



## **ST. ANN'S COLLEGE FOR WOMEN**

(Affiliated to Acharya Nagarjuna University,  
Recognized Under Section 2(f) of UGC Act 1956-New Delhi)  
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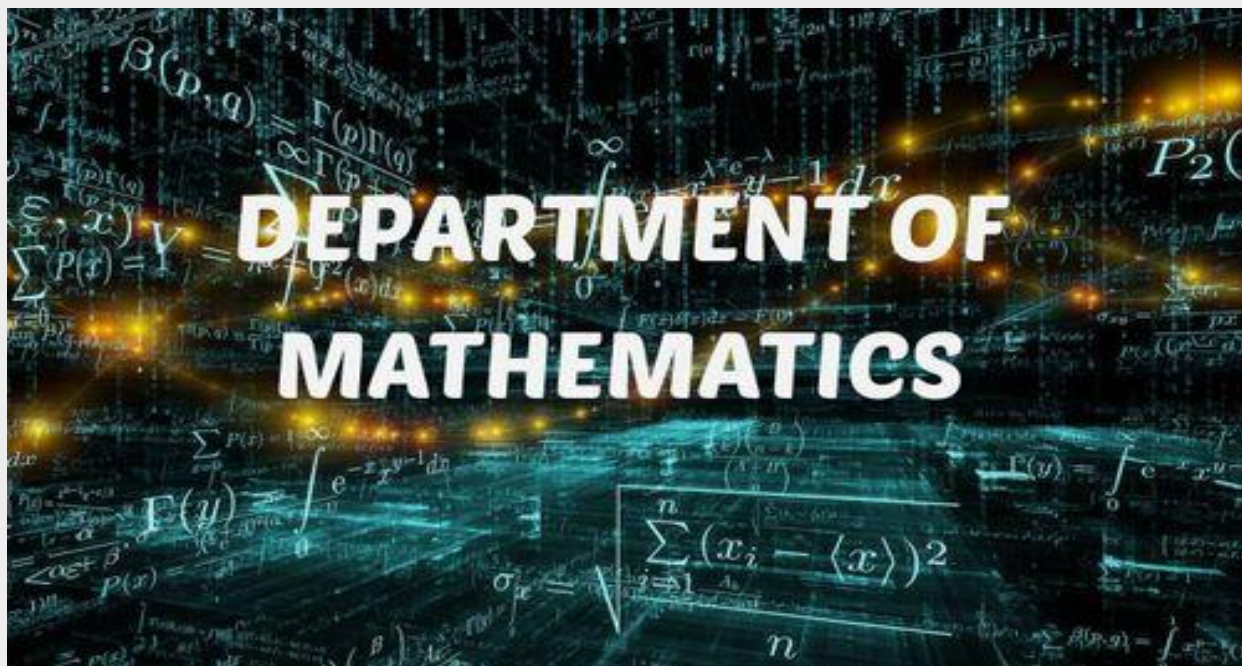
**Criterion: II**

**Metric –2.3.1**



### **2.3.1 STUDENT CENTRIC METHODS**

**Department of Mathematics**



## STUDENT CENTRIC METHODS

Experiential Learning	Participative Learning	Problem Solving
<ul style="list-style-type: none"> <li>- Work shop</li> <li>- Project &amp; Internship</li> <li>- Group Discussions</li> <li>- Community services</li> <li>- Poster Presentations</li> </ul>	<ul style="list-style-type: none"> <li>- Student seminars</li> <li>- Competitions – Quiz</li> <li>- Internship</li> <li>- Exhibition</li> </ul>	<ul style="list-style-type: none"> <li>- Book reviews</li> <li>- Mini Projects</li> <li>- Assignments</li> <li>- Question bank preparation</li> </ul>

## EXPERIENTIAL LEARNING

# GROUP DISCUSSION

The Department of Mathematics conducted GROUP DISCUSSION competition in the Academic year 2022-2023 on 5<sup>th</sup> April 2023 on the topic “**Number theory in every day life**”. All the students of the Department of Mathematics II, III BSc-MPC, MPCs & MSCs students were participated in the competition. Four groups of four members each had actively participated to perform their comprehensive level. **The Mathmagicians of Sk. Ruksana & Team** won the first prize and the **Alge - Bros of M. Geethika& Team** got the Second prize. There were presented with certificates.

### PARTICIPANTS LIST IN GROUP DISCUSSION:

S. No	Alge - Bros	Accuracy Allstars	Mathmagicians	Limit Breakers
1.	M. Geethika	R. Jessy	Sk. Ruksana	B. Sruthi
2.	P. Divya	A. Naga Srivalli	K. Jones	T. Rajeswari
3.	K. Hrudaya Pani	B. Remya	G. Prasanna	Sk. Reshu
4.	R. Rajini	S. Niharika	Sr. S. Sucharitha	S. Sanjana



The Department of Mathematics conducted GROUP DISCUSSION competition in the Academic year 2021-2022 on 23<sup>rd</sup> April 2022 on the topic “**Mathematical objects**”. All the students of the Department of II& III BSc-MPC, MPCs & MSCs students were participated in the competition. Four groups of four members each had actively participated to perform their comprehensive level. **The Mathmagicians of A. Pavithra & Team** won the first prize and the **Probability Pioneers of Sr.G.Sushma& Team** got the Second prize. There were presented with certificates.

### **PARTICIPANTS LIST IN GROUP DISCUSSION**

<b>S. No</b>	<b>Math Magicians</b>	<b>Numerical Ninjas</b>	<b>Probability Pioneers</b>	<b>Logic Legends</b>
<b>1.</b>	A. Pavithra	B. Anusha	D. Alekhya	J. Anitha
<b>2.</b>	K. Prasanya	K. Sravani	Sk. Ruksana	J. Anusha
<b>3.</b>	SK. Shabana	U. Sireesha	Sr. G. Sushma	K. Rekha
<b>4.</b>	S. Niharika	E. Harika	M. Divya	SK. Sadika



**Participation of Students in Group Discussion**



The Department of Mathematics conducted **GROUP DISCUSSION** competition in the academic year 2019-2020 on 4<sup>th</sup> February 2020 on the topic “**Benefits of Registration of Birth and Deaths**”. All the 2<sup>nd</sup>& 3<sup>rd</sup> Year B.SC students of the Department of Mathematics were participated in the competition. Five groups of five members each had actively participated to perform their comprehensive level. **The Archimedes Group of I. Sireesha & Team** won the first prize and the **Lagrange’s Group of P. Bindhu& Team** got the Second prize. There were presented with certificates and gifts by the principal.

### PARTICIPANTS LIST IN GROUP DISCUSSION

S. No	Ramanujan’s Group	Aryabhata’s Group	Lagrange’s Group	Pythagoras Group	Archimedes Group
1.	K. Kalyani	G. Mounika	G. A. Lakshmi	J. Anuradha	I. Sireesha
2.	L. Siva Parvathi	G. Mercy Rani	Y. Geetha Rani	K. Hena Priyanka	G. Durga
3.	N. Velangini	K. Gowthami	P.Bindhu	M. Jyothi	V. Snehalatha
4.	S. Gowthami	N. Apsana Begum	Sk.RahamThunisha	P. Navya	D. Bhargavi
5.	V. Hema	R. Sravani	S.Siva Gayathri	S. Navya Sri	S. Bhuvaneshwari





The Department of Mathematics conducted GROUP DISCUSSION competition in the academic year 2018-2019 on 23<sup>rd</sup> August 2018 on the topic “**Benefits of Registration of Birth and Deaths**”. All the II- & III-Year B.SC students of the Department OF Mathematics were participated in the competition. Five groups of five members each had actively participated to perform their comprehensive level. **The Ramanujan’s Group of B. Sravya & Team** won the first prize and the **Bhaskara’s Group of R. Sumathi & Team** got the Second prize. There were presented with certificates and gifts by the principal.

### PARTICIPANTS LIST IN GROUP DISCUSSION

S. No	Sakunthala Devi’s Group	Aristotle’s Group	Bhaskara’s Group	Newton’s Group	Ramanujan’s Group
1.	A. Jyothi	K. Mounika	R. Sumathi	A. Triveni	B. Sravya
2.	L. Parvathi	G. Rani	Y. Geetha Rani	P. Ramya	E. Lalitha
3.	A. Lavanya	P. Bhargavi	K. Pavani	Sk. Apsana	M. Jyothi
4.	B. Sunitha	P. Navya	P. Srilatha	R. Divyasri	G. Roshini
5.	B. Neelima	R. Sravani	S. Gayathri	Sk. Salma	S. Navya Sri



## Participative Learning

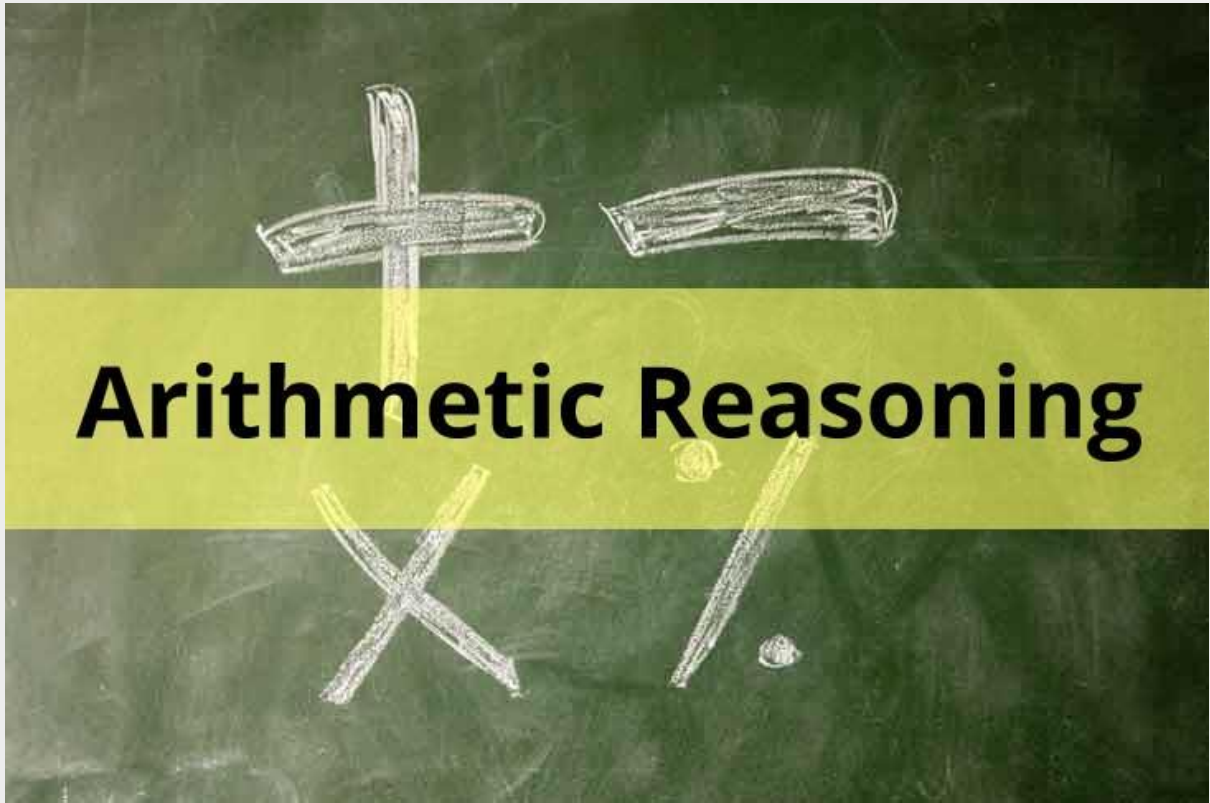
### SPECIAL LECTURE

The Department of Mathematics arranged a **Awareness Program** in the academic year 2021-2022 on 29<sup>th</sup> April 2022 on the topic “Career **Guidance**” conducted for 204 Students of III Year B Sc-MPC, MPCs & MSCs in the Seminar Hall. The Department invited the Resource Persons Mrs. J. Aruna Kumari, Director & Superior of Coaching Centre, Brodipet, Guntur.





**Awareness Program on “Arithmetic Skills and Reasoning”.**



The Department of Mathematics arranged a **Awareness Program** in the academic year 2021-2022 on 21<sup>st</sup> January 2019 on the topic “Arithmetic Skills and Reasoning” conducted for 145 Students of III Year B Sc- MPC, MPCs & MSCs in the Seminar Hall . The Department invited the Resource Persons Mrs. Dr.S.V.S.Girija, Associate Professor in Mathematics of Hindu College, Guntur.



# **Experiential Learning**



**POSTER  
PRESENTATION**

The Department of Mathematics conducted “**Poster Presentation**” in the academic year 2018-2019 on 04<sup>th</sup> February 2019. All the students of the Department of I, II & III B Sc- MPC, MPCs & MSCs students were participated in the event.

Students exhibited **Poster Presentation** on the topics

- Brain Game
- Maths in Nature Presentation
- Puzzles





# Community Service

***“EVERY GOOD WORK IS RECOGNIZED BY EVERY ACT THAT PROCES FROM HEART TO OTHER”***

As per the Community Services of Department of Mathematics, the students of I B Sc-MPC, MPCs & MSCs visited to “Anira Charitable Trust” on 28-04-2022. Never felt any better than spending time at Old Age Home . Our students showed great love and affection towards the old people and they arranged Lunch & Fruits for them .





**“The best Way to find yourself is to lose yourself in the service of others.”**

The Department of Mathematics organized **Community Service** in the academic year 2019-2020 on 07<sup>th</sup> December 2019 . All the III Year B.SC-MPC, MPCs & MSCs students had gone to MANDAL PARISHATH PRIMARY SCHOOL . They explained the simple tricks of Mathematics by using Teaching aids on the topics charts on clock, Calendar, Fractions . They were appreciated by the Head master and faculty of the school .

### **Students Exhibiting their teaching skills**



***“EVERY GOOD WORK IS RECOGNIZED BY EVERY ACT THAT PROCES FROM HEART TO OTHER”***

As per the Community Services of Department of Mathematics, the students of III B Sc had gone to MARGADARSI HIGH SCHOOL on 28-11-2018. They explained the simple tricks of Mathematics by using Teaching aids on the topics Real Numbers , Triangles, Angles. They were appreciated by the Head master D.V. Ramana of the school for their creative teaching potentials & calibers.



## PARTICIPATIVE LEARNING



The Department of Mathematics conducted JAM on 19<sup>th</sup> April 2022. More than 30 students of I,II & III BSC- MPC, MPCs & MSCs were participated took part in it. S.Niharika of I MSCs stood in the first position and K. Prema Kumari of III MPCs won the second prize.





## Experiential Learning

# FIELD TRIPS

### AGRICULTURAL EDUCATION DAY

Department of Mathematics were participated in Agricultural Education Day on 3<sup>rd</sup> December 2022, the Acharya N.G.Ranga Agricultural University, Lam, Guntur were invited our College to participated in the celebration of birth day of the First Indian Union Agriculture Minister(1946) and the first President of Independent India, Rajendra Prasad as “Agricultural Education Day “ Students came to know that how to Agricultural Education plays a significant role in boosting economy and speeding up the development process. It can create a Land mark in achieving food security and sustainability.



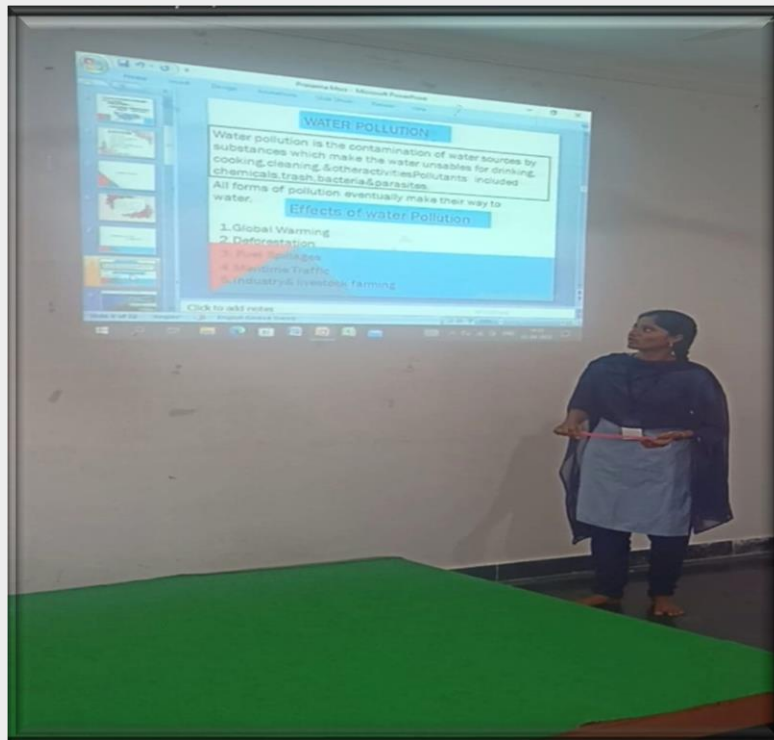






# **POWER POINT PRESENTATIONS**

The Department of Mathematics conducted **POWER POINT PRESENTATION** in the academic year 2022-2023 on 27<sup>th</sup> April 2023 on the topic “**Presentation On Linear Equation in Two Variable**”. 236 Students of the Department of 1<sup>st</sup> & 2<sup>nd</sup> B Sc-MPC, MSCs & MPCs were participated in the presentation.



The Department of Mathematics conducted **POWER POINT PRESENTATION** in the academic year 2019-2020 on 22<sup>nd</sup> February 2020 on the topic “**Presentation On Linear Equation in Two Variable**”. 338 Students of the Department of I & II B Sc-MPC, MSCs & MPCs were participated in the presentation.



The Department of Mathematics conducted **POWER POINT PRESENTATION** in the academic year 2018-2019 on 11-01-2019 on the topic “**Presentation On Linear Equation in Two Variable**”. 310 Students of the Department of 2<sup>nd</sup> & 3<sup>rd</sup> B Sc-MPC, MSCs & MPCs were participated in the presentation.





The Department of Mathematics conducted **QUIZ COMPETITION** in the academic year 2022-2023 on 03<sup>rd</sup> April 2023. All the students of the Department of Mathematics II & III B Sc-MPC, MPCs & MSCs students were participated in the event. It was held in Three rounds of General Knowledge, Subject round & Visual round. Four groups of four members each had actively participated to perform their comprehensive level. **S. Sanjana & Team** won the first prize and the **R. Jessy & Team** got the Second prize. There were presented with certificates.

## THE PARTICIPATES LIST IN QUIZ COMPETITION.

S. No	Group A	Group B	Group C	Group D
1.	M. Geethika	R. Jessy	Sk. Ruksana	B. Sruthi
2.	P. Divya	A. Naga Srivalli	K. Jones	T. Rajeswari
3.	K. Hrudaya Pani	B. Remya	G. Prasanna	Sk. Reshu
4.	R. Rajini	S. Niharika	S. Sucharitha	S. Sanjana

### Students participating in the Quiz Competition





# Participative Learning



The Department of Statistics conducted **SEMINAR PRESENTATION** in the academic year 2021-2022 from 13-08-2023 TO 17-03-2023. 204 Students of the Department of III B Sc- MPC, MPCs & MSCs were participated in the presentation.





## Problem-Solving

# SUDOKU

The Department of Mathematics conducted SUDOKU PUZZLE on 15<sup>th</sup> February 2020 . More than 30 students of I-BSC were participated took part in it. Solved the puzzles in 11 minutes as tonishing everyone, I. Geetha Rani of I MSCs stood in the first position and K. Prema Kumariof I MPCs won the second prize.

### STUDENTS SLOVING SUDOKU PUZZLE

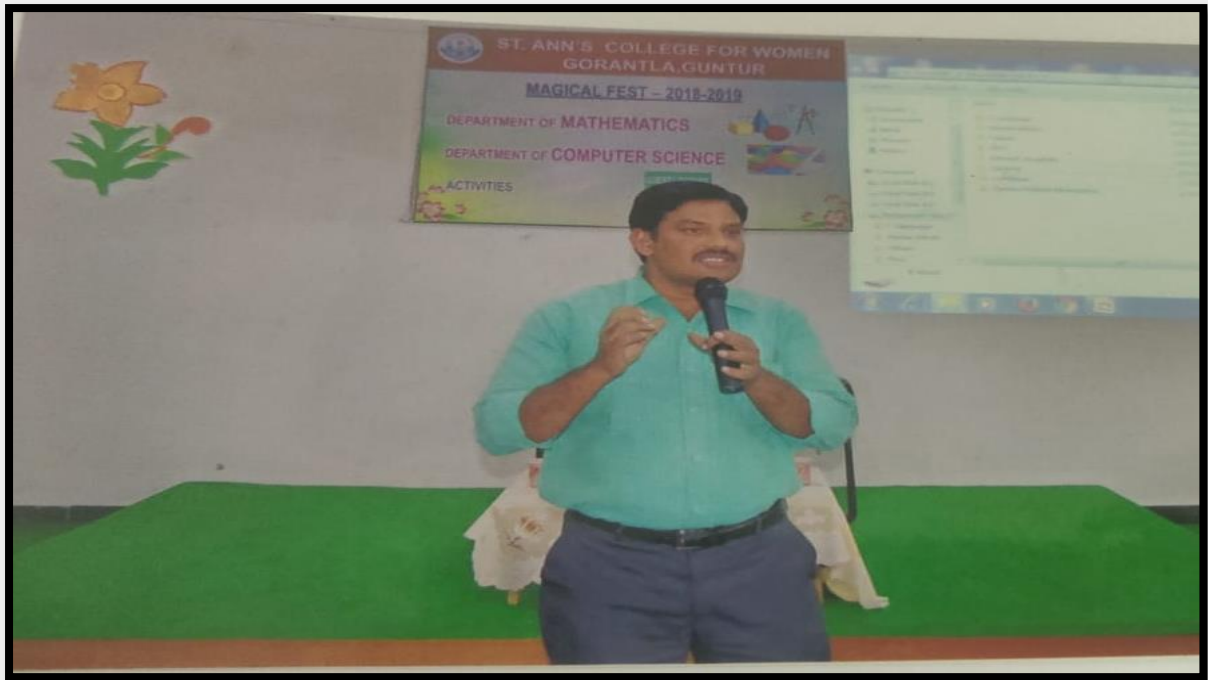


## Experiential Learning



To create interest in Mathematics, the Department of Mathematics arranged Magical Fest on 10<sup>th</sup> January 2019. The day attract lovers of Mathematics in the college The Mathematics Magical Fest was inaugurated with the Lighting of the lamp by the Principal & Correspondent Rev. Dr. Sr. Fathima Rani. P





The Guest speaker **G. Ramanuja** gave a Lecture on “**CYBER SECURITY**”.



## Problem Solving

### ASSINGMENTS

The Department of Mathematics conducted Assignments for I, II & III B Sc- MPC, MPCs & MSCs students for the I, II, III, IV, V & VI Semester. The Assignments were conducted in September 2018 for I, III & V Semesters and for II, IV, & VI Semesters in January 2019 for the Academic Year 2018-2019 on different Semester papers of Mathematics of the different topics.

S. No	Program	Semester	Course	In charge Lecturer	Topic
1	I B Sc-MPCs	I	Differential Equations	Mrs. K. Sandhya Rani	Linear differential equations based problems.
					Exact differential equations method based problems.
					Equations solvable for p method based problems.
					Equations solvable for y; equations solvable for x method based problems.
					Solution of homogneous linear differential equations of order n with constant coefficients.
					Linear differential equations based problems.
					Exact differential equations method based problems.

2	I BSc-MSCs	I	Differential Equations	Mrs. L. Mary Anusha	Equations solvable for p method based problems.
					Equations solvable for y; equations solvable for x method based problems.
3	I B Sc-MPCs	II	Three Dimensional Analytical Solid Geometry	Mrs. K. Sandhya Rani	Equations of a plane through the given points, length of the perpendicular from a given point to a given plane.
					Bisectors of angles between two panes, combined equations of two planes.
					Equations of a line; angle between a line and a plane.
					The condition that a given line may lie in a given plane; the condition that two given lines are co-planar.
					The length and the equations of the lines of shortest distance between two straight lines.
Definition and equations of sphere; equations of the sphere through four given points.					
4	I B Sc- MSCs	II	Three Dimensional Analytical Solid Geometry	Mrs. L. Mary Anusha	Equations of a plane through the given points, length of the perpendicular from a given point to a given plane.
					Bisectors of angles between two panes, combined equations of two planes.
					Equations of a line; angle between a line and a plane.
					The condition that a given line may lie in a given plane; the condition that two given lines are co-planar.
5	II BSc-MPC	III	Abstract Algebra	Mrs. K. Sandhya Rani	Group definition and elementary properties finite and infinite groups – examples- order of a group.
					Subgroup definition – examples- criterion for a complex to be a subgroups.
					Criterion for a product of two subgroups to be a subgroup - union and intersection of subgroups.
6	II BSc-MPCs	III	Abstract Algebra	Mr. S. M. Subhani	Group definition and elementary properties finite and infinite groups – examples- order of a group.

					<p>Subgroup definition – examples- criterion for a complex to be a subgroups.</p> <p>Criterion for a product of two subgroups to be a subgroup - union and intersection of subgroups.</p> <p>Coset definition – properties of cosets – index of a subgroups of a finite groups – Legranges theorem</p> <p>Definition of normal subgroups- proper and improper normal subgroups.</p> <p>Intersection of two normal subgroups- subgroups of index 2 is a normal subgroup.</p>
7	II BSc-MSCs	III	Abstract Algebra	Mrs. L. Mary Anusha	<p>Group definition and elementary properties finite and infinite groups – examples- order of a group.</p> <p>Subgroup definition – examples- criterion for a complex to be a subgroups.</p> <p>Criterion for a product of two subgroups to be a subgroup - union and intersection of subgroups.</p> <p>Coset definition – properties of cosets – index of a subgroups of a finite groups – Legranges theorem</p> <p>Definition of normal subgroups- proper and improper normal subgroups.</p> <p>Intersection of two normal subgroups- subgroups of index 2 is a normal subgroup.</p> <p>kernel of a homomorphism – fundamental theorem on homomorphism and applications.</p>
8	II BSc- MPC	IV	Real Analysis	Mr. S. M. Subhani	<p>The algebraic and order properties of <math>\mathbb{R}</math> , absolute values and real line.</p> <p>Completeness property of <math>\mathbb{R}</math>, applications of supremum property ; intervals.</p> <p>Sequences and their limits , range and boundedness of sequences , limit of a sequences and convergent sequences.</p>

9	II BSc-MPCs	IV	Real Analysis	Mr. S. M. Subhani	The algebraic and order properties of $\mathbb{R}$ , absolute values and real line.
					Completeness property of $\mathbb{R}$ , applications of supremum property ; intervals.
					Sequences and their limits , range and boundedness of sequences , limit of a sequences and convergent sequences.
					The Cauchy's criterion, properly divergent sequence, monotone sequences.
					Limit point of sequence, subsequences and the Bolzano-Weierstrass theorem.
					Cauchy's sequence – Cauchy's general principle of convergence theorem.
10	II BSc-MSCs	IV	Real Analysis	Mr. S. M. Subhani	The algebraic and order properties of $\mathbb{R}$ , absolute values and real line.
					Completeness property of $\mathbb{R}$ , applications of supremum property ; intervals.
					Sequences and their limits , range and boundedness of sequences , limit of a sequences and convergent sequences.
					The Cauchy's criterion, properly divergent sequence, monotone sequences.
					Limit point of sequence, subsequences and the Bolzano-Weierstrass theorem.
					Cauchy's sequence – Cauchy's general principle of convergence theorem.
					1.P- test and Comparison test 2.Cauchy's $n^{\text{th}}$ root test or root test.
11	II BSc-MPC	V	Linear Algebra	Mrs. L. Mary Anusha	Vector spaces, general properties of vector spaces, $n$ dimensional vectors, addition and scalar multiplication of vectors.

					Linear sum of two subspaces, linear combination of vectors, linear span linear independence and linear dependent of vectors.
					Basis of vector space I , finite dimensional vector spaces, basic extensions,
12	II BSc-MPCs	V	Linear Algebra	Mrs. L. Mary Anusha	Vector spaces, general properties of vector spaces, n dimensional vectors, addition and scalar multiplication of vectors.
					Linear sum of two subspaces, linear combination of vectors, linear span linear independence and linear dependent of vectors.
					Basis of vector space I , finite dimensional vector spaces, basic extensions,
					Dimension of a vector space, dimension of a subspace, quotient space and dimension of quotient space.
					Algebra of linear operators, range and null space of linear transformations.
					rank and nullity of linear transformations- rank – nullity theorem.
13	II BSc-MSCs	V	Linear Algebra	Mrs. L. Mary Anusha	Vector spaces, general properties of vector spaces, n dimensional vectors, addition and scalar multiplication of vectors.
					Linear sum of two subspaces, linear combination of vectors, linear span linear independence and linear dependent of vectors.
					Basis of vector space I , finite dimensional vector spaces, basic extensions,
					Dimension of a vector space, dimension of a subspace, quotient space and dimension of quotient space.
					Algebra of linear operators, range and null space of linear transformations.



					Rank and nullity of linear transformations- rank – nullity theorem.
					Characteristic values & vectors of square matrix, Cayley’s Hamilton theorem.
14	III BSc-MPC	VI - A	Numerical Methods	Mr. S. M. Subhani	Forward differences, backward differences , central differences Methods based problems.
					Newton’s formulae for interpolation. Central difference interpolation formulae.
					Gauss’s forward interpolation formulae, Gauss’s backward interpolation formulae.
15	III BSc-MPCs	VI - A	Numerical Methods	Mr. S. M. Subhani	Forward differences, backward differences , central differences Methods based problems.
					Newton’s formulae for interpolation. Central difference interpolation formulae.
					Gauss’s forward interpolation formulae, Gauss’s backward interpolation formulae.
					Stirling’s formula, Bessel’s formula.
					Divided difference and properties, Newton’s divided difference formula.
					Lagrange’s interpolation formula, Lagrange’s inverse interpolation formula.
					Derivatives using Newton’s forward difference formula, Newton’s backward difference formula.
16	III BSc-MPCs	VI - A	Numerical Methods	Mr. S. M. Subhani	Forward differences, backward differences , central differences Methods based problems.
					Newton’s formulae for interpolation. Central difference interpolation formulae.
					Gauss’s forward interpolation formulae, Gauss’s backward interpolation formulae.
					Stirling’s formula, Bessel’s formula.

					Divided difference and properties, Newton's divided difference formula.
					Lagrange's interpolation formula, Lagrange's inverse interpolation formula.
					Derivatives using Newton's forward difference formula, Newton's backward difference formula.
					Derivatives using Central difference formula, Stirling's interpolation formula.
17	III BSc-MSCs	VII - A	Mathematical Special Functions	Mrs. L. Mary Anusha	Euler's integrals – beta and gamma functions, elementary properties of gamma functions.
					Another form of beta functions, relation between beta and gamma functions.
					Chebyshev polynomials, orthogonal properties of Chebyshev polynomials.
18	III BSc-MSCs	VII - A	Mathematical Special Functions	Mrs. L. Mary Anusha	Euler's integrals – beta and gamma functions, elementary properties of gamma functions.
					Another form of beta functions, relation between beta and gamma functions.
					Chebyshev polynomials, orthogonal properties of Chebyshev polynomials.
					recurrence relations, generating functions for Chebyshev polynomials.
					Hermite differential equations, solution of Hermite equations.
					Hemite polynomials, generating functions for Hermite polynomials.
					Other forms for Hermite polynomials, Rodrigues formula for Hermite polynomials.
19	III BSc-MSCs	VII - A		Mrs. L. Mary Anusha	Euler's integrals – beta and gamma functions, elementary properties of gamma functions.

			Mathematical Special Functions	<p>Another form of beta functions, relation between beta and gamma functions.</p> <p>Chebyshev polynomials, orthogonal properties of Chebyshev polynomials.</p> <p>recurrence relations, generating functions for Chebyshev polynomials.</p> <p>Hermite differential equations, solution of Hermite equations.</p> <p>Hermite polynomials, generating functions for Hermite polynomials.</p> <p>Other forms for Hermite polynomials, Rodrigues formula for Hermite polynomials.</p> <p>Orthogonal properties of Hermite polynomials, recurrence formulae for Hermite polynomials.</p>
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