# MANNAR THIRUMALAI NAICKER COLLEGE PASUMALAI, MADURAI- 625 004

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

(Re-accredited with 'A' Grade by NAAC)



# **B.Sc.**, Mathematics

# SYLLABUS AND REGULATIONS

# UNDER CHOICE BASED CREDIT SYSTEM (CBCS) (For those who joined during 2018-2019 and after)

# Qualification for Admission

Candidate should have passed the Higher Secondary Examination conducted by the Board of Higher Secondary Education, Government of Tamil Nadu CBSE Board with Mathematics as one of the subjects in Higher Secondary Education.

# **Duration of the Course**

The students shall undergo the prescribed B.Sc(Mathematics) course of study for a period of three academic years (six semesters).

# Subject of Study

Part I: Tamil Part II: English Part III: 1. Core Subjects 2. Allied Subjects 3. Electives Part IV : 1. Non Major Electives 2. Skill Based Subjects 3. Environmental Studies 4. Value Education Part V : Extension activities

Extension activities

# The scheme of Examination

The components for continuous internal assessment are:

Two tests and their average	15 marks
Seminar /Group discussion	5 marks
Assignment	5 marks
Total	25 marks

# Pattern of the questions paper for the continuous Internal Assessment

# (For Part I, Part II, Part III, NME & Skilled Paper in Part IV)

The components for continuous internal assessment are:

Part –A		
Six multiple choice questions (answ	ver all)	6 x01= 06 Marks
Part –B		
Two questions ('either or 'type)	)	2 x 07=14 Marks
Part –C		
One question out of two		1 x 10 =10 Marks
	Total	30 Marks

Pattern of the question paper for the Summative Examinations:

Note: Duration- 3 hours		
Part –A		
Ten multiple choice questions	10 x01	= 10 Marks
(No Unit shall be omitted; not more than two questions f	rom each ur	nit.)
Part –B		
Five Paragraph questions ('either or 'type)	5 x 07	= 35 Marks
(One question from each Unit)		
Part –C		
Three Essay questions out of five	3 x 10	=30 Marks
(One question from each Unit)		
Total		75 Marks

# The Scheme of Examination (Environmental Studies and Value Education)

Two tests and their average	15 marks
Project Report	10 marks*
Total	25 marks

\*\* The students as Individual or Group must visit a local area to document environmental assets – river / forest / grassland / hill / mountain – visit a local polluted site – urban / rural / industrial / agricultural – study of common plants, insects, birds – study of simple ecosystem – pond, river, hill slopes, etc.

# Question Paper Pattern Pattern of the Question Paper for Environmental Studies & Value Education only) (Internal)

Part –A		
(Answer is not less than 150 words)		
Four questions ('either or 'type)		4 x 05=20 Marks
Part –B		
(Answer is not less than 400 words)		
One question ('either or 'type)		1 x 10=10 Marks
	Total	30 Marks

# Pattern of the Question Paper for Environmental Studies & Value Education only) (External)

Part –A		
(Answer is not less than 150 words)		
Five questions (either or type)	5 x 06	=30 Marks
(One question from each Unit)		
Part –B		
(Answer is not less than 400 words)		
Three questions out of Five	3 x 15	= 45 Marks
each unit (One question from each Unit)		
Т	otal	75 Marks
	-	

# Minimum Marks for a Pass

40% of the aggregate (Internal +Summative Examinations).No separate pass minimum for the Internal Examinations.27 marks out of 75 is the pass minimum for the Summative Examinations.

# **PROGRAMME SPECIFIC OUTCOMES**

- PSO1: To understand the basic rules of logic, including the role of axioms or assumptions
- **PSO2:** To recognize connections between different branches of mathematics and appreciate the connections between theory and applications.
- **PSO3:** To enable the students to gain knowledge in basic Mathematics.
- PSO4: To provide sufficient knowledge on computer skills through MS office, C, C++ and Java Programming and many innovative and modern subjects in Mathematics.

Study Component	Ι	II	III	IV	V	VI	Total	Total	No.of	Total
	Sem	Sem	Sem	Sem	Sem	Sem	Hours	Credit	course	marks
Part – I	6(3)	6(3)	6(3)	6(3)			24	12	4	400
Tamil										
Part –II	6(3)	6(3)	6(3)	6(3)			24	12	4	400
English										
Part –III										
Core subjects	6(4)	6(5)	5(5)	5(5)	5(5)	5(5)	76	69	14	1400
			5(5)	5(5)	5(5)	5(5)				
					6(5)	6(5)				
					6(5)	6(5)				
Allied Subject-I	4(4)	4(3)	4(4)	4(3)			16	14	4	400
Allied Subject-I	2(0)	2(1)	2(0)	2(1)			8	2	2	200
(P)										
Allied Subject-II					6(5)	6(5)	12	10	2	200
Allied Subject –									1	100
II (P)										
Part-IV										
Allied	6(4)	6(4)	4(4)	4(4)			20	16	4	400
Mathematics										
Skill Based	2(2)	2(2)			2(2)	2(2)	12	12	6	600
Subjects	2(2)	2(2)								
Environment	2(2)	2(2)					4	4	2	200
studies / value										
education										
Non Major			2(2)	2(2)			4	4	2	200
Elective										
Part V										
Extension				0(1)			0	1	1	100
Activities										
Total	30	30	30	30	30	30	180	140	42	4200
	(20)	(21)	(22)	(23)	(27)	(27)				

# B.Sc (Mathematics) (Those who joined in 2018-2019 and after) Table: 1: Course pattern

SEMESTER –III							
Subject		No. of	Hours		Maximum Marks		
code	Subjects	Courses	/ week	Creatts	Int	Ext	Total
18UTAG31	<b>Part –I Tamil</b> காப்பிய இலக்கியமும் சிறுகதையும்	1	6	3	25	75	100
18UENG31	<b>Part –II English</b> Exploring Language Through Literature-III	1	6	3	25	75	100
	Part –III Core Subject						
18UMTC31	Integral Calculus	1	5	5	25	75	100
18UMTC32	Sequences and Series	1	5	5	25	75	100
18UPHA31	<b>Part –III Allied Subject</b> Allied Physics –III Electricity and Electronics	1	4	4	25	75	100
18UPHAP2	Allied Physics Practical - II	-	2				
18UMTN31	<b>Part –IV</b> <b>Non Major Elective</b> Mathematics for Competitive Examination - I	1	2	2	25	75	100
	Total	6	30	22	150	450	600

Volume IV – Science Syllabus / 2019 - 2020

SEMESTER I	V						
Subject Code	Title of the Paper	No.of	Hours	Credita	Maxin	num Ma	arks
-	_	Courses	/Week	Creatts	Int	Ext	Total
18UTAG41	Part – I Tamil	1	6	3	25	75	100
	பழந்தமிழ் இலக்கியமும்						
	புதினமும்						
	Part –II English						
18UENG41	Exploring Language	1	6	3	25	75	100
	Through Literature-IV						
	Part –III Core Subject						
18UMTC41	Analytical geometry 3D and	1	5	5	25	75	100
	Vector calculus						
18UMTC42	Statistics - I	1	5	5	25	75	100
18UPHA41	Part –III Allied Subject						
	Allied Physics- IV	1	4	3	25	75	100
	Optics, Spectroscopy and						
	Modern Physics						
18UPHAP2	Allied Physics Practical -II	1	2	1	40	60	100
	Part –IV						
	Non Major Elective						
18UMTN41	Mathematics for Competitive	1	2	2	25	75	100
	Examination - II						
18UEAG40-	Part V- Extension						
18UEAG49	Activities	1	-	1	100	-	100
	Total	8	30	23	290	510	800

# MANNAR THIRUMALAI NAICKER COLLEGE (AUTONOMOUS) DEPARTMENT OF MATHEMATICS (For those who joined in 2018-2019 and after) Programme : UG Part III : Core Semester : III Hours per week : 05 Sub code : 18UMTC31 Credit : 05 INTEGRAL CALCULUS

# **Course Outcomes**

CO1: To give an idea about the properties of definite integrals.CO2: To apply integral calculus to evaluate double and triple integrals.CO3: To understand the basic concepts interchanging Cartesian to polar co-ordinates.CO4: To understand the various properties of Beta and Gamma functions.

# UNIT I

Integration of rational algebraic functions –Special cases – Integration of irrational

algebraic functions - Properties of definite integrals.

# UNIT II

Integration by parts– Reduction formulae for  $\sin^n x$ ,  $\cos^n x$ ,  $\tan^n x$ ,  $\csc^n x$ ,  $\sin^m x \cos^n x$ – Bernoulli's formula.

# UNIT III

Evaluation of double integral – Changing of order of integration– Double integral in Polar co– ordinates – Triple integral.

# UNIT IV

Jacobian - Change of variables in the case of two variable and three variables -

Transformation from Cartesian to polar coordinate – Transformation from Cartesian to spherical coordinates.

# UNIT V

Properties - relation between Beta and Gamma functions - Recurrence formula.

# **Text Book:**

1) Narayanan. S and Manickavasagam Pillai. T.K, Calculus Volume II, (2015) Unit I : Chapter 1 : 7.3, 7.4, 7.5, 8, 11

Unit II : Chapter 1: 12,13,15.1

Unit III: Chapter 5 : 2.1, 2.2, 3.1, 4

Unit IV : Chapter 6: 1.1, 1.2, 2.1, 2.2, 2.3, 2.4

Unit V: Chapter 7: 2.1, 2.2, 2.3, 3, 4, 5

- 1. Bali. N. P, Integral Calculus, Laxmi Publications, (1991), Delhi.
- 2. Arumugam. S and Isaac, Calculus, New Gamma Publishing House, 2008, Palayamkottai.
- 3. George B.Thomas, Maurice D.Weir and Joel Hass **Calculus** 12th Edition, Pearson Education, 2015.



Programme	: UG	Part III	: Core
Semester	: III	Hours per week	: 05
Sub code	: 18UMTC32	Credit	: 05

# **SEQUENCES AND SERIES**

# **Course Outcomes**

- **CO1:** To learn about sequences through examples.
- CO2: To introduce infinite series and alternative series.
- **CO3**: To familiarize the application of series in Trigonometry.
- **CO4**: To understand of how the elementary functions can be defined by power series, with an ability to deduce some of their easier properties.

#### Unit - I:

Sequences - Bounded Sequences - Bounded above Sequences - Bounded below Sequences - Monotonic Increasing Sequences - Monotonic decreasing Sequences.

#### Unit – II:

Convergent Sequences – limit of the sequence – Theorems - Divergent and Oscillating Sequences – Sequences diverging to  $\infty$  - Sequences diverging to  $-\infty$  - Finitely Oscillating Sequences - Algebra of limits - Theorems.

# Unit – III:

Subsequences - Limit points - Cauchy sequences - Theorems - The Upper and

Lower limits of a sequence - Theorems and Problems .

# Unit - IV:

Infinite series - Comparison test - Theorems and Problems.

#### Unit – V:

Kummer's Test –D' Alembert's ratio test –Raabe's Test – De morgan and Bertrand's test - Gauss's Test- Problems - Cauchy's Root test and Cauchy's Condensation test – Problems.

# **Text Book:**

1. Arumugam.S and Issac, **Sequences and Series**, New Gamma Publishing House, 2003, Palayamkottai.

Unit I	Chapter 3: Section 3.1 to 3.3
Unit II	Chapter 3 Section 3.4 to 3.6.
Unit III :	Chapter 3 Section 3.9 to 3.12.
Unit IV	Chapter 4: Section 4.1 to 4.2
Unit V	Chapter 4: Section 4.3 & 4.4.

- 1. Arumugam .S and Thangapandi Issac, **Classical Algebra**, New Gamma Publications, Edition 2003, Palayamkottai.
- 2. Chandra Sekara Rao. K and K.S.Narayanan, **Real Analysis**, Volume –I, Viswanathan. S Pvt.Ltd, 2008, Chennai.
- 3. Jain. M.L, Sequence & Series, Jeevanson's Publications, 2016.



Programme	: B.Sc (Mathematics & Chemistry)	Part III	: Allied
Semester	: III	Hours per week	: 04
Sub code	: 18UPHA31	Credit	: 04

# ALLIED PHYSICS - III ELECTRICITY AND ELECTRONICS

#### **Course Outcomes**

**CO1:** To enable the students to understand the basic concepts of electricity and electronics.

CO2: To understand the Gauss's law, Kirchhoff's laws and torque.

CO3: To study diodes and Binary number system.

**CO4:** To analyse the types of oscillator.

#### Unit I:

Gauss's law – Proof – Applications – Electric field due to a charged sphere – Field near a charged conducting cylinder - Coulomb's theorem – Electric potential – Relation between electric potential and electric field – Capacitors –Expression for C of a parallel plate, spherical (outer sphere earthed) and cylindrical capacitors – Energy of a charged capacitor – Loss of energy due to sharing of charges between two capacitors.

#### Unit II:

Kirchoff's laws – Application of Kirchhoff's laws to Wheatstone's network – Carey Foster's Bridge – Measurement of resistance and temperature coefficient of resistance – Principle of Potentiometer – Calibration of ammeter and voltmeter( low & high range) – Measurement of resistance using potentiometer.

# Unit III:

Torque on a current loop – Mirror galvanometer, dead beat and ballistic galvanometers – Current and voltage sensitiveness using B.G – Experiments for charge sensitiveness – comparison of emf's and comparison of capacitors.

Electro motive force generated in a coil rotating in a uniform magnetic field – RMS and Mean values – LCR circuit -Series and parallel resonant circuits.

# Unit IV:

Junction Diodes – Forward and reverse bias – Diode characteristics – Types of diodes (LED and Zener)-Bridge rectifier using Pi filter – Transistor – Characteristics(CE mode only) – Single transistor(CE) amplifier Frequency response - Hartley oscillator – OPAMP and its characteristics – OPAMP as adder and subtractor.

# Unit V:

Decimal number system - Binary number system – Binary to decimal and decimal to binary conversions – Addition and subtraction of binary numbers – Logic circuits – Boolean algebra – Postulates and theorems of Boolean Algebra – De Morgan's theorem – OR, AND, NOT, NOR and NAND gates –NOR and NAND gates as universal building blocks - EX-OR gates.

# **Text Book:**

- 1. Murugesan.R, Electricity and Electronics, S.Chand and Co, First Edition, June 2012, New Delhi.

- 1. Narayanamoorthy and Nagarathinam, **Electricity and Magnetism**, National Publishing Co, 1997
- 2. Sehgal, Chopra and Sehgal, **Electricity and Magnetism**,- Sultan chand and Sons, 1998, New Delhi.
- 3. Murugesan.R, Electricity and Electromagnetism, S.Chand and Co, 2004, New Delhi.
- 4. Brijlal and Subramaniyam, **Electricity & Magnetism**, S.Chand and Co, 20<sup>th</sup> revised edition, 2007.



#### MANNAR THIRUMALAI NAICKER COLLEGE (AUTONOMOUS) DEPARTMENT OF MATHEMATICS (For those who joined in 2018-2019 and after)

Programme	: B.Sc (Mathematics & Chemistry)	Part III	: Allied
Semester	: III & IV	Hours per week	: 02
Sub code	: 18UPHAP2	Credit	: 01

# ALLIED PHYSICS PRACTICAL – II

#### **Course Outcomes**

CO1: To develop experimental knowledge by handling various apparatusCO2: To know the various components and its importantCO3: To know the circuit connections an functioning of experiments.CO4: To create interest to develop oscillatory circuit.Any 14 experiments.

- 1. Mirror Galvanometer Voltage and current sensitiveness
- 2. LCR Series resonance Determination of L & Q factor
- 3. Air wedge Thickness of a wire
- 4. Dispersive power of a prism Spectrometer
- 5. Grating N and  $\lambda$  by Normal incidence Spectrometer
- 6. Newton's rings Determination of radius of curvature
- 7. Bridge rectifier Pi filter
- 8. Transistor characteristics CE mode
- 9. Single stage transistor amplifier
- 10. Hartley oscillator
- 11. Logic gates AND, OR, NOT Truth table verification Using Discrete Components.
- 12. Logic gates NAND, NOR Truth table verification Using Discrete Components.
- 13. Zener diode characteristics and break down voltage
- 14. OP AMP as an adder and subtractor
- 15. Comparison of capacitances Desauty's method using headphone
- 16. LCR Parallel resonance.



Programme	: UG	Part IV	: NME
Semester	: III	Hours per week	: 02
Sub code	: 18UMTN31	Credit	: 02

# MATHEMATICS FOR COMPETITIVE EXAMINATION – I

# **Course Outcomes**:

**CO1**: To introduce concepts of Mathematics along with analytical ability.

- **CO2**: To practice the mathematical formulas and methods
- **CO3**: To develop the computational skills needed.
- **CO4**: To improve the ability to face the competitive examinations.

# Unit–I

Addition of matrices - Subtraction of matrices - Multiplication of matrices - Determinant.

# Unit – II

Operation on numbers – Divisibility – Arithmetic Progression – Geometric Progression.

# Unit – III

HCF Factorization method – Division method –Factorization method of finding LCM – Common Division method – Comparison of fractions.

# Unit – IV

Concept of percentage- Results on population – Results on Depreciation.

# Unit – V

Comparison of ratios - Compounded ratio - Variation.

# **Text Book:**

Text Material will be supplied by the Department.

- 1. Aggarwal. R.S, **Quantitative Aptitude for Competitive Examinations**, S.Chand and Company Ltd, Reprint 2011, New Delhi.
- 2. Abhigit Guha, **Quantitative Aptitude**, fourth edition, Tata MC Graw Hill Publication, 2011, New Delhi.
- 3. Mohan Rao. U, **Quantitative Aptitude**, Scitech Publications, Reprint, 2013, Chennai.



#### MANNAR THIRUMALAI NAICKER COLLEGE (AUTONOMOUS) DEPARTMENT OF MATHEMATICS (For those who joined in 2018-2019 and after)

Programme	: UG	Part III	: Core
Semester	: IV	Hours per week	: 05
Sub code	: 18UMTC41	Credit	: 05

# ANALYTICAL GEOMETRY 3D AND VECTOR CALCULUS

# **Course Outcomes:**

CO1: To understand the concepts of equation of a plane, Straight line, Sphere,

**CO2**: To learn the basic concepts in vector differentiation.

CO3: To acquire the knowledge of Analytical geometry of three dimensions & vector calculus.

**CO4**: To introduce the application of double and triple Integration.

# Unit – I

The plane – Angle between two planes – Length of perpendicular – Bisecting plane – Distance between two planes.

# Unit –II

The straight line – Symmetric form – Image of a line about a plane – A plane and a straight line – Angle Between a plane and straight line, Coplanar lines – Shortest distance between two lines.

# Unit –III

The Sphere – Equation of the sphere – Equation of the tangent plane – Simple problems.

# Unit –IV

Vector Differentiation, Gradient – Divergence – Curl – Theorems.

# Unit –V

Vector Integration – Line integrals – Surface integrals – Theorems of Green, Gauss and Stokes (statements only) – Simple Problems.

# **Text Book :**

1. Dr. Arumugam. S and A. Thangapandi Isaac, **Analytical Geometry of three Dimensions and Vector Calculus**, New Gamma Publications, Reprint 2017, Palayamkottai.

Unit I	_	Chapter 2 Full
Unit II	_	Chapter 3 : Section 3.1 and 3.2
Unit III	_	Chapter 4 : Full
Unit IV	_	Chapter 5 : Full
Unit V	_	Chapter 7 : Full

- Manicka Vasagam Pillai and Natarajan, Analytical Geometry of three Dimensions and Vector Calculus, Viswanathan. S, Printers and Publishers Pvt. Ltd., Reprint 2001, Chennai.
- Duraipandian.P, Laxmidurai pandian and Muhilan.D, Analytical Geometry of two Dimensions, Emerald Publishers, Reprint, 1985, Chennai.
- Dr. Venkataraman, M.K and Mrs. Manorama Sridhar, Calculus and Fourier series, The National Publishing Company, Chennai.,



Programme	: UG	Part III	: Core
Semester	: IV	Hours per week	: 05
Sub code	: 18UMTC42	Credit	: 05

# STATISTICS – I

#### **Course Outcomes**

CO1: To develop skills in basic statistical concepts.CO2: To introduce Correlation and Regression.CO3: To learn about various techniques on curve fitting.CO4: To imply all kinds of attributes in statistics.

#### Unit – I

Measures of averages – Arithmetic Mean - Median-Quartile Deviation – Mode- Geometric Mean – Harmonic Mean- Measures of dispersion – Standard Deviation – Skewness and Kurtosis based on moments.

# Unit –II

Correlation - Correlation Coefficient.- Problems - Rank correlation Coefficient -Regression- Equation of Regression lines – Regression Coefficients – Angle between Regression lines.

# Unit – III

Index numbers - Aggregate method – Average of price relatives method – Weighted Index numbers – Laspeyre's Index number-, Paasche's Index number- Marshall -Edgeworth 's Index number- Bowley's Index number – Fisher's Index number – Kelley's Index number – Ideal Index number- Consumer Price Index numbers and Time series.

# Unit –IV

Curve fitting –Principle of Least Squares- Fitting a Straight Line – Fitting a second degree parabola – Type of Curves of the form  $y = bx^{a}$ ,  $y = ab^{x}$ ,  $y = ae^{bx}$ .

# Unit –V

Theory of attributes – Positive Class Frequencies – Negative Class Frequencies - Ultimate Class Frequencies - Consistency of Data – Independence and Association of Data – Coefficient of Association – Coefficient of Colligation.

# **Text Book:**

1. Dr. Arumugam, S & Isaac, Statistics, New Gamma Publications, Reprint 2012.

Unit I - Chapter 2, 3, 4 Unit II - Chapter 6 Unit III - Chapter 9, 10 Unit IV - Chapter 5 Unit V - Chapter 8

- Gupta. S.C, Kapoor.V.K, Elements of Mathematical Statistics, Sultan Chand and Sons Publications, 2001, New Delhi.
- R.S.N.Pillai & Bagavathi, Practical Statistics, S.Chand & Company Pvt Ltd, Reprint 2010, New Delhi.
- 3. David Freeman, **Statistics**, Viva Book Publisher, 2010, New Delhi.



# MANNAR THIRUMALAI NAICKER COLLEGE (AUTONOMOUS) DEPARTMENT OF PHYSICS (For those who joined in 2018-2019 and after)

Programme	: B.Sc (Mathematics & Cl	hemistry) Part III	: Allied
Semester	: IV	Hours per week	: 04
Sub code	: 18UPHA41	Credit	: 03
		ED DUVSICS IV	

#### ALLIED PHYSICS - IV

# **OPTICS, SPECTROSCOPY AND MODERN PHYSICS**

# **Course Outcomes**

**CO1:** To understand the basic concepts in optics.

- **CO2:** To understand the properties of light like reflection, refraction, interference, diffraction and polarization
- **CO3:** To study the infrared spectroscopy, Raman effect, Doppler Effect and fiber optic communication system.
- **CO4:** To evaluate theory of relativity.

# Unit I:

Deviation produced by thin lens – Focal length of two thin lenses in and out of contact – Cardinal points – Refraction through a thin prism – Dispersion – Dispersive power – Combination of thin prisms to produce (a) Deviation without dispersion and (b) Dispersion without deviation – Direct vision spectroscope – Chromatic aberration in lenses – Spherical aberration in lenses – Theory of primary and secondary rainbows.

# Unit II:

Photography – Photographic camera – Depth of focus – Photographic film. Interference in thin films – air wedge – Newton's rings (reflected beam only) – Determination of wavelength.

# Unit III:

Double refraction – Nicol prism – Construction, action and uses – Quarter wave plate (QWP) – Half wave plate (HWP) – Optical activity – Biot's laws – Specific rotatory power – Half shade polarimeter – Determination of specific rotatory power – Fibre optics – Light propagation in fibres – Fibre optic communication system - Advantages.

# Unit IV:

Infra red radiations – Sources, properties and uses – Ultraviolet radiations – Sources, properties and uses – Planck's quantum theory – Raman effect – Experimental study of Raman effect(simple theory) - Quantum theory of Raman effect – Applications – Photo electricity – Laws of photo electricity – Photo electric cells – Types(Photo emissive, Photoconductive and Photovoltaic cells) and their uses – Applications of photo electric cells.

# Unit V:

Michelson–Moreley experiment – Significance of the negative results – Postulates of special theory of relativity – Lorentz transformation equations - Length contraction – Time dilation – Variation of mass with velocity – Mass energy equivalence.

# **Text Book:**

1. Murugesan.R, **Optics, Spectroscopy and Modern Physics,** S.Chand and Company Ltd, 2010, New Delhi.

Unit – I : 1.1 - 1.24Unit – II : 2.1 - 2.10Unit – III : 3.1 - 3.21Unit – IV : 4.1 - 4.14Unit – V : 5.1 - 5.11

- 1. Kakani and Bhandari Sultan, **Optics and Spectroscopy**, Chand and Sons, 2004, New Delhi.
- 2. Brijlal and Subramanyam, A Text book of Optics, S.Chand and Co, 2004, New Delhi.
- 3. B.K.Sharma, Spectroscopy, GOEL Publishing House, 2006, Meerut.
- 4. R.Murugesan and Kiruthiga Sivaprasath, **Modern Physics**, S.Chand and Co, Sixteenth Edition, 2012, New Delhi.



#### MANNAR THIRUMALAI NAICKER COLLEGE (AUTONOMOUS) DEPARTMENT OF MATHEMATICS (For those who joined in 2018-2019 and after)

Programme	: B.Sc (Mathematics & Chemistry)	Part III	: Allied
Semester	: III & IV	Hours per week	: 02
Sub code	: 18UPHAP2	Credit	: 01

# ALLIED PHYSICS PRACTICAL – II

#### **Course Outcomes**

CO1: To develop experimental knowledge by handling various apparatusCO2: To know the various components and its importantCO3: To know the circuit connections an functioning of experiments.CO4: To create interest to develop oscillatory circuit.Any 14 experiments.

- 1. Mirror Galvanometer Voltage and current sensitiveness
- 2. LCR Series resonance Determination of L & Q factor
- 3. Air wedge Thickness of a wire
- 4. Dispersive power of a prism Spectrometer
- 5. Grating N and  $\lambda$  by Normal incidence Spectrometer
- 6. Newton's rings Determination of radius of curvature
- 7. Bridge rectifier Pi filter
- 8. Transistor characteristics CE mode
- 9. Single stage transistor amplifier
- 10. Hartley oscillator
- 11. Logic gates AND, OR, NOT Truth table verification Using Discrete Components.
- 12. Logic gates NAND, NOR Truth table verification Using Discrete Components.
- 13. Zener diode characteristics and break down voltage
- 14. OP AMP as an adder and subtractor
- 15. Comparison of capacitances Desauty's method using headphone
- 16. LCR Parallel resonance.



Programme	: UG	Part IV	: NME
Semester	: IV	Hours	: 02
Sub code	: 18UMTN41	Credit	: 02

# MATHEMATICS FOR COMPETITIVE EXAMINATION - II

#### **Course Outcomes:**

**CO1:** To introduce concepts of Mathematics along with analytical ability.

**CO2:** To develop the computational skills needed.

**CO3**: To improve the ability to face the competitive examinations.

CO4: To familiarize the concepts of permutation and combination.

# Unit–I

Cost Price- Selling price - Profit or Gain - Loss - Profit and Loss Percentage.

# Unit – II

Alligation – Mean price - Rule of alligation.

# Unit – III

Principal – Interest – Simple Interest – Compound Interest.

# Unit – IV

Non Verbal Reasoning - Completion of Figures - Completion of Series.

# Unit – V

Calendar - Leap Year - Non Leap Year - Number of Days between Dates

# **Text Book:**

Text Material will be supplied by the Department.

- 1. Aggarwal. R.S, **Quantitative Aptitude for Competitive Examinations**, S.Chand and Company Ltd, Reprint 2011, New Delhi.
- AbhigitGuha, Quantitative Aptitude, fourth edition, Tata MCGraw Hill Publication, 2011, New Delhi.
- 3. BS Sijwali, Indu Sijwali, **Non -Verbal Reasoning,** Arihant Publications (India) LTD., New Delhi.