

CONTENTS

Part 1. Analytical methods**Experiment**

1. Determination of available chlorine in sodium hypochlorite solution	3
2. Determination of the hardness of water	6
3. Estimation of iron in water	9
4. Determination of the saponification value of an oil	11
5. Determination of the iodine value of an oil	13
6. Use of the pH meter	16
7. Use of pH indicators in acid – base titrations	19
8. Determination of the nitrogen content of an organic substance by the kjeldahl method	23
9. Paper chromatography – principles and techniques	26
10. Separation of amino acids by paper chromatography	30
11. Thin layer chromatography	33
12. Chromatography on ion- exchange paper	36
13. Separation of amino acids by paper electrophoresis	39
14. Identification of N – terminal amino acids by the ‘dansyl’ method	43
15. The spekker photo – electric absorptionmeter	48
16. Determination of the cystine content of a protein	52
17. Determination of the tyrosine content of a protein	56

Part 2. Experiment on proteins

18. The milling of wool fabrics	61
19. Supercontraction of wool	64
20. The acid combining value of untreated and acetylated wool	66
21. Rendering wool resistant to acid dyeing	69
22. The alkali solubility of wool	72
23. Effect of breaking disulphide cross – links in wool	76
24. Cross – linking wool with formaldehyde	79
25. Formation of lanthionine linkages in wool	81
26. Isolation of the a - , B – and y-keratose fractions from oxidised wool	85
27. Carbonising of wool	91
28. Chlorination of wool fabric	94
29. A kinetic study of the reaction of wool with chlorosulphamic acid	97
30. Rendering wool non – felting with chlorosulphamic acid	101
31. Shrinkproofing wool by interfacial polymerisation of polyamides	103
32. Properties and reactions of silk	105

Part 3. Experiments on carbohydrates

33. Preparation of α - and β -glucose penta - acetates	111
34. Preparation of cellobiose octa - acetate from cellulose	115
35. Preparation of cellobiose from cellobiose octa - acetate	118
36. Determination of α - , β - and γ - cellulose	122
37. Absorption of methylene blue by cellulose	126
38. Fluidity of cellulose in cuprammonium hydroxide solution	130
39. Determination of the copper number of cellulose	134
40. Mercerising of cotton	138
41. preparation of cellulose triacetate and its hydrolysis to second - ary acetates	141
42. Preparation and analysis of cellulose acetate - stearate	145
43. End - group analysis of starch by periodate oxidation	148

Part 4. Experiments on synthetic polymers

44. Preparation of a urea - formaldehyde resin	153
45. Preparation of polystyrene	156
46. Polymerisation of acrylonitrile	161
47. Preparation of nylon 66 and nylon 610	165
48. Identification of the hydrolysis products of nylon 66	170
49. Identification of the hydrolysis product of nylon 6	173
50. Chromatographic identification of nylons	176
51. properties of polyester fibres	179
Appendix	
Table of atomic weights	184
Four figure logarithmic tables	185