THE S_5 EXTENSIONS OF DEGREE 6 WITH MINIMUM DISCRIMINANT

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Abstract. The algebraic number fields of degree 6 having Galois group S_5 and minimum discriminant are determined for signatures $(0,3)$, $(2,2)$ and $(6,0)$. The fields F_0, F_2, F_6 are generated by roots of $f_0(t) = t^6 + 3t^4 + 2t^3 + 6t^2 + 1$, $f_2(t) = t^6 - 2t^4 + 12t^3 - 16t + 8$, and $f_6(t) = t^6 - 18t^4 + 9t^3 + 90t^2 - 70t - 69$ respectively. Each of these fields is unique up to isomorphism. This completes the enumeration of primitive sextic fields with minimum discriminant for all possible combinations of Galois group and signature.