ANNEXURE - 9

CHOICE BASED CREDIT SYSTEM – STRUCTURE

FROM THE ACADEMIC YEAR 2017–18

B.Sc MATHEMATICS WITH COMPUTER APPLICATIONS

SEM	Part – I	Part – II	Part – III				Part – IV			Part – V (6th Hr)	ACC (6th Hr)			SLC
I Sem.	I Lang (6)	II Lang (6)	Core (5)	Core (5)	Allied Maths CA (4)	Allied Maths CA Lab (2)	SBE (2)	–	**Total (30)**	NCC/NSS/PED. (3)	Com.Eng (2)	Comp.Lit (1)	–	–
II Sem.	I Lang (6)	II Lang (6)	Core (4)	Core (5)	Allied Maths CA (4)	Allied Maths CA Lab (2)	SBE (2)	Elec. EVS (1)	**Total (30)**	NCC/NSS/PED. (3)	Com.Eng (2)	Comp.Lit (1)	–	Law and Society
III Sem.	I Lang (6)	II Lang (6)	Core (6)	Core Lab (2)	Allied Maths CA (4)	Allied Maths CA Lab (2)	NME (2)	SBE (2)	**Total (30)**	NCC/NSS/PED. (3)	Com.Eng (2)	Comp.Lit (1)	–	Human Rights
IV Sem.	I Lang (6)	II Lang (6)	Core (6)	Core Lab (2)	Allied Maths CA (4)	Allied Maths CA Lab (2)	NME (2)	SBE (2)	**Total (30)**	NCC/NSS/PED. (3)	Com.Eng (2)	Comp.Lit (1)	–	Number theory
V Sem.	Core (6)	Core (6)	Core (4)	Core (4)	Core Lab (2)	Elec. (5)	SBE (2)	Elec. W.S. (1)	**Total (30)**	–	Com.Eng (2)	Comp.Lit (1)	Skill Devt – Career Guidance (3)	History of Mathamatics
VI Sem.	Core (6)	Core (4)	Core (4)	Core Lab (2)	Elec.II (5)	Elec.III (5)	SBE (2)	Elec. VBE (2)	**Total (30)**	–	Com.Eng (2)	Comp.Lit (1)	Skill Devt – Career Guidance (3)	—
								TOTAL	**180 Hrs**					

I Language	–	Tamil
II Language	–	English
SBE	–	Skill – Based Electives
SLC	–	Self – Learning Course
EVS	–	Environmental Studies
W.S.	–	Women Studies

CHOICE BASED CREDIT SYSTEM – STRUCTURE

FOR THOSE WHO HAVE JOINED FROM THE ACADEMIC YEAR 2017–18 ONWARDS

B.Sc MATHEMATICS WITH COMPUTER APPLICATIONS

Part	Course	Subject	Code	Hrs.	6th Hr.	Cr.	Adl. Cr.	Exam (Hrs)	Marks	
									Int.	Ext.
SEMESTER - I										
I	Lang. – I	Tamil – I	170103101	6		3		3	25	75
II	Lang. – II	English – I	171003101	6		3		3	25	75
III	Core	Calculus [Common]	173103101	5		5		3	25	75
	Core	Analytical Geometry of 3D and vector calculus [Common]	173103102	5		5		3	25	75
	Al.Maths CA	PC Software	173103121	4		4		3	25	75
	Al.Mat.CA Lab	Ms Office and DTP lab	173103122	2		1		3	40	60
IV	SBE - I	Basic Algebra(common)	174403131	2		2		2	25	75
V	Extension activities	NSS / NCC / PED	–		3			–	–	–
	Additional Courses	Communicative English–I	–		2			–	–	–
		Computer Literacy	–		1			–	–	–
SEMESTER - II										
I	Lang. – I	Tamil – II	170103201	6		3		3	25	75
II	Lang. – II	English – II	171003201	6		3		3	25	75
III	Core	Sequences and Series & Trigonometry (common)	173103201	4		4		3	25	75
	Core	Differential Equation and Laplace Transformation [Common]	173103202	5		4		3	25	75
	Al.Maths.CA	Programming in C	173103221	4		4		3	25	75
	Al.Mat.CA.Lab	C Lab	173103222	2		1		3	40	60
IV	SBE - II	Theory of Equations (common)	174403231	2		2		2	25	75
	EVS	Environmental Studies	174103201	1		1		2	–	100
V	Extension activities	NSS / NCC / PED	–		3			–	–	–
	Additional Courses	Communicative English–I	178003201		2		1	3	25	75
		Computer Literacy	–		1			–	–	–
	SLC	Law and Society	178003202				3	3	–	100
SEMESTER - III										
I	Lang. – I	Tamil – III	170103301	6		3		3	25	75
II	Lang. – II	English – III	171003301	6		3		3	25	75
III	Core	Modern Algebra	173103301	6		5		3	25	75
	Core Lab	Application of Differential Equations Lab	173103302	2		1		3	40	60
	Al.Mat.CA	Object oriented Programming with C++	173103321	4		4		3	25	75
	Al.Mat.CALab	C++ Lab	173103322	2		1		3	40	60
IV	NME - I	Basic Maths – I	174603331	2		2		2	25	75
	SBE - III	Quantitative Aptitude - I	174403331	2		2		2	25	75
V	Extension activities	NSS / NCC / PED	–		3			–	–	–
	Additional Courses	Communicative English–II	–		2			–	–	–
		Computer Literacy	–		1			–	–	–
	SLC	Human Rights	178003301				3	3	–	100

Part	Course	Subject	Code	Hrs.	6th Hr.	Cr.	Adl. Cr.	Exam (Hrs)	Marks	
									Int.	Ext.
SEMESTER - IV										
I	Lang. – I	Tamil – IV	170103401	6		3		3	25	75
II	Lang. – II	English – IV	171003401	6		3		3	25	75
III	Core	Linear Algebra	173103401	6		5		3	25	75
	Core Lab	Combinatorial Mathematics Lab	173103402	2		1		3	40	60
	Al.Mat.CA	Java programming	173103421	4		4		3	25	75
	Al.Mat.CA lab	Java Lab	173103422	2		1		3	40	60
IV	NME - II	Basic Maths – II	174603431	2		2		2	25	75
	SBE - IV	Quantitative Aptitude - II	174403431	2		2		2	25	75
V	Extension activities	NSS / NCC* / PED*	–		3	1		3	25 *40	75 *60
	Additional Courses	Communicative English–II	–		2		1	3	25	75
		Computer Literacy	–		1			–	–	–
	SLC	Number Theory	178003431				4	3	–	100
SEMESTER - V										
III	Core	Real Analysis(Common)	173103501	6		5		3	25	75
	Core	Operations Research (Common)	173103502	6		4		3	25	75
	Core	Visual programming	173103503	4		4		3	25	75
	Core	Mechanics	173103504	4		2		3	25	75
	Core Lab	Visual programming Lab	173103505	2		2		3	40	60
	Elective	Elective – I	-	5		5		3	25	75
IV	SBE - V	Astronomy	174403531	2		2		2	25	75
	WS	Women Studies	174503501	1		1		2	–	100
	Additional Courses	Communicative English–III	–		2			–	–	–
		Computer Literacy	–		1			–	–	–
		Skill Development – Career Guidance	–		3			–	–	–
	SLC	History of Mathematics	178003520				4	3	–	100
SEMESTER - VI										
III	Core	Complex Analysis	173103601	6		5		3	25	75
	Core	.Net Programming	173103602	4		4		3	25	75
	Core	Numerical Analysis	173103603	4		2		3	25	75
	Core Lab	.Net Lab	173103604	2		2		3	40	60
	Elective	Elective – II	-	5		5		3	25	75
	Elec. - III	Project *Report;@Viva	173103607	5		5		–	40 [24:16]	60 [36:24]
IV	SBE - VI	Graph theory	174403631	2		2		2	25	75
	VBE	Value Based Education	174303601	2		2		2	–	100
	Additional Courses	Communicative English–III	178003601		2		1	3	25	75
		Computer Literacy	178003602		1		1	3	–	100
		Skill Development – Career Guidance	178003603		3		2	3	–	100
		TOTAL		**180**	**36**	**140**	**20**			

***Elective I and II: Each elective paper has two choices, select any one.**

1.1 Mathematical Statistics - I - 173103506

1.2 Functional Analysis - 173103507

2.1 Mathematical Statistics – II - 173103605

2.2 Stochastic Processes - 173103606

	ALLIED – MATHEMATICS FOR INFORMATION TECHNOLOGY						
Sem	**Title of the Paper**	**SUB CODE**	**Hrs.**	**Cr.**	**Exam (Hrs)**	**Marks Allotted**	
						Int.	**Ext.**
III	Discrete Mathematics	173103323	4	4	3	25	75
IV	Resource management Techniques	173103423	4	4	3	25	75

B.Sc MATHEMATICS WITH COMPUTER APPLICATIONS:

Those Who Have Joined From The Academic Year

2017 – 18 Onwards Under CBCS System

Core Subject **MODERN ALGEBRA**

SEMESTER III **Code: 173103301**

6 Hrs/Week

Credits 5

Objectives:-

- ***To provide basic knowledge about the sets, functions, algebraic structures and isomorphism.***

UNIT – I: **[18 Hrs]**

Groups – Definition and examples - Elementary properties of a group - Equivalent definitions of a group - Permutation Groups - Subgroups - Cyclic Groups - Order of an element.

UNIT – II: **[18 Hrs]**

Coset's and Lagrange's theorem - Normal subgroups and Quotient Groups - Homomorphisms - Fundamental theorem of group homomorphism.

UNIT – III: **[18 Hrs]**

Isomorphism - Isomorphism is an equivalence relation among groups - Cayle's theorem - Inner automorphisms

UNIT – IV: **[18 Hrs]**

Rings - Definition and examples - Elementary properties of rings - Homomorphism of rings - Isomorphism - Types of rings - Characteristic of a ring.

UNIT – V: **[18 Hrs]**

Subrings-Ideals-Quotient rings - Maximal and prime ideals.

TEXT BOOK:

01. Arumugam S., and Isaac Modern Algebra, Scitech Publications Private Limited, Reprint 2013.

Unit-I:	3.1 to 3.7
Unit-II :	3.8,3.9,3.11
Unit-III:	3.10
Unit-IV:	4.1 to 4.5,4.10
Unit-V:	4.6 to4.9

REFERENCE:

01.Vasishtha A.R.,Modern Algebra,Krishna Publications,1998.

Core Lab **APPLICATION OF DIFFERENTIAL EQUATIONS LAB**

SEMESTER III **Code: 173103302**

2 Hrs/Week

Credits 1

Objectives:

- ***To help the students to understand how differential equations areb applied in real life problems.***

LIST OF PRACTICALS:

01. Mixture problem
02. An application involving a snowplow
03. First order R.C. series circuits
04. Drug distribution in human body by a decay model
05. Brachistochrone problem
06. Damped vibrations
07. Electric circuits
08. Second order RLC Electric circuits
09. Derivation of a Wave equation in a vibrating string
10. Derivation of Heat flow in a rectangular plate
11. Solving circuit equations
12. Solving a spring mass system that is critically damped

REFERENCES:

01. Narayanan S., Manicavasagam T.K.Pillay, Differential equations and its applications, Viswanathan S. Printers & Publishers pvt Ltd - 2009.
02. George F. Simmons, Steven G.Krantz, Differential equations, Tata Mc Graw Hill Edition - 2009.

Allied Maths CA **OBJECT ORIENTED PROGRAMMING WITH C++**

SEMESTER III **Code: 173103321**

4 Hrs/Week

Credits 4

Objectives:

- ***To introduce the fundamental concept in object oriented Programming.***
- ***To lay foundation for future studies in C++ Programming.***

UNIT – I: **[12 Hrs]**

Introduction – Tokens – Keywords – Identifiers and constants – Data types – Variables – Operators – Manipulators – Expressions – Control structures.

UNIT – II: **[12 Hrs]**

Functions in C++: The main function – Function prototyping – Call by value – Call by reference – Inline functions – Function overloading – Friend function.

UNIT – III: **[12 Hrs]**

Classes and objects: Specifying a class – Defining member functions – Objects – constructors, destructors – Operator overloading – Type conversions.

UNIT – IV: **[12 Hrs]**

Inheritance – Single inheritance – Multilevel inheritance – Multiple inheritance – Hierarchical inheritance – Hybrid inheritance – Pointer to objects, this pointer – Virtual functions – C++ streams – C++

stream classes – Unformatted I/O operators – Formatted console I/O operators.

UNIT – V: **[12 Hrs]**

Working with files – Classes – Opening and closing a file – File pointers – Updating a file – Command line Arguments.

TEXT BOOK:

01. Balagurusamy E., Object-Oriented Programming with C++, 4th Edition, Tata McGraw – Hill Publishing Company Ltd, New Delhi. Chapters – 3, 4, 5, 6, 7, 8.1 to 8.8, 9.1 to 9.4, 9.6, 10.1 to 10.5, 11

REFERENCE:

01. John R., Hubbard, Programming with C++, Tata McGraw – Hill Publishing Company Ltd, New Delhi.

Allied Maths CA Lab **C++ LAB** **Code: 173103322**

SEMESTER- III **2 Hrs/Week**

Credit 1

Objective:

- ***To give hands on training in C++ Programming.***

Program List

01. Write a program to convert temperature Fahrenheit in to Celsius.
02. Write a program to print the following output using for loops
    i. 1
    ii. 2 2
    iii. 3 3 3
    iv. And so on
03. Write a macro that obtains the largest of the number.
04. Write a program to calculate variance and Standard deviations of N number.
05. Write a program to find largest values of two numbers using nesting the member function.
06. Write a program to overload the unary minus operator.
07. Write a program to overload the operator using friends.
08. Write a program to overload the binary operator for adding two complex numbers.
09. Write a program to overload the binary operator for multiplying two complex numbers.
10. Write a program to maintain the employees information using inheritance.
11. Write a program to maintain the library details using constructor and destructor.
12. Write a program to find the magnitude of a vector using conversion function.

REFERENCE:

01. Balagurusamy E., Object-Oriented Programming with C++, 4th Edition, Tata McGraw – Hill Publishing Company Ltd, New Delhi.

Part – IV **BASIC MATHS – I** **Code: 174603331**
Non–Major Electives **SEMESTER III** **2 Hrs/Week**
Credits 2

Objectives:

- ***To give fundamental concepts in mathematics.***
- ***To help the students in preparing for Competitive Examinations.***

UNIT – I: **[6 Hrs]**

H.C.F and L.C.M of numbers.

UNIT – II: **[6 Hrs]**

Average

UNIT – III: **[6 Hrs]**

Problems on numbers

UNIT – IV: **[6 Hrs]**

Problems on ages

UNIT – V **[6 Hrs]**

Surds and indices

TEXT BOOK:

01. Aggarwal R.S., Quantitative Aptitude, S.Chand & company Ltd, New Delhi, Revised Edition (Reprint 2013)
    - Unit – I : Chapter 2 (worked examples only)
    - Unit – II : Chapter 6(worked examples only)
    - Unit – III : Chapter 7(worked examples only)
    - Unit – IV : Chapter 8(worked examples only)
    - Unit – V : Chapter 9(worked examples only)

REFERENCES :

01. Ranganath G.K, Sampangiram C.S, and Rajaram.Y, & text books of business Mathematics, Himalaya Publishing House, New Delhi, Reprint 2006.
02. Ponnien Selvi.M, & Sri Devi.N, Business Mathematics, Yoga Publishing House, Virudhunagar, 2007.

Skill Based Electives–Major **QUANTITATIVE APTITUDE – I**
SEMESTER III **Code: 174403331**
2 Hrs/Week
Credits 2

Objectives:

- ***To motivate and to lay foundation for the beginners in Mathematics***
- ***To help the students in preparing for Competitive Examinations***

UNIT – I: **[6 Hrs]**

Average

UNIT – II: **[6 Hrs]**

Problems on Numbers – Problems on ages

UNIT – III: **[6 Hrs]**

Percentage

UNIT – IV: **[6 Hrs]**

Profit and Loss

UNIT – V: **[6 Hrs]**

Ratio and Proportion

TEXT BOOK:

01. Aggarwal R.S., Quantitative aptitude, S. Chand & company limited, New Delhi, Revised Edition (Reprint 2013)

Unit – I : Chapter 6 (worked examples only)
Unit – II : Chapter 7, 8 (worked examples only)
Unit – III : Chapter 10 (worked examples only)
Unit – IV : Chapter 11 (worked examples only)
Unit – V : Chapter 12 (worked examples only)

REFERENCE:

01. Abhijit Guha, Quantitative Aptitude for Competitive Examinations, Tata Mc Graw–Hill Publishing Company Limited, New Delhi.

Core Subject **LINEAR ALGEBRA**

SEMESTER IV **Code: 173103401**

6 Hrs/Week

Credits 5

Objectives:-

- ***To provide the basic knowledge about the vector spaces, linear transformations and Matrices.***

UNIT – I: **[18 Hrs]**

Vector Spaces: Definition and Examples – subspaces – linear transformation - span of a set.

UNIT – II: **[18 Hrs]**

Linear Independence – Basis and Dimension – Rank and Nullity – Matrix of a Linear Transformation

UNIT – III: **[18 Hrs]**

Inner product spaces - Definition and Examples – Orthogonality – Orthogonal complement.

UNIT – IV: **[18 Hrs]**

Theory of matrices - Algebra of matrices – Types of Matrices – The inverse of a matrix – Elementary Transformation – Rank of a matrix.

UNIT – V: **[18 Hrs]**

Simultaneous Linear Equations – Characteristic Equation and Cayley Hamilton Theorem – Eigen Values and Eigen vectors.

TEXT BOOK:

01. S.Arumugam, Thangapandi A., Isaac, Modern Algebra, Scitech Publications (India) Private Limited, Reprint 2013.

UNIT – I : Chapters – 5.1 to 5.4
UNIT – II : Chapters – 5.5 to 5.8
UNIT – III : Chapters – 6.1 to 6.3
UNIT – IV : Chapters – 7.1 to 7.5
UNIT – V : Chapters – 7.6 to 7.8

REFERENCE:

01. Vasistha, Modern Algebra, Krishna Publications, 1998.

Core lab **COMBINATORIAL MATHEMATICS LAB**

SEMESTER IV **Code: 173103402**

2 Hrs/Week

Credits 1

Objectives:

- ✍ ***To help the learners to has to find the solutions.***

01. Obtain the formula for the sum of the first n triangular numbers by Mathematical induction.
02. Obtain the formula for the sum of the first n harmonic numbers by Mathematical induction.
03. Let f_i are Fibonacci numbers, prove that $\forall\, n \in Z^+, \sum_{i=1}^{n} {f_i}^2 = f_n \times f_{n+1}$ using recursive definition.
04. Find Lucas numbers using the principle of inclusion and exclusion.
05. Determine the number of positive integers n where $1 \leq n \leq 100$ and n is not divisible by 2, 3 and 5 where $s = \{1, 2, 3, \ldots, 100\}$ and N = 100, for $n \in s$, n satisfies
    (a) Condition C_1 if n is divisible by 2.
    (b) Condition C_2 if n is divisible by 3 and
    (c) Condition C_3 if n is divisible by 5.
06. Determine in how many ways can the letters in the word ARRANGEMENT be arraged so that
    (a) There are exactly two pairs of consecutive identical letters.
    (b) Atleast two pairs of consecutive identical letters.
07. Find generating function for
    (a) For the sequence 1, 2, 6, 12, …
    (b) 1, – 1, 1, – 1, 1, – 1, …
08. Find the coefficient of
    (a) $x^0\ in\ (4x^3 - 5/x)^{16}$
    (b) $x^{50}\ in\ (x^7 + x^8 + x^9 \ldots)^6$
09. Determine the number of integral solutions of the equation $x_1 + x_2 + x_3 + x_4 = 18$ subject to $1 \leq x_1 \leq 5, -2 \leq x_2 \leq 4$, $0 \leq x_3 \leq 5, 3 \leq x_4 \leq 9$.
10. Tower of Hanoi.

REFERENCE:

01. Ralph P. Grimaldi and B.V. Ramana, Discrete and Combinatorial Mathematics – an applied introduction, Pearson Education, 5th edition, 2007.

Allied Maths CA **JAVA PROGRAMMING** **Code: 173103421**

SEMESTER IV **4 Hrs/Week**

Credits 4

Objectives:

- ***To introduce the fundamental concepts in Java programming.***
- ***To lay foundation for future studies in Java programming.***

UNIT – I: **[12 Hrs]**

Java History – Java features – Simple Java Programming – Class declaration – Java tokens – Comments – Java Statements – JVM – Implementing Java Program – Command line arguments – Constants, Variables and data types – Operators and expressions.

UNIT – II: **[12 Hrs]**

Decision making statements – Simple if statement – if – else statements – Nested if – else statements – else if ladder – Switch statement – Ternary operator. Looping – Looping statements – While, do, for, loop statements.

UNIT – III: **[12 Hrs]**

Creation of class – Objects and methods – Accessing class members – Constructors – method overloading – Overloading – Static Members.

UNIT – IV: **[12 Hrs]**

Inheritance – Interface – Java API packages – System package – Creating and accessing user defined and system package.

UNIT – V: **[12 Hrs]**

Multithreaded Programming – Multithreaded in Java – Thread Class – Life Cycle of Thread – Exception – Priority – Synchronization – Managing errors and exceptions.

TEXT BOOK:

01. Balagursamy E., Programming with JAVA, 3rd Edition, The McGraw – Hill, New Delhi.

    UNIT – I: Chapter 2,3,4,5

    UNIT – II: Chapter 6,7

    UNIT – III: Chapter 8,9

    UNIT – IV: Chapter 10,11

    UNIT –V: Chapter 12,13

REFERENCES:

01. Peitel H.M., and Peitel P.J., JAVA – How to Program, Pearson Education, New Delhi, 2003.
02. Patriclc Nanghton, Herberth Schildt, The Complete Reference JAVA 2, Tata McGraw – Hill, 5th Edition, New Delhi, 2006.

Allied Maths CA Lab **JAVA LAB** **Code: 173103422**

SEMESTER IV **2 Hrs/Week**

Credits 1

Objective:

- ✍ ***To give hands on training in Java programming.***

Program List

01. Simple programs (Prime Number, Adam Number, Reverse the Number, Sum of Digits, Factorial, Biggest of n numbers, Sort the given numbers, Sort the strings.
02. Array Manipulations.
03. Simple Constructor, Constructor, Overloading.
04. Inheritance.
05. Arithmetic Exception.
06. Throne Exception, Thronging Exception.
07. Interface.
08. Package.
09. Try & Catch.
10. Multiple Catch.

REFERENCE:

01. Balagursamy E., Programming with JAVA, 3rd edition, Tata McGraw – Hill, New Delhi.

Part – IV **BASIC MATHS - II**

Non- major Elective **SEMESTER IV** **Code: 174603431**

2 Hrs/Week

Credits 2

Objectives:

- ✍ ***To provide a basic knowledge of Mathematics.***
- ✍ ***To motivate the learners of Mathematics there by to lay foundation for further studies.***

UNIT – I: **[6 Hrs]**

Percentage.

UNIT – II **[6 Hrs]**

Profit & Loss.

UNIT – III **[6 Hrs]**

Ratio & proportion

UNIT – IV **[6 Hrs]**

Time & Work

UNIT – V **[6 Hrs]**

Simple Interest

TEXT BOOK:

01.Aggarwal R.S, Quantitative Aptitude, S.Chand & Company Ltd, NewDelhi, Revised Edition (Reprint 2014)

Unit-I Chapter 10 worked examples only

Unit-II Chapter 11 worked examples only

Unit-III Chapter 12 worked examples only
Unit-IV Chapter 15 worked examples only
Unit-V Chapter 21 worked examples only

REFERENCE:

01. Raghunath G.K, Sampangiram C.S , Rajaram.Y and Text books of Business Mathematics, Himalaya Publishing House, NewDelhi, Reprint 2006.
02. Sundaresan.V, Jayaseelan S.D, An introduction to Business Mathematics, S.Chand & Company Ltd, NewDelhi

Skill Based Electives–Major **QUANTITATIVE APTITUDE – II**

SEMESTER IV **Code: 174403431**

2 Hrs/Week

Credits 2

Objectives:

- ***To motivate the learners of mathematics there by to lay foundation for further studies***
- ***To help the students in preparing for Competitive Examinations***

UNIT – I: **[6 Hrs]**

Partnership

UNIT – II: **[6 Hrs]**

Time and Work

UNIT – III: **[6 Hrs]**

Time and Distance – Problem on trains

UNIT – IV: **[6 Hrs]**

Simple interest

UNIT – V: **[6 Hrs]**

Compound interest

TEXT BOOK:

01. Aggarwal R.S., Quantitative aptitude, S. Chand & company limited, New Delhi, Revised Edition (Reprint 2013)

Unit – I : Chapter 13 (worked examples only)
Unit – II: Chapter 15 (worked examples only)
Unit – III: Chapter 17, 18 (worked examples only)
Unit – IV : Chapter 21 (worked examples only)
Unit – V : Chapter 22 (worked examples only)

REFERENCE:

01. Abhijit Guha, Quantitative Aptitude for Competitive Examinations, Tata Mc Graw–Hill Publishing Company Limited, New Delhi.

Self Learning Course **NUMBER THEORY** **Code: 178003431**

SEMESTER IV **Addl. Credits–4**

Objectives:

- ***To motivate the learners for Self – study.***

UNIT – I:

Theory of Numbers – prime and composite number – The sieve of Eratosthenes – Divisors of a given number – simple problems

UNIT – II:

Euler's function – Integral part of a real number – simple problems.

UNIT – III:

The highest power of a prime ρ contained in n! – simple problems – The product of r consecutive integers is divisible by r! – simple problems.

UNIT – IV:

Congruence – Criteria of divisibility of a number – simple problems – Numbers in Arithmetic progression – Fermat's theorem.

UNIT – V:

Generalization of Fermat's theorem – Wilson's theorem – Lagrange's theorem – Simple problems.

TEXT BOOK:

01. Dr. Arumaugam and Issac, Theory of Equations and Number theory.

REFERENCE:

01. T.K. Manicavasagam Pilli and Narayanan, Algebra I & II, S.V. Publications - 2008.

Allied Maths **DISCRETE MATHEMATICS** **Code: 173103323**
[IT Major Students] **4 Hrs/Week**
SEMESTER III **Credits 4**

Objective:

- ***To give an introductory knowledge of the basic concepts in Discrete mathematics and graph theory.***
- ***To develop logical thinking***

UNIT – I: **[12 Hrs]**

Relations – Matrix of a relation – Digraph of a relation – operations on Relation – composition of the relations – Equivalance relations.

UNIT – II: **[12 Hrs]**

Functions – one to one – onto functions – special types of functions – Invertible functions – composition of functions.

UNIT – III: **[12 Hrs]**

Mathematical induction – techniques proof – principle of mathematical induction.

UNIT – IV: **[12 Hrs]**

Matrix Algebra – introduction – Matrix operations – the inverse of a square matrix – Elementary operations and rank of a matrix – simultaneous linear equations.

UNIT – V: **[12 Hrs]**

Logic Introduction – TF statements – connectives – parsing trees – Truth table of a formula – Tautology – Tautological implications and equivalence of formula

TEXT BOOK:

01. M.K. Venkatraman, Dr. M. Sridharan, and Chandra Sekaran N., Discrete Mathematics, The National Publishing Company, Chennai, 2007.

Unit – I	:	Chap II	: 1, 2, 3, 4, 5
Unit – II	:	Chap III	: 1, 2, 3, 4, 5
Unit – III	:	Chap IV	: 1, 2
Unit – IV	:	Chap VI	: 1, 2, 3, 4, 5
Unit – V	:	Chap IX	: 1 to 8

REFRENCE:

01. Tremblay J.P., and Manoharan R., Discrete Mathematical Structures with Applications to Computer Science, McGraw–Hill, New Delhi, 2007.

Allied Maths **RESOURCE MANAGEMENT TECHNIQUES**
[IT Major Students] **Code: 173103423**
SEMESTER IV **4 Hrs/Week**
Credits 4

Objectives:

- ***To introduce a basic knowledge of formation of Linear Programming problems.***
- ***To motivate the learners to find the solutions.***

UNIT I: **[12 Hrs]**

Linear programming problem – General form of a L.P.P. - Graphical solution method: Linear programming problem - Mathematical formulation of the problem – Illustrations on mathematical formulation of LPPs – Graphical solution method – some Exceptional cases – slack & surplus variable – canonical & standard forms of L.P.P.

UNIT – II: **[12 Hrs]**

Simplex method: Introduction – fundamental properties of solutions (Problems only) – the computational procedure – use of Artificial Variables. (Big – M method only)

UNIT – III: **[12 Hrs]**

Duality of Linear programming: Introduction – General primal – Dual pair – formulating a dual problem - Primal – Dual pair in matrix form – duality and simplex method.

UNIT – IV: **[12 Hrs]**

Transportation problem – Introduction – LP formulation of the transportation problem – Existance of solution in T.P. – the Transportation table – loops in Transportation table – solution in T.P –

finding an Initial Basic feasible solution – test for optimality – degeneracy in T.P - Transportation Algorithm (Modi method) – some exceptional cases.

UNIT – V: **[12 Hrs]**

Assignment problem – mathematical formulation of the problem – solution methods of Assignment problem – special cases in Assignment problem – (Maximization Assignment problem and unbalanced Assignment problem). The Travelling salesman problem.

TEXT BOOK:

01. Dr. S. Arumugam and Thangapandi Isaac A., Linear Programming, New Gamma Publishing House, Palayam Kottai, 2010.

Unit – I	:	Chap III	: 1, 2, 3, 4
Unit – II	:	Chap III	: 5, 6
Unit – III	:	Chap III	: 9, 10
Unit – IV	:	Chap IV	: 1, 2
Unit – V	:	Chap V	: 1, 2

REFERENCES:

01. Kanthi Swarap, Gupta P.K., Manmohan, Operation Research, 13th Edition, Sultan Chand and Sons, New Delhi, Reprint 2008.
02. Sharma S.D., Operations Research, Kedarnath, Ramnath & Co, 12th edition, 2007.

B.Sc MATHEMATICS WITH COMPUTER APPLICATIONS: Those who have joined from the Academic year 2017–18 onwards under CBCS system

EVALUATION PATTERN

Internal : 25 Marks **External** : 75 Marks

INTERNAL:

Test – 20 (average of the better two of the three tests conducted)
Assignment – 5

Question Paper Pattern:

INTERNAL		**EXTERNAL**	
Part – A : 6 × 1	= 6	Part – A :10 × 1	= 10
(Multiple Choice)		(Multiple Choice)	
Part – B : 2 × 7	= 14	Part – B : 5 × 7	= 35
(Either /Or)		(Either /Or)	
Part – C : 2/3 ×10	= 20	Part – C : 3/5×10	= 30
	*40		75

* Internal test mark 40 will be converted to 20.

SBE & NME

INTERNAL		**EXTERNAL**	
Part – A : 3 × 1	= 3	Part – A :15 × 1	= 15
(Multiple Choice)		(Multiple Choice)	
Part – B : 1 × 7	= 7	Part – B : 3/5 × 10	= 30
(Either /Or)			
Part – C : 1/2 ×10	= 10	Part – C : 2/4×15	= 30
	20		75

The **Assignment** Component of any one of the subjects (except Non-Major Electives and other Department Papers) in the III and IV Semesters in UG COURSES (as decided by the Head of the Department on Rotation Basis) should be in the form of REPORT (as per the guidelines) on the **HANDS ON EXPERIENCE GAINED** by the students from their:

- Part-time job (or) Assignment (or)
- Self-Employment (or)
- Making of Hand made Products (or)
- Survey on Marketing of goods and services (or)
- Maintenance and Servicing of Equipments (or)
- How things Work (or)
- Working Principles of Toys/gadgets…. Models (or)
- Making of working Models using some Concepts

Students should maintain a work diary which should be monitored by the **course teacher** guided by a **Monitoring Committee** of the concerned department.