MA-632 COMMUTATIVE ALGEBRA-II (Pre requisite Commutative Algebra-I (3 Credits)

Unique Factorization Domains: Basics and examples, Guass Theorem, Quotient of a UFD, Nagata Theorem.

Class Groups: Divisor Cllasses, Divisor Class monoid, Divisor Class group.

Krull Rings and Factorial Ring: Divisorial ideals, Divisors, Krull rings, Stability properties, Two classes of Krull rings, Divisor class groups, Application of a Theorem of Nagata, Examples of Factorial Rings.

Atomic Domains: Definition and examples, Polynomial extension of Atomic domains.

Domains Satisfying ACCP: Definition and examples, Polynomial extension of domains satisfying ACCP. Connection of domains satisfying ACCP and Atomic domains.

Bounded Factorization Domains: Definition and examples Length function, Charecterization of BFD through length function. Polynomial extension of BFDs, Noetherian and Krull domains are BFDs.

Half Factorial Domains: Class number of a Field, Carlitz Theorem, Examples and basic results, Dedekind and krull examples, Integrability and HFD, On polynomial and polynomial like extensions.

Finite Factorization Domains: Group of Divisibility G(D) of a domain D, G(D) and FFD, Atomic idf-domain is FFD,

RECOMMENDED BOOKS:

1. P. Samuel, Lecture Notes on Unique Factorization Domains, Tata Institute of Fundamental Research, Bombay, 1964.
2. R. Gilmer, Multiplicative ideal Theory, Marcel Dekker, New York, 1972.
3. R. M. Fossum, Divisor Class group of a krull Domain, Spriger Verlag, 1973.
4. D. D. Anderson, Factorization in Integral Domains, Lecture Notes in Pure & Applied Mathematics, Marcel Dekker, New York, Vol. 189, 1997.
5. S. T. Chapman & Sara Glaz, Non Noetherian Commutative Ring Theory, Mathematics & its Applications series Vol. 520, Kluwar Academic Publishers, 2000.