiseuille's formula - stream line motion - Turbulent motion - Critical velocity - Co-efficient of viscosity - Co-efficient of viscosity by Poiseuille's method - Ostwald's viscometer.

UNIT-II: MECHANICS

Force - centripetal and centrifugal forces - Laws of friction - co-efficient of friction - Banking of curved tracks - Newton's law of gravitation – Kepler's laws of Planetary motion - Deduction of Newton's law of gravitation from Keplers law - Centre of gravity - Centre of gravity of solid cone - Floatation laws - Stability of floating bodies.

UNIT-III: HEAT AND THERMODYNAMICS

Celcius – Rankine-Fahrenheit Scale - Entropy and Enthalpy definition - Thermal conductivity of a bad conductor by Lees Disc method - Newton's law of cooling - Specific heat capacity of liquids - Liquification of gases – Linde's process - Isothermal and adiabatic process - zeroth, first, second laws of thermodynamics - solar constant - Angstrom pyroheliometer

UNIT-IV: MAGNETISM AND ELECTROMAGNETISM

Magnetic materials - Properties of dia, para, ferro and anti ferro magnetic materials - Permeability and susceptibility - Laws of electromagnetic Induction - Biot and Savarts law - Force acting on a conductor carrying current in magnetic field – Moving coil galvanometer - Eddy currents – applications.

UNIT-V: SOUND

Laws of stretched strings - determination of frequency of alternating current by Sonometer - characteristics of musical sound - Acoustics of buildings – Decibel - Reverberation time - Sabine's formula for reverberation time - Condition for good acoustics - Ultrasonics: Piezo-electric effect - piezo-electric oscillator - Properties of ultrasonic waves and its applications.

BOOKS FOR STUDY:

Unit-I

1. Brijlal subramaniam, *Properties of matter and sound.*
2. R. Murugesan *Properties of matter and sound.*

Unit-II

1. R. Murugesan *Allied Physics I & II.*
2. A. Sundaravelusamy *Allied Physics.*

Unit-III

1. Heat and Thermodynamics - Brijlal subramaniam
2. Heat and Thermodynamics - Narayanamurthi and Nagarathinam

Unit-IV

1. Electricity and magnetism — R. Murugesan
2. Electricity and magnetism — Narayanamurthi and Nagarathinam
3. Electricity and magnetism - Brijlal subramaniam

Unit-V

1. Sound -- Brijlal subramaniam
2. Sound – R.L. Seihgal

Sl. No.:

Subject Code:

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.

CHAIRMAN – BOS

COE

Sl. No.:

Subject Code:

U15L2T2

அரசு கலைக் கல்லூரி (தன்னாட்சி) - ஈநர் - 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

தமிழ்விடுதாது

- 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 நிரப்பதல் 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

COE

Sl. No.:

Subject Code:

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

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

(For the candidates admitted from 2015 – 2016 onwards)

PROBABILITY AND STATISTICS

- UNIT 1:** Theory of Probability – Basic Definition – Axioms – Theorems on Probability – Conditional Probability – Bayes Theorem
(Ch.3: § 3.1-3.5 and § 3.8.5, 3.8.6, § 3.9-3.15 and § 4.2)
- UNIT 2:** Random variables – Discrete and Continuous types of a Random variable – Distribution Function – Probability Mass and Density function – Joint Probability distribution function.
(Ch.5: § 5.1-5.5)
- UNIT 3:** Expectation – Variance – Co variance – M.G.F. – Theorems on Moment Generating Function. (M.G.F.)
(Ch.6: § 6.1- 6.8, § 7.1)
- UNIT 4:** Correlation and Regression – Properties of Correlation and Regression coefficients – Numerical problems only.
(Ch.10: § 10.1-10.4, § 10.7, Ch.11: § 11.1-11.2)
- UNIT 5:** Theoretical Discrete and Continuous Distributions – Binomial, Poisson, Normal Distributions – Properties – M.G.F. – Recurrence relation for the moments about origin and Mean for the Binomial and Poisson distribution.
(Ch.8: §8.4-8.4.2, §8.5-8.5.4, § 8.5.8 and Ch.9: § 9.1-9.2.5)

TEXT BOOK:

1. Gupta S.C. and Kapoor V.K., “**Fundamentals of Mathematical Statistics** ” Sultan Chand and sons, 11th Edition, 2002.

REFERENCE BOOKS:

1. J. N . Kapur and H. C. Saxena, “ **Mathematical statistics**” - S. Chand and Company Ltd ., New Delhi, 1989.
2. Marex. Fisz, “**Probability Theory and Mathematical Statistics**”, John Wiley & Sons, 1961.

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COE

Sl. No.:

Subject Code:

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

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

(For the candidates admitted from 2015 – 2016 onwards)

TRIGONOMETRY AND ANALYTICAL GEOMETRY (3D)

- UNIT 1:** Expansion of $\sin nx$, $\cos nx$, $\tan nx$ - Expansion of $\sin^n x$, $\cos^n x$, $\tan^n x$ - Expansion of $\sin x$, $\cos x$, $\tan x$ in powers of x .
(Ch.1:§ 1.2-1.4 [1])
- UNIT 2:** Hyperbolic Functions - Relation between Hyperbolic and Circular functions - Inverse Hyperbolic Functions.
(Ch.2:§ 2.1-2.2 [1])
- UNIT 3:** Logarithm of a Complex Number - Summation of trigonometric series - Angles in Arithmetic progression method - Gregory's series.
(Ch. 3 & Ch. 4: § 4.1, 4.2 & 4.2[2])
- UNIT 4:** Sphere - Standard Equation - Length of a Tangent from any point - Sphere passing through a given circle - Intersection of two spheres - Tangent plane.
(Ch. 4: § 35-41[2])
- UNIT 5:** Cone and Cylinder.
(Ch. 5: § 44-49[2])

TEXT BOOKS:

1. T. K. Manickavasagam Pillai and others, “**Analytical Geometry**”, S. V. Publications, Chennai- 1985. Revised Edition
2. S. Arumugam and Others, “**Trigonometry**”, New Gamma Publications - 1985.Revised Edition.

REFERENCE BOOKS:

1. Arumugam & Isaac, “**Trigonometry**”, New Gamma Publications , 2011.
2. Arumugam & Isaac, “**Analytical Geometry of 3D and Vector Calculus**”, New Gamma Publications, 2011 .

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Sl. No:

Subject Code:

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05
B.Sc., –II - SEMESTER – FIRST ALLIED COURSE – II
(FOR CHEMISTRY & MATHEMATICS MAJOR)
(For the candidates admitted from the year 2015-16 onwards)

ALLIED PHYSICS – II – LAB
(Any fifteen experiments)

1. Young's Modulus – Non Uniform Bending – Pin and Microscope.
2. Torsional Pendulum – Rigidity Modulus.
3. Surface tension and Interfacial Surface tension – Drop weight method.
4. Coefficient of Viscosity of liquid using graduated burette.
5. Specific heat capacity of liquid by cooling method.
6. Lee's Disc – Thermal Conductivity of a bad conductor.
7. Focal length of a concave lens.
8. Spectrometer – Grating – Normal incidence method.
9. Spectrometer – refractive index of solid prism (A, D and μ).
10. Newton's Rings – Radius of curvature of a convex lens.
11. Sonometer – Verification of transverse laws.
12. Carey Foster's bridge – specific resistance.
13. Meter bridge – Determination of specific resistance.
14. Potentiometer – Low range voltmeter calibration.
15. Potentiometer – Calibration of ammeter.
16. Table galvanometer – Figure of merit.
17. EMF of thermocouple – Direct deflection method.
18. Characteristics of a junction diode.
19. Construction of full wave rectifiers.
20. AND, OR and NOT Logic gates - Verification of truth table using discrete Components.

BOOKS FOR REFERENCE:

1. M.N. Srinivasan and others, *A Text book of Practical Physics* - Sultan Chand & Son, New Delhi.
2. A. Dhanalakshmi and K.R.Paramasivam, *Practical Physics* - Apsara publication, Trichy.

Sl. No:

Subject Code:

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05
B.SC.,-II- SEMESTER – FIRST ALLIED COURSE-III
(FOR CHEMISTRY & MATHEMATICS MAJOR)
(For the candidates admitted from the year 2015-16 onwards)

ALLIED PHYSICS – III

UNIT- I: OPTICS

Laws of Reflection and Refraction - Refractive index of prism using spectrometer - Interference - Newton's rings - Applications - Fresnel's explanation of rectilinear propagation of light - Fiber optics: Numerical aperture, acceptance angle - Fiber optics communication system - Temperature sensor.

UNIT-II: LASER PHYSICS

Einstein's co-efficients - Spontaneous and stimulated emission - Population inversion - Optical pumping - Condition for Laser action - Semiconductor laser - CO₂ laser - Nd-YAG laser - Applications of laser - Holography - Construction and Reconstruction.

UNIT-III: ATOMIC & NUCLEAR PHYSICS

Atomic physics: Photo electric effect - Einstein photoelectric equation - Coupling schemes - LS & JJ couplings - Zeeman effect - Experiment - Stark effect (definition only) - Nuclear Physics: Detection of nuclear radiation - Geiger Muller counter - Particle accelerators: Betatron - Elementary particles: Leptons, Mesons, and Baryons.

UNIT IV: SEMICONDUCTORS AND OPTOELECTRONICS

Volt - Ampere Characteristics of P-N junction Diode - Zener diode - Applications of Zener diodes - Zener voltage regulator - Optoelectronic devices: Photovoltaic cell - Photoconductive cell - Solar cell - Phototransistor - LED and LCD - Construction and working.

UNIT-V: NUMBER SYSTEM AND DIGITAL ELECTRONICS

Binary, Octal, Hexadecimal - Interconversion - AND, OR, NAND, NOR, XOR, XNOR gates - DeMorgan's theorem - Laws of Boolean algebra - Operation Amplifiers: Ideal characteristics - Inverting - Non inverting op-amp - CMRR - Adder - Subtractor.

BOOKS FOR STUDY:

Unit-I

1. R. Murugesan, *Modern Physics*.
2. R. Murugesan, *Optics and Spectroscopy*.

Unit-II

1. Gaur and Gupta, *Engineering physics*.
2. M. Arumugam, *Engineering physics*.
3. Thiagarajan, *Laser Physics*.

Unit-III

1. R.Murugesan, *Modern Physics*.

Unit-IV

1. V.K. Metha, *Principles of Electronics*.
2. B.L. Theraja, *Basic Electronics*.

Unit-V

1. Morris Mano, *Digital Logic and Computer Design*.
2. Malvino & Leech, *Digital principles and Applications*.

Books for Referances:

1. R.Murugesan, *Allied Physics I&II*.
2. Dr.R.Sabesan & Dr.Mrs. Dhanalakshmi *Allied Physics*.

CHAIRMAN-BOS

COE

Sl. No.:

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.

CHAIRMAN – BOS

COE

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:

U15L3E3

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

CHAIRMAN – BOS

COE

Sl. No.:

Subject Code:

U15MM3C4

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., MATHEMATICS - III SEMESTER – CORE COURSE - IV

(For the candidates admitted from 2015 – 2016 onwards)

SEQUENCES AND SERIES

- UNIT 1:** Sequence (Definition), Limit, Convergence of a sequence – Cauchy’s general principle – Cauchy’s first theorem on limits – Bounded sequences – Monotone sequence always tends to a limit, finite or infinite – limit superior and limit inferior. (Ch. 2: § 1-7)
- UNIT 2:** Infinite series – Definition of Convergence, Divergence & Oscillation series – Necessary condition for Convergence – Convergence of $\sum \frac{1}{n^2}$ and Geometric series – Comparison test, D’Alembert’s ratio test and Raabe’s test. Simple problems based on the above tests. (Ch. 2: § 8-14, 16, 18)
- UNIT 3:** Cauchy’s condensation test, Cauchy’s root test and their simple problems – Alternating series with simple problems. (Ch.2: §15,17,24)
- UNIT 4:** General summation of series including successive difference and recurring series. (Ch. 5: § 2-7)
- UNIT 5:** Binomial Theorem for a rational index – Exponential & Logarithmic series - Summation of Series & Approximations using these theorems. (Ch. 3: § 5-11, 14 & Ch 4: § 2-3, 5-9)

TEXT BOOK:

1. T. K. Manicavachagam, T. Natarajan, K. S. Ganapathy, “**Algebra Vol. I**”, S.V.Publications, 2010.

REFERENCE BOOKS:

1. Robert G. Bartle, Donald R. Sherbet, “**A first course in Real Analysis**”, John wiley & Sons, 3rd Edition, 2012.
2. S. Arumugam, A. Thangapandian Issac, “**Sequences & Series**”, New Gamma Publishing house, 1999.
3. M. K. Singhal and Asha Rani Singhal, “**A first course in Real Analysis**”, S. Chand & Co., 1999.

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BOARD OF STUDIES**

COE

Sl. No.:

Subject Code:

U15CH3A1

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.
- UNIT –II**
(15 hours)
- 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.
 - 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.

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COE

Sl. No.:

Subject Code:

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc ., III SEMESTER – NON-CORE ELECTIVE – I

(FOR MATHEMATICS MAJOR)

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

FUNDAMENTALS OF INFORMATION TECHNOLOGY

UNIT – I

Introduction to Computers: Introduction, types of computer - characteristics of computers - classification of digital computer system - functions and components of a computer.

UNIT – II

Number system- memory units – auxiliary storage devices – input devices – output devices – decimal numbers system- binary number system- conversion-complements, Octal, Hexadecimal.

UNIT – III

Introduction to Computer software, operating systems – programming Languages – General software features and Trends

UNIT – IV

Database management system: Data processing – Introduction to Database management system – database design – Distributed system- Computer networks

UNIT – V

Internet and World Wide Web – Electronic mail – intranets – introduction to multimedia – multimedia tools – electronic commerce

TEXT BOOK:

1. Fundamentals of Information Technology – Alexis Leon, Mathews Leon – Leon Vikas publishing PVT Ltd., New Delhi 1999.

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 பழகுதல்

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) 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 தருக. 3*10=30
 மொத்த மதிப்பெண் - 75

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U15L4E4

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., MATHEMATICS - IV SEMESTER – CORE COURSE - V

(For the candidates admitted from 2015 – 2016 onwards)

CLASSICAL ALGEBRA

- UNIT 1:** Relation between Roots and Coefficients of Polynomial equations – Symmetric functions – Sum of the Powers of the Roots – Newton’s theorem on the sum of the powers of the roots. (Ch. 6: § 11-14[1])
- UNIT 2:** Transformation of Equations – Diminishing, Increasing & Multiplying the Roots by a Constant – Forming equations with the given Roots – Reciprocal equations – All Types - Descartes’ Rule of Signs (Statement only) – Simple Problems. (Ch. 6: § 15-21 & 24[1])
- UNIT 3:** Inequalities – Elementary Principles – Geometric & Arithmetic Means – Weierstrass Inequalities – Cauchy Inequality. (Ch.4: § 4[2])
- UNIT 4:** Eigen values, Eigen vectors of Matrices – Cayley Hamilton’s Theorem (statement only) – Symmetric, Skew Symmetric, Orthogonal, Hermitian, Skew Hermitian and Unitary Matrices – Diagonalization - Simple problems only. (Ch. 6: § 6.1-6.3[3])
- UNIT 5:** Theory of Numbers – Prime and Composite Numbers – Divisors of a given Number “n” – Euler’s function and its value – The highest power of a prime P contained n! Congruence – Fermat’s, Wilson’s and Lagrange’s theorem. (Ch. 5:[2])

TEXT BOOKS:

1. T. K. Manickavasagam Pillai & others “**AlgebraVol.I**” S.V.Publications -1985.
2. T. K. Manickavasagam Pillai & others “**AlgebraVol.II**” S.V.Publications -1985.
3. S. Arumugam and A. Thangapandi Issac, “**Modern Algebra**”, New Gamma Publishing House, 2000

REFERENCE BOOK:

1. H. S. Hall and S. R. Knight, “**Higher Algebra**”, Prentice Hall of India, New Delhi , 2013.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., MATHEMATICS - IV SEMESTER – CORE COURSE - VI

(For the candidates admitted from 2015 – 2016 onwards)

VECTOR CALCULUS AND FOURIER SERIES

- UNIT 1:** Vector differentiation – Gradient of a Vector – Directional derivatives – Divergence and curl of a vector – Solenoidal and irrotational vectors – Laplacian Operator - Simple problems.
(Ch. 1: § 1.1-1.5 & Ch. 2 § 2.3, 2.4, 2.6, 2.8, 2.9[1])
- UNIT 2:** Vector integration - Conservative Force Field - Scalar potential - work done by Force - Tangential line integral - Normal surface integral - Volume integral - Simple problems.
(Ch. 3: § 3.1 – 3.6[1])
- UNIT 3:** Gauss divergence theorem - Stoke's theorem - Greens theorem (without proof) - Verification of theorems for simple problems.
(Ch. 4: § 4.1 – 4.8[2])
- UNIT 4:** Fourier series - Fourier expansion of a periodic function with period 2π and $2a$ - use of odd and even function in Fourier series. (Ch. 6: § 1-3[2])
- UNIT 5:** Half range Fourier series – Sine and Cosine series - Change of interval - Combination of series – Harmonic Analysis. (Ch. 6: § 4-8[2])

TEXT BOOKS:

1. P. Duraipandian and Laxmi Duraipandian, “**Vector Analysis**”, Emerald Publishers, 1986.
2. T. K. Manickavasagam Pillai & Others, “**Calculus Vol. III**” S. V. Publication & Vijay Nicole imprint Pvt Ltd 2004.

REFERENCE BOOKS:

1. K. Viswanathan, S. Selvaraj, “**Vector Analysis**”, Emerald, 1988.
2. Arumugam Isaac, “**Analytical Geometry of 3D and Vector Calculus**”, New Gamma Publications, 2011.

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**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. Permanganometry

- 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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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
- UNIT- V (15 hours) 5.1 Surface Chemistry: Emulsions, Gels – Definition, Preparation, Properties and applications.
5.2 Chromatography – Column, paper and thin layer chromatography.
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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U15MM4S1

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., MATHEMATICS - IV SEMESTER – SKILL BASED ELECTIVE - I

(For the candidates admitted from 2015 – 2016 onwards)

PROGRAMMING IN C

- UNIT 1:** Basic Structure of C Programs.
Constants, Variables and Data Types: Introduction – Character Set – C Tokens – Keywords and Identifiers – Constants – Variables – Data Types – Declaration of Variables – Declaration of Storage Class – Assigning Values to Variables – Defining Symbolic Constants – Declaring a Variable as Constant.
(Ch 1:§ 1.8 & Ch 2: § 2.1- 2.12)
- UNIT 2:** **Operators and Expressions:** Introduction - Arithmetic Operators – Relational Operators – Logical Operators- Assignment Operators – Increment and Decrement Operators – Conditional Operator - Bitwise Operators – Special Operators – Arithmetic Expressions – Evaluation of Expressions - Precedence of Arithmetic Operators - Type Conversions in Expressions - Operator Precedence and Associativity - Mathematical Functions.
(Ch 3: § 3.1- 3.12 & 3.14-3.16)
- UNIT 3:** **Managing Input and Output Operations :**Introduction - Reading a Character - Writing a Character - Formatted Input- Formatted Output.
Decision Making and Branching: Introduction - Decision Making With if Statement- Simple if Statement - The ifelse Statement - Nesting of if else Statements - The Else if Ladder- The Switch Statement - The Goto Statement.
(Ch 4: § 4.1-4.5 &Ch5: § 5.1- 5.7, 5.9)
- UNIT 4:** **Decision Making and Looping:** Introduction - The While Statement - The do Statement - The for Statement.
Arrays: Introduction - One - dimensional Arrays - Declaration of one - dimensional Arrays -Initialization of One - dimensional Arrays - Two - dimensional Arrays - Initialization of Two - dimensional Arrays .
(Ch 6: §6.1 -6.4 & Ch7: § 7.1-7.6)
- UNIT 5:** **User- defined Functions:** Introduction - Need for User - defined Functions - A Multi - function program - Elements of User - defined Functions - Definition of Functions - Return Values and their Types - Function Calls - Function Declaration - Nesting of Functions.
(Ch 9: §9.1-9.8& 9.15)

TEXT BOOK:

E. Balagurusamy, “**Programming In ANSI C**”, - Tata McGraw Hill Publishing company, New Delhi, 2004.

REFERENCE BOOK: R.Rajaram, “**C Programming Made Easy**”, Scitech Publications, 1999.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05**B.Sc ., – IV SEMESTER - NON –CORE ELECTIVE – II****(FOR MATHEMATICS MAJOR)**

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

OFFICE AUTOMATION AND HTML**UNIT – I**

MS Word – Starting Word – Parts of Word Window – Mouse and Keyboard Operations - Menus, Commands, Toolbars and their Icons – Creating Word Documents – Editing Word Documents – Inserting Objects - Formatting Documents - Working with Tables – Mail Merge.**MS Excel** - Introduction - Entering and Editing text, Numbers, Formulas and Date - Menus, Commands, Toolbars and their Icons – Inserting rows and columns- Building Worksheets – Creating and formatting charts – Application of Financial and Statistical functions.

UNIT – II

MS PowerPoint: Introduction – Menus, Toolbar and Navigating in PowerPoint.
MS Access: Introduction – Parts of an Access Window: Starting MS Access – Creating a New DataBase – Creating a Database through Table Wizard – Creating a New Table – Rename Columns – Saving the Database – Relationship – Creating Table through Design View – Relationship – Query – Form – Report – Exiting MS Access.

UNIT – III

Introduction To HTML: Designing a Home Page – HTML Documents – Anchor Tag – Hyper Links – Head and Body Section: Header Section – Title – Links – Colorful Web Page – Comment Lines – Designing the Body Section: Heading Printing – Aligning The Headings – Horizontal Rule – Paragraph – Tab Settings – Images and Pictures.

UNIT – IV

Ordered and Unordered Lists: Lists – Unordered Lists – Heading in a List – Ordered Lists – Nested Lists – Table Handling: Table – Table Creation in HTML – Width of the Table and Cells – Cells Spanning Multiple Rows/Columns – Coloring Cells – Column Specification.

UNIT – V

Frames: Frameset Definition – Frame Definition – Nested Framesets – Forms: Action Attribute – Method Attribute – Enctype Attribute – Drop Down List.

TEXT BOOKS

1. MS Office 2000 – Sanjay Saxena, Vikas Publishing House
2. World Wide Web Designing, C.Xavier, Tata McGraw Hill, 2000.

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U15MM5C7

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., MATHEMATICS - V SEMESTER – CORE COURSE - VII

(For the candidates admitted from 2015 – 2016 onwards)

MODERN ALGEBRA

- UNIT 1:** Groups - Subgroups - Cyclic groups - Order of an element - Cosets and Lagrange's theorem. (Ch. 3: § 3.5-3.8)
- UNIT 2:** Normal subgroups and quotient groups - Finite groups and Cayley tables - Group Homomorphism - Group Isomorphism. (Ch. 3: § 3.9-3.11)
- UNIT 3:** Rings - Definitions and examples - Isomorphism and homomorphism - Types of rings - Characteristics of rings - Subrings - Ideals - Quotient rings - Maximal and Prime Ideals – Homomorphism of rings – Isomorphism of rings. (Ch. 4: § 4.1-4.8 & 4.10)
- UNIT 4:** Vector spaces - Definition and examples - Subspaces - Linear span of a set - Linear independence, basis and dimension. (Ch. 5: § 5.1, 5.2, 5.4-5.6)
- UNIT 5:** Linear transformation, rank and nullity - Matrix of a linear transformation. (Ch. 5: § 5.3, 5.7, 5.8)

TEXT BOOK:

1. S. Arumugam & A. Thangapandi Issac, “**Modern Algebra**”, New Gamma Publishing House – June 1997.

REFERENCE BOOKS:

1. T.K. Manicavachagam Pillai, T.Natrajan, K.S.Ganapathi, “**Algebra, Vol I**”, S.Vishvanathan Private Ltd, Chennai, 2004.
2. M. L. Santiago, “**Modern Algebra**”, Tata McGraw Hill, 2003.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., MATHEMATICS - V SEMESTER – CORE COURSE - VIII

(For the candidates admitted from 2015 – 2016 onwards)

REAL ANALYSIS

- UNIT 1:** Functions – Real valued functions - Equivalence – Countability - Real Numbers - Least Upper Bounds. (Ch 1:§1.3-1.7)
- UNIT 2:** Limit of a Function on the Real line – Metric Spaces – Limits in Metric spaces- Functions continuous at a point on the Real line- Reformulation. (Ch 4: §4.1-4.3 & Ch 5: §5.1, 5.2)
- UNIT 3:** Functions continuous on a Metric Space- Open Sets – Closed Sets- Discontinuous functions on \mathbb{R}^1 - More about Open Sets – Connected Sets. (Ch 5: § 5.3 -5.6 & Ch 6: § 6.1,6.2)
- UNIT 4:** Bounded Sets and totally bounded sets – Complete Metric Spaces – Compact Metric Spaces- Continuous Functions on Compact Metric Spaces – Continuity of the Inverse Function – Uniform Continuity. (Ch 6: §6.3 – 6.8)
- UNIT 5:** Definition of the Riemann Integral – Existence of the Riemann Integral – Properties of the Riemann Integral – Derivatives – Rolle’s Theorem – The law of the Mean – Fundamental Theorems of Calculus. (Ch 7: § 7.2-7.8)

TEXT BOOK:

1. Richard R.Goldberg, “**Methods of Real Analysis**”, Oxford and IBH Publishing Co. Pvt. Ltd, New Delhi, 1970.

REFERENCE BOOKS:

1. M.K. Singhal and A.R. Singhal, “**A First course in Real Analysis**”, R.Chand & Co, June 1997 edition.
2. Shanthi Narayan, “**A Course of Mathematical Analysis**”, S.Chand & Co, 1995.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., MATHEMATICS - V SEMESTER – CORE COURSE - IX

(For the candidates admitted from 2015 – 2016 onwards)

DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS

- UNIT 1:** First order and Higher Degree differential equation: solvable for x, solvable for y, solvable for dy/dx - Clairaut's form – conditions of integrability of $Mdx + Ndy = 0$, Simple problems. (Ch. 1: § 3-7 & Ch. 2: § 1-4 [1])
- UNIT 2:** Particular integrals of second order differential equations with constant coefficients (simple problems only) linear equations with variable coefficients – methods of variation of parameters. (Ch. 2: § 1-4, 8-10 [1])
- UNIT 3:** Laplace transforms – standard forms – basic theorems and simple applications inverse Laplace Transforms and Simultaneous Equation - Use of Laplace transforms in solving ODE with constant coefficients. (Ch. 5: § 1-8[1])
- UNIT 4:** Formation of partial differential equation – General, particular and complete integrals – Solutions of PDE of the standard forms – Lagrange's method of solving $Pp+Qq=R$ – Charpit's method and a few standard forms. (Ch. 4: § 1-7[1])
- UNIT 5:** PDE of second order homogeneous equations with constant coefficients – particular integrals of $F(D,D')Z = f(x,y)$ where $f(x,y)$ is one of the forms $e^{(ax+by)}$, $\sin(ax+by)$, $\cos(ax+by)$ and $e^{(ax+by)} f(x,y)$. (Ch. 9: § 9.13-9.19[2])

TEXT BOOKS:

1. S. Narayanan, T. K. Manicavasagam Pillai, “**Calculus – Vol III**”, S. Vishwanathan Publishers, 2010 .
2. Dr. M. K. Venkatramanan, Mrs. Manorama Sridhar , “**Differential equation and Laplace transforms**”, –The National Publishing Company, 2010.

REFERENCE BOOK:

1. M. D. Raisinghania, “**Ordinary and Partial differential equations**”, S. Chand & Co, 2010.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., MATHEMATICS - V SEMESTER – CORE COURSE - X

(For the candidates admitted from 2015 – 2016 onwards)

STATICS

- UNIT 1:** Forces & Equilibrium – Forces – Resultant of two forces – Three forces related to a triangle – Equilibrium of a particle under three or more forces. Forces on a rigid body – Moment – Equivalent systems of forces – Parallel forces – Varignon’s Theorem – Forces along a Triangle.
(Ch. 1: § 1-6 & Ch. 2 § 1-16 & Ch. 3 § 1-14)
- UNIT 2:** Couples – Equilibrium of a rigid body under three or coplanar forces – Reduction of coplanar forces into a force and a couple.
(Ch. 4: § 1-10 & Ch. 5 § 1-8 & Ch. 6 § 1-14)
- UNIT 3:** Friction – Laws of Friction – Coefficient of Friction, Angle & Cone of Friction – Limiting Equilibrium of a particle on a rough inclined plane, tilting of a body – Simple Problems.
(Ch. 7: § 1-14)
- UNIT 4:** Virtual Work – Principle of Virtual Work – Applied to a body or a system of bodies in equilibrium – Equation of Virtual Work - Simple Problems.
(Ch. 9: § 1-8)
- UNIT 5:** Strings – Equilibrium of Strings under Gravity – Common Catenary – Suspension bridge.
(Ch.11: § 1-9)

TEXTBOOK:

1. M. K. Venkatraman., “**Statics**”, Agasthiyar Publications, 2002.

REFERENCE BOOKS:

1. A. V. Dharmapadham, “**Statics**”, S.Viswanathan Publishers Pvt Ltd., 1979.
2. S. L. Lony, “**Elements of Statics and Dynamics**”, Part – I, A. I. T. Publishers, 1991.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., MATHEMATICS - V SEMESTER – ELECTIVE COURSE - I

(For the candidates admitted from 2015 – 2016 onwards)

OPERATIONS RESEARCH

- UNIT 1:** Introduction to Operation Research: Linear Programming Problem – formulation of LPP – Graphical solution – Simplex method – Big M method – Two phase simplex method. (Ch. 1, 2, 3, 4)
- UNIT 2:** Duality in LPP – formulating of Primal – dual pair – duality and simplex method – dual simplex method. (Ch. 5)
- UNIT 3:** Transportation problem – transportation algorithm – degeneracy in transportation problem, unbalanced transportation problem – assignment problem – unbalanced assignment. (Ch. 10, 11)
- UNIT 4:** Sequencing and replacement problems. (Ch. 12,18)
- UNIT 5:** Game theory – two person zero sum game – maxmin and minimax principle – game without saddle point – mixed strategy – graphical method – dominance properties – matrix method. (Ch. 17)

(In all the units no book work need to be proved – only applications of book works need to be taught)

TEXT BOOK:

1. Kanthi Swaroop, Gupta, P.K. & Manmohan, “**Operation Research**”, Sultan Chand & Co, 13th edition, 2007.

REFERENCE BOOKS:

1. Hamdy A. Taha, “**Operation Research**” (9th edn), Prentice Hall of India, 2012.
2. Richard Bronson, “**Theory and Problems of Operation Research**”, Tata McGraw Hill Publishing Company Ltd, New Delhi, 1982.

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U15MM5S2

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., MATHEMATICS - V SEMESTER – SKILL BASED ELECTIVE - II

(For the candidates admitted from 2015 – 2016 onwards)

PROGRAMMING IN C++

UNIT 1: Software Evolution - OOP Paradigm - Basic Concepts of OOP - Benefits of OOP - Object - Oriented Languages - Applications of OOP.
Beginning With C++ : What is C++? - Applications of C++ - A simple C++ Program - More C++ Statements - An Example with Class - Structure of C++ Program .

(Ch 1:§1.2 & 1.4- 1.8, Ch 2: § 2.1-2.6)

UNIT 2: **Tokens, Expressions and Control Structures:** Tokens - Keywords - Identifiers and Constants - Basic Data Types - reference variables - Manipulators - Expressions and their Types - Control Structures.

(Ch 3: §3.2-3.5, 3.12, 3.17,3.19,3.24)

UNIT 3: **Functions in C++:** Introduction - The Main Function - Function Prototyping Call by reference - Inline functions - Function Overloading - Friend and Virtual Functions.

Classes and Objects: Specifying a Class - Defining Member Functions - Nesting of Member Functions- Private Member Functions - Arrays within a Class-Static data members- Static member functions .

(Ch4: §4.2-4.6,4.9,4.10 &Ch5: §5.3,5.4,5.7-5.9,5.11,5.12)

UNIT 4: **Constructors and Destructors:** Constructors - Parameterized Constructors - Multiple Constructors in a Class - Constructors with Default Arguments - Copy Constructors - Destructors - Operator Overloading and Type Conversions: Defining Operator Overloading - Overloading Unary Operators - Overloading Binary Operators - Rules for Overloading Operators - Type Conversions.

(Ch6: § 6.2-6.5, 6.7,6.11 & Ch7: §7.2-7.4, 7.7,7.8)

UNIT 5: **Inheritance:** Defining derived Classes - Single Inheritance - Multi level Inheritance - Multiple Inheritance - Hierarchical Inheritance - Hybrid Inheritance.

Working with Files: Opening and Closing a File - Detecting end- of - File.

(Ch8: §8.2,8.3,8.5-8.8 & Ch 11: §11.3,11.4)

TEXT BOOK: E. Balagurusamy, “**Object Oriented Programming With C++**”,Tata McGraw Hill Education Pvt Ltd, 2010.

REFERENCE BOOK: Radha Ganesan, “ **Programming with C++**”, Scitech Publications (India) Pvt Ltd, Chennai 2002.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., MATHEMATICS - V SEMESTER – SKILL BASED ELECTIVE - III

(For the candidates admitted from 2015 – 2016 onwards)

C++ PRACTICAL

1. Write a C++ Program to create a student class .
2. Write a C++ Program for friend functions.
3. Write a C++ Program to implement Object as function argument .
4. Write a C++ Program using a function overloading .
5. Write a C++ Program using an operator overloading .
6. Write a C++ Program using Nesting of Member Functions.
7. Write a C++ Program for static function.
8. Write a C++ Program using an inline function.
9. Write a C++ Program to implement a student record using constructor.
10. Write a C++ Program for Copy Constructor.
11. Write a C++ Program using Destructor.
12. Write a C++ Program to implement single Inheritance.
13. Write a C++ Program to implement multiple inheritance.
14. Write a C++ Program to implement multilevel inheritance.
15. Write a C++ Program to implement Hybrid Inheritance.

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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.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., MATHEMATICS - VI SEMESTER – CORE COURSE - XI

(For the candidates admitted from 2015 – 2016 onwards)

COMPLEX ANALYSIS

- UNIT 1:** Functions of a Complex variable : Limits – Theorems on Limits – Continuous functions – Differentiability – Cauchy-Riemann equations – Analytic functions – Harmonic functions. (Ch.2: § 2.1-2.8)
- UNIT 2:** Elementary transformations : Bilinear transformations – Cross ratio – Fixed points of Bilinear transformations – Some special Bilinear transformations. (Ch.3: § 3.1-3.5)
- UNIT 3:** Complex Integration : Definite Integral – Cauchy’s Theorem – Cauchy’s Integral formula – Higher derivatives. (Ch.6: § 6.1-6.4)
- UNIT 4:** Series expansions : Taylor’s series – Laurent’s series – Zeroes of analytic functions – Singularities. (Ch.7: § 7.1-7.4)
- UNIT 5:** Residues : Cauchy’s Residue Theorem – Evaluation of Definite integrals. (Ch.8: § 8.1-8.3)

TEXT BOOK:

1. S. Arumugam, A. Thangapandi Issac, & A. Somasundaram, “**Complex Analysis**”, New Scitech Publications (India) Pvt Ltd, 2002.

REFERENCE BOOKS:

1. J. N. Sharma, “**Functions of a Complex variable**”, Krishna Prakasan Media (P) Ltd, 13th Edition, 1996-97.
2. T. K. Manickavasagam Pillai, “**Complex Analysis**”, S. Viswanathan Publishers Pvt Ltd, 1994.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

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

(For the candidates admitted from 2015 – 2016 onwards)

DYNAMICS

- UNIT 1:** Kinematics: Velocity- Relative Velocity –Angular Velocity- Acceleration- Properties and related problems – Newton’s Laws of Motion- Work – Power – Energy- Kinetic Energy – Potential Energy – Principle of Conservation of Energy- Properties and related problems.
(Ch 3 :§ 3.1 – 3.31 and Ch 4: § 4.1- 4.12 & 4.24-4.35)
- UNIT 2:** Projectiles – Definition - Path of Projectile – Range on the Inclined Plane- Properties and problems – Impulsive Force- Impulse and Impact.
(Ch 6: § 6.1-6.16 & Ch 7: § 7.1-7.6)
- UNIT 3:** Collision of Elastic Bodies – Direct and Oblique Impact – Loss of Kinetic Energy – Related properties and problems – Simple Harmonic Motion and related problems.
(Ch 8: § 8.1- 8.10 & Ch 10: § 10.1-10.7)
- UNIT 4:** Central Orbits – Motion under action of Central forces- Properties and related problems- Differential Equations of Central Orbit - Pedal Equation of Central Orbit- Velocities in Central Orbit – Law of Forces – Properties and related problems
(Ch 11: §11.1- 11.14)
- UNIT 5:** Moment of Inertia – Definition – Theorem of Parallel axes – The Theorem of Perpendicular axes – Moment of Inertia in some particular cases – Dr. Routh’s Rule.
(Ch 12: §12.1-12.5)

TEXT BOOK:

1. Dr. M. K.Venkatraman, “**Dynamics**”, Agasthiar Publications, 13th Edition,2009.

REFERENCE BOOKS:

1. P. Duraipandian, “**Vector Treatment as in Mechanics**”, S. Chand & Co - June 1997 edition.
2. A.V. Dharmapadam, “**Dynamics**”, S. Vishwanathan Publishers, 1981.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

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

(For the candidates admitted from 2015 – 2016 onwards)

METHODS IN NUMERICAL ANALYSIS

- UNIT 1:** Algebraic and Transcendental equations – Finding a root of the given equation (Derivation of the formula not needed) using Bisection Method, Method of False Position, Newton Raphson Method, Iteration Method. (Ch.2: § 2.1-2.5)
- UNIT 2:** Finite differences – Forward, Backward & Central Differences – Their symbolic relations – Newton’s Forward & Backward difference interpolation formulae – Interpolation with unevenly spaced intervals – Application of Lagrange’s interpolating Polynomial (Proof not needed) – Divided differences and their properties – Application of Newton’s General Interpolating formula. (Proof not needed) (Ch.3: § 3.1, 3.3, 3.6, 3.9, 3.9.1, 3.10, 3.10.1)
- UNIT 3:** Numerical Differentiation – Numerical Integration using Trapezoidal rule & Simpson’s 1/3rd & 3/8th – Theory & Problems. (Ch.4:§ 4.2, 4.4, 4.4.1, 4.4.2)
- UNIT 4:** Solutions to Linear systems – Gaussian elimination Method – Gauss Jacobi, Gauss Jordan & Gauss Seidal Iterative Methods – Theory & Problems. (Ch.5: § 5.4)
- UNIT 5:** Numerical solution of ODE – Solution by Taylor Series Method, Euler’s Method, Runge Kutta 2nd and 4th order methods (Derivation of the formula not needed) – Theory and Problems using Adam’s Predictor Corrector Method & Milne’s Predictor Corrector Methods. (Ch.6: § 6.1, 6.2, 6.4, 6.5, 6.6.1, 6.6.2)

[In all the units the value of a root may be calculated upto 3 decimal accuracy only]

TEXTBOOK:

1. S. S. Sastry, “**Introductory Methods of Numerical Analysis**”, Prentice Hall of India Pvt Ltd, 1995.

REFERENCE BOOKS:

1. S. Narayanan & Others, “**Numerical Analysis**”, S. Viswanathan Publishers 1994.
2. A. Singaravelu, “**Numerical Methods**”, Meenachi Agency, June 2000

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

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

(For the candidates admitted from 2015 – 2016 onwards)

GRAPH THEORY

- UNIT 1:** Definition of a Graph – Finite and Infinite Graphs – incidence, Degree isolated and pendent vertices – Isomorphism – Subgraphs – Walks, Paths and Circuits - connected and disconnected graphs – Components Euler Graphs – Operations on graphs – more on Euler graphs – Hamiltonian Paths and Circuits.
(Ch. 1: § 1.1-1.5, Ch.2:§ 2.2,2.4-2.9)
- UNIT 2:** Trees- Properties of trees – Pendent vertices in a tree – Distances and centres in a tree- Rooted and Binary trees- Spanning trees – Fundamental circuits – Finding all spanning trees of a graph – Spanning trees in a weighted graphs.
(Ch.3:§ 3.1-3.10)
- UNIT 3:** Cut sets – Properties of a cut set – All cut sets in a graph – Fundamental circuits and cut set – Connectivity and separability.
(Ch.4:§ 4.1-4.5)
- UNIT 4:** Planar and Dual graphs – Planar graphs – Kuratowski’s two graphs – Different representation of a planar graphs- detection of a planarity - geometric dual- Combinatorial dual.
(Ch.5:§ 5.2-5.7)
- UNIT 5:** Matrix representation of a graph- Incident matrix- circuit matrix – Fundamental circuit matrix and rank of a matrix- cut set matrix- Adjacency matrix.
(Ch.7:§ 7.1-7.4,7.6-7.9)

TEXT BOOK:

1. Narsingh Deo, “**Graph theory with applications to Engineering and Computer Sciences**”, Prentice Hall of India New Delhi, 1997.

REFERENCE BOOKS:

1. Dr. Arumugam and Dr. S. Ramachandran, “**Invitation to graph theory**”, scitech Publication India Pvt Ltd, Chennai,2001.
2. K.R.Parthasarathy, “**Basic Graph Theory**”, Tata McGraw Hill publishing co, New Delhi,1994.
3. G.T.John Clark, Derek Allon Halton, “**A first look at Graph Theory**”, world scientific publishing co,1995.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., MATHEMATICS - VI SEMESTER – ELECTIVE COURSE - III

(For the candidates admitted from 2015 – 2016 onwards)

DISCRETE MATHEMATICAL STRUCTURES

- UNIT 1: Propositional Logic:** Statements and Notation, symbolic representation and tautologies. Normal forms- disjunctive normal form – conjunctive normal form – principal disjunctive normal forms- principal conjunctive normal forms.
(Ch. 1 §.1.1 to 1.3)
- UNIT 2: Predicate Calculus:** Quantifiers – predicates – symbolic representation – Free and bound variables - the universe of discourse – theory of inference for the predicate calculus – Formulae involving more than one quantifier. (Ch. 1 §.1.5, 1.6)
- UNIT 3: Semi Groups and Monoids:** Definition and Examples of semi groups and monoids – homomorphism of semi groups and monoids – Sub Semigroups and submonoids – Examples. (Ch.3 §.3.2)
- UNIT 4: Lattices:** Partially Ordered Sets – Some Properties of Lattices – Lattices as Algebraic Systems – sublattices – direct products and homomorphism – some special lattices – Complete, Complemented, Distributive lattice. (Ch. 4 §.4.1)
- UNIT 5: Boolean Algebra:** Definition and examples – various Boolean identities – sub algebra – direct product – homomorphism – minterms Boolean forms – sum of product of canonical forms – minimization of Boolean function – application of Boolean Algebra – The Karnaugh map method. (Ch. 4 §.4.2 to 4.4)

TEXT BOOK:

1. J. P. Trembley and R. Manohar, “**Discrete Mathematical Structures with Application to Computer Science**”, Tata McGraw Hill Publishing Company Ltd, 2010.

REFERENCE BOOKS:

1. J. L. Gersting, “**Mathematical Structures For a Computer Science**”,
2. 3rd Edition, Computer Science Press, New York.
2. G. Liu, “**Elements of Discrete Mathematics**”, McGraw Hill Book co, 2007.
3. Dr. M. K. Venkatramanan, N. Sridharam, N. Chandrasekeran, “**Discrete Mathematics**”, National publishing company, 2000.

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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 பதினேராவது
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.

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