Title:	On the index of an algebraic integer and beyond
Authors:	Khanduja, S.K. (/jspui/browse?type=author&value=Khanduja%2C+S.K.)
Keywords:	Rings of algebraic integers Dedekind domains Valued fields
Issue Date:	2019
Publisher:	Elsevier
Citation:	Journal of Pure and Applied Algebra, 224(7).
Abstract:	Let K=Q(θ)be an algebraic number field with θin the ring AKof algebraic integers of Khaving minimal polynomial f(x)over Q. Fo r a prime number p, let ip(f)denote the highest power of pdividing the index [AK:Z[θ]]. Let f̄(x) = ̄φ1(x)e1⋯ ̄φr(x)erbe the factorization of f(x) modulo pinto a product of powers of distinct irreducible polynomials over Z/pZwith φi(x) ∈Z[x]monic. Let the integer l≥1and the polynomial N(x) ∈Z[x]be defined by f(x) =r∏i=1φi(x)ei+plN(x), N(x) = ̄0. In this paper, we prove that ip(f) ≥r∑i=1uidegφi(x), where uiis a constant defined only in terms of l, eiand the highest power of the polynomial ̄φi(x)dividing N(x). Fu r t h e r a class of irreducible polynomials is described for which the above inequality becomes equality. The results of the paper quickly yield the well known Dedekind criterion which gives a necessary and sufficient condition for ip(f)to be zero. In fact, these results are proved in a more general set up replacing Zby any Dedekind domain.
Description:	Only IISERM authors are available in the record.
URI:	https://www.sciencedirect.com/science/article/pii/S0022404919302944 (https://www.sciencedirect.com/science/article/pii/S0022404919302944) http://hdl.handle.net/123456789/2329 (http://hdl.handle.net/123456789/2329)
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format	
Need to add pdf.odt (/jspui/bitstream/123456789/2329/1/Need%20to%20add%20pdf.odt)		8.63 kB	OpenDocument Text	View/Open (/jspui/bitstream/12345

Show full item record (/jspui/handle/123456789/2329?mode=full)
(/jspui/handle/123456789/2329/statistics)