STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

Course Schedule: June - November 2024

Department : Mathematics
Name/s of the Faculty : Dr. Arul Roselet Meryline S
Course Title : Algebraic Structures
Course Code : 19MT/MC/AS55
Shift : II

Week & No. of hours	Units & Topics	Teaching Methodology	Text & References	Method of Evaluation
Jun 19 – 26, 2024 (Day Order 1 - 6) 6-Hours	**Unit 1 Group Theory** 1.1 Elementary Properties of Groups 1.2 Finite Groups	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th Edition, Reprint 2016. Herstein, I. N., Topics in Algebra 2 nd ed. New Delhi: Wiley, 2007, Reprint 2017	Questioning
Jun 27 – July 4, 2024 (Day Order 1 - 6) 6-Hours	**Unit 1 Group Theory** 1.3 Subgroups 1.4 Cyclic Groups – Properties	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th Edition, Reprint 2016.	Slip test
July 05– July 12, 2024 (Day Order 1 to 6) 6-Hours	**Unit 1 Group Theory** 1.4 Cyclic Groups – Classification of Subgroups of Cyclic Groups **Unit 2 Permutation Groups** 2.1 Cycle notation	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th Edition, Reprint 2016. Herstein, I. N., Topics in Algebra 2 nd ed. New Delhi: Wiley, 2007, Reprint 2017	Quiz

July 15 – July 23, 2024 (Day Order 1 to 6) 6-Hours	**Unit 2 Permutation Groups** 2.2 Properties of Permutations	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th Edition, Reprint 2016. Herstein, I. N., Topics in Algebra 2 nd ed. New Delhi: Wiley, 2007, Reprint 2017	Quiz
July 24 – July 31, 2024 (Day Order 1 to 6) 6-Hours	**Unit 3 Cosets and Lagrange's Theorem** 3.1 Properties of Cosets 3.2 Lagrange's Theorem and Consequences	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th Edition, Reprint 2016. Herstein, I. N., Topics in Algebra 2 nd ed. New Delhi: Wiley, 2007, Reprint 2017	Questioning
Aug 1 – 5, 2024 (Day Order 1 - 3) 3-Hours	**Unit 3 Cosets and Lagrange's Theorem** 3.2 Lagrange's Theorem and Consequences 3.3 An Application of Cosets to Permutation groups	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th Edition, Reprint 2016. Herstein, I. N., Topics in Algebra 2 nd ed. New Delhi: Wiley, 2007, Reprint 2017	Slip test
Aug 6 – 10, 2024	**C.A. Test – I** **(Unit 1, Unit 2: 2.1,2.2)**			

Aug 12 – 14, 2024 (Day Order 4-6) 3-Hours	**Unit 3 Normal Subgroups and Factor Groups** 3.4 Normal subgroups	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th Edition, Reprint 2016. Herstein, I. N., Topics in Algebra 2 nd ed. New Delhi: Wiley, 2007, Reprint 2017	Questioning
Aug 16 – Aug 23, 2024 (Day Order 1 to 6) 6-Hours	**Unit 3 Normal Subgroups and Factor Groups** 3.5 Factor Groups **Unit 4 Ring Theory** 4.3 Properties of Rings 4.4 Subrings	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th Edition, Reprint 2016. Herstein, I. N., Topics in Algebra 2 nd ed. New Delhi: Wiley, 2007, Reprint 2017	Quiz III Component Test 1 MCQ Unit-1 (15 Marks)
Aug 27 – Sep 3, 2024 (Day Order 1-6) 6-Hours	**Unit 4 Ring Theory** 4.5 Integral Domains 4.6 Fields 4.7 Characteristic of a Ring	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th Edition, Reprint 2016.	Slip test
Sept 4 – Sept 11, 2024 (Day Order 1 to 6) 6-Hours	**Unit 5 Ring Theory (contd.)** 5.1 Ideals and Factor Rings 5.2 Prime Ideals and Maximal Ideals	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th Edition, Reprint 2016.	Questioning

Sept 12 – Sept 20, 2024 (Day Order 1 to 6) 6-Hours	**Unit 2** **Isomorphisms** 2.6 Cayley's Theorem 2.7 Properties of Isomorphisms 2.8 Automorphisms	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th Edition, Reprint 2016.	Questioning
Sep 23 - 26, 2024 (Day Order 1-4) 4-Hours	**Unit 4 Group Homomorphism** 4.1 Properties of Homomorphisms 4.2 The First Isomorphism Theorem	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th Edition, Reprint 2016. Herstein, I. N., Topics in Algebra 2 nd ed. New Delhi: Wiley, 2007, Reprint 2017	Quiz III Component Test 2 Assignment Problem Solving Unit 2 – 2.6, 2.7, 2.8 (25 Marks)
Sep 27 – Oct 3, 2024	**C.A. Test – II** **(Unit 3: 3.4,3.5 Unit 4, Unit 5:5.1,5.2)**			
Oct 4 – 5, 2024 (Day 5 & 6) 2-Hours	**Unit 5 Ring Theory (contd.)** 5.3 Ring Homorphism	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th Edition, Reprint 2016. Herstein, I. N., Topics in Algebra 2 nd ed. New Delhi: Wiley, 2007, Reprint 2017	Slip test
Oct 7 - 15, 2024 (Day Order 1 to 6) 6-Hours	**Unit 5 Ring Theory (contd.)** 5.4 Properties of	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th	Questioning III Component

	Ring Homomorphism 5.5 Field of Quotients		Edition, Reprint 2016. Herstein, I. N., Topics in Algebra 2 nd ed. New Delhi: Wiley, 2007, Reprint 2017	Application Assignment (10 Marks)
Oct 16 - 22, 2024 (Day Order 1 to 6) 6-Hours	**Unit 2** **Symmetry Groups** 2.3 Isometries 2.4 Classification of Finite Plane Symmetry Groups 2.5 Classification of Finite Groups of Rotation in $\mathbb{R}$	Lecture and problem solving	Gallian Joseph A., Contemporary abstract algebra, New Delhi: Cengage Learning, 8 th Edition, Reprint 2016. Herstein, I. N., Topics in Algebra 2 nd ed. New Delhi: Wiley, 2007, Reprint 2017	Questioning
Oct 23 - 24, 2024 (Day Order 1 to 2) 2-Hours	**REVISION**			