

Contents

Chapter 1. Introduction	1
Acknowledgment	8
Chapter 2. Preliminary Group Theoretical Results	9
Chapter 3. Identification Theorems of Some Almost Simple Groups	19
Chapter 4. Strongly \mathfrak{p} -embedded Subgroups	25
Chapter 5. Sylow Embedded Subgroups of Linear Groups	27
Chapter 6. Main Hypothesis and Notation for the Proof of the Main Theorems	47
Chapter 7. The Embedding of \mathbf{Q} in \mathbf{G} Under Hypothesis 6.2	49
Chapter 8. The Groups Which Satisfy Hypothesis 6.2 with $\mathbf{N}_{\mathbf{F}^*(\mathbf{H})}(\mathbf{Q})$ Not Soluble and $\mathbf{N}_{\mathbf{G}}(\mathbf{Q}) \not\leq \mathbf{H}$	55
Chapter 9. The Groups with $\mathbf{F}^*(\mathbf{H}) \cong \mathbf{PSL}_3(\mathfrak{p}^e)$, \mathfrak{p} Odd	59
Chapter 10. The Groups with $\mathbf{F}^*(\mathbf{H}) \cong \mathbf{PSL}_3(2^e)$ or $\mathbf{Sp}_4(2^e)'$	63
Chapter 11. The Groups with $\mathbf{F}^*(\mathbf{H}) \cong \mathbf{Sp}_{2n}(2^e)$, $n \geq 3$	71
Chapter 12. The Groups with $\mathbf{F}^*(\mathbf{H}) \cong {}^2\mathbf{F}_4(2^{2e+1})'$	75
Chapter 13. The Groups with $\mathbf{F}^*(\mathbf{H}) \cong \mathbf{F}_4(2^e)$	79
Chapter 14. The Case When $\mathfrak{p} = 2$ and Centralizer of Some $\mathbf{2}$ -central Element of \mathbf{H} is Soluble	85
Chapter 15. The Groups with $\mathbf{F}^*(\mathbf{H}) \cong \mathbf{G}_2(3^e)$	89
Chapter 16. The Groups with $\mathbf{F}^*(\mathbf{H}) \cong \mathbf{P}\Omega_8^+(\mathfrak{3})$ and $\mathbf{N}_{\mathbf{G}}(\mathbf{Q}) \not\leq \mathbf{H}$	93
Chapter 17. The Case When $\mathfrak{p} = 3$, the Centralizer of Some $\mathbf{3}$ -central Element of \mathbf{H} is Soluble and $\mathbf{N}_{\mathbf{G}}(\mathbf{Q}) \not\leq \mathbf{H}$	99
Chapter 18. Proof of Theorem 2 and Theorem 3	103
Chapter 19. Groups Which Satisfy Hypothesis 6.2 with $\mathbf{N}_{\mathbf{G}}(\mathbf{Q}) \leq \mathbf{H}$ and Some \mathfrak{p} -local Subgroup Containing \mathbf{S} Not Contained in \mathbf{H}	105
Chapter 20. Proof of Theorem 4	117

Chapter 21. Proof of Theorem 1	119
Chapter 22. Proof of Main Theorem 1 and Main Theorem 2	131
Appendix A. Properties of Finite Simple Groups of Lie Type	133
Appendix B. Properties Alternating Groups	141
Appendix C. Small Modules for Finite Simple Groups	143
Appendix D. \mathfrak{p} -local Properties of Groups of Lie Type in Characteristic \mathfrak{p}	155
Appendix E. Miscellanea	175
Bibliography	179