

GOVT. POST GRADUATE NEHRU COLLEGE, JHAJJAR
Department of Mathematics (2024-25)

Lesson Plan 2024-2025(ODD SEM)

Class BA/ B. Sc./ B. Com/BCA (MDC)

Semester -3rd

Name of Teacher: Samsher

Subject/Paper: Applicable Mathematics

| Sr. No. | Week Days | Subject Matter/ Syllabus |
|---------|---------------------------------|---|
| Unit-1 | 15 th July to August | Theory of Sets: Meaning, elements, types, presentation and equality of Sets, Union, Intersection, Complement and Difference of Sets, Venn Diagram, Cartesian Product of two Sets, Applications of Set Theory. |
| Unit-2 | September | Matrices and Determinants: Definition of a Matrix ; Types of Matrices, Algebra of Matrices; Properties of determinants; Calculation of values of Determinants upto third order; adjoint of a Matrix, elementary row and column operations; Finding inverse matrix through adjoint; Solution of a system of Linear equations having unique Solution and involving not more than three variables. |
| Unit-3 | October | Compound Interest: Certain different types of interest rate; Concept of present value and amount of a sum. |
| Unit-4 | Upto 19 th November | Annuities: Types of annuities; Present value and amount of an annuity, including the case of continuous compounding. Revision |



Signature
HOD

GOVT. POST GRADUATE NEHRU COLLEGE, JHAJJAR
Department of Mathematics (2024-25)

Lesson Plan 2024-2025(ODD SEM)

MSc. Mathematics Semester-I

Name of Teacher...Samsher

Subject/Paper-Abstract Algebra

| Sr No | Month | M.sc. 1 st (Abstract algebra) |
|---------|-----------|--|
| Unit -1 | August | Sylow theorems, p -Groups, Sylow subgroups, application of sylow theorem, Description of group of order p^2 and pq , Survey of groups upto order 15. Assignment, Class test |
| Unit-2 | September | Normal and subnormal series, solvable series, Solvability of S_n $n \geq 2$ Central series Nilpotent groups and their property, Equivalent condition for finite group to be nilpotent, Upper and lower central series, composition series, Zassenhaus lemma, Jordan holder theorem, Class test |
| Unit -3 | October | Module, cyclic modules, Simple and semi- simple modules, Schurs lemma, Free Modules, Open class Discussion, Module over PID and its application to finitely generated abelian groups, Class test |
| Unit -4 | November | Noetherian and Artinian modules, module of finite length, Noetherian and Artinian rings, Hilbert basis theorem, Assignment, $\text{Hom}(R, R)$, Opposite rings, wedderburn-Artin theorem, Presentation |

Samsher

GOVT. POST GRADUATE NEHRU COLLEGE, JHAJJAR
Department of Mathematics, Lesson Plan 2024-2025(ODD SEM)

Class MSc. Mathematics

Semester -III

Name of Teacher...Samsheer

Subject/Paper-Functional Analysis

| Sr. No. | Month | Subject Matter/ Syllabus |
|---------|-----------|---|
| Unit-1 | August | Normed linear spaces, Metric on normed linear spaces, Completion of a normed space, Banach spaces, subspace of a Banach space, Holder and Minkowski inequality, Completeness of quotient spaces of normed linear spaces. Completeness of l_p , L_p , R_n , C_n and $C[a,b]$. Incomplete normed spaces. |
| Unit-2 | September | Finite dimensional normed linear spaces and Subspaces, Bounded linear transformation, Equivalent formulation of continuity, Spaces of bounded linear transformations, Continuous linear functional, Conjugate spaces. Hahn-Banach extension theorem (Real and Complex form). |
| Unit-3 | October | Riesz Representation theorem for bounded linear functionals on L_p and $C[a,b]$. Second conjugate spaces, Reflexive space, Uniform boundedness principle and its consequences, Open mapping theorem and its application, Projections, Closed Graph theorem. |
| Unit-4 | November | Equivalent norms, Weak and Strong convergence, Their equivalence in finite dimensional spaces. Weak sequential compactness, Solvability of linear equations in Banach spaces. Compact operator and its relation with continuous operator, Compactness of linear transformation on a finite dimensional space, Properties of compact operators, Compactness of the limit of the sequence of compact operators. |


Signature