

Contents

PART – I LABORATORY TESTS

Section – A Laboratory Tests on Subgrade Soil

1. Grain Size Analysis 2
2. Consistency Limits and Indices 11
3. Compaction Test 24
4. Shear Tests on Soil 31
5. California Bearing Ratio Test 41
6. Soil-Cement Mix Design 51

Section – B Tests on Road Aggregates

7. Aggregate Impact Test 63
8. Los Angeles Abrasion Test 68
9. Polished Stone Value Test 72
10. Aggregate Crushing Value Test 78
11. Specific Gravity and Water Absorption Tests 84
12. Shape Tests 88
13. Soundness Test 97
14. Stripping Value of Road Aggregates 101

Section – C Tests on Bituminous Materials

15. Penetration Test 107
16. Ductility and Elastic Recovery Tests 112
17. Softening Point Test 118
18. Specific Gravity Test on Bitumen 122
19. Viscosity Tests 125
20. Flash and Fire Point Tests 135
21. Tests on Bitumen Emulsion and Cutback Bitumen 139
22. Tests on Polymer and Rubber Modified Bituminous Binders 145

Section – D Tests on Bituminous Mixes

23. Marshal Stability Test and Mix Design 153
24. Water Sensitivity Test on Compacted Bituminous Mixes 167

PART – II TESTS ON PAVEMENT LAYERS

Section – E Field Tests

25. Determination of Field Density of Pavement Layer 173
26. Plate Bearing Test 182
27. Dynamic Cone Penetrometer Test 189
28. Tests on Bituminous Pavement Layer 195
28. Benkelman Beam Deflection Studies and Analysis 200
29. Unevenness Measurement by Bump Integrator and MERLIN 209